APPROVED LOCAL WETLANDS INVENTORY
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OREGON DEPARTMENT OF STATE LANDS

Local Wetland Inventory Report

City of Scio
Linn County, Oregon

Prepared for Lane Council of Governments
and the City of Scio

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LCOG
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1 INTRODUCTION

SWCA Environmental Consultants contracted with the Lane Council of Governments (LCOG) to conduct a Local Wetland Inventory (LWI) for each of five cities in the southern Willamette Valley (Adair Village, Monroe, Harrisburg, Mill City, and Scio). This report documents the LWI for the City of Scio, Linn County, Oregon. The LWI was conducted according to Oregon Administrative Rules (OAR) 141-086-0180 through 141-086-0350 (Appendix A). A list of acronyms used in this study and selected definitions are included in Appendix B.

SWCA determined the location and size of wetlands throughout the study area. The quality and condition of wetlands were determined by applying the Oregon Freshwater Wetland Assessment Methodology (OFWAM) and then determining whether wetlands were locally significant by applying the criteria in State Administrative Rules (OAR 141-86-300-350). This report presents the results of the wetland inventory and assessment as well as the identification of streams within the study area.

2 GENERAL DESCRIPTION OF THE STUDY AREA

The study area for Scio includes 340 acres within the Urban Growth Boundary (UGB) and 44 acres of future growth area for a total study area of 384 acres. The study area is located in Sections 7, 8, 17, and 18, Township 10 South, Range 1 West, in Linn County, Willamette Meridian, Oregon. Background figures for this project are included in Appendix C. Figure 1 shows the site location on the U.S. Geological Survey topographic base map. Figure 2 shows the National Wetlands Inventory (NWI) map. Figure 3 shows the Natural Resources Conservation Service (NRCS) soil map.

2.1 Landscape Setting, Topography, and Land Use

Scio is located in a flat part of the upper Willamette Valley northwest of Franklin Butte and south of a ridgeline. Elevation is approximately 317 feet above sea level, and topography is relatively flat. Soils in the town formed in silty and loamy mixed alluvium and alluvium weathered from sedimentary and basic igneous bedrock on nearly level to undulating floodplains. The town is residentially developed with agricultural parcels including pastures, hazelnut orchards, and grazing livestock. Two sewage lagoons are present in the south.

2.2 Watershed

Scio is located along Thomas Creek (approximate river mile 8 to 9.5), which flows west into the South Santiam River, roughly paralleling the course of the North Santiam River located to the north. The study area is contained entirely within the Lower Thomas Creek 6th field hydrologic unit code (HUC) watershed (170900060705). The watershed is 40.57 square miles in size and has an average slope of 6.79 percent. Peters Ditch, tributary to Thomas Creek, is located south of the creek and is reportedly managed by the Scio Water Improvement District. It is unknown if the path that the ditch takes is the same path that the drainage took prior to the late 1950s, when it was constructed, but it is believed to have followed the basic natural course of a stream stemming from a spring on Rogers Mountain Loop Road. Two unnamed drainages located in the

northwest corner of the study area join and flow south into Thomas Creek. A watershed summary is included in Appendix E.

2.3 Growing Season

The growing season for Scio is March 16 through November 21 as documented at the Lacomb WETS Station, which is located ten miles southeast of Scio at an elevation of 520 feet. Average annual rainfall is 57.43 inches.

2.4 Sensitive Species and Water Quality Data

The Oregon Natural Heritage Information Center (now known as the Oregon Biodiversity Information Center) provided a list of sensitive species occurring within two miles of the study area on March 22, 2010:

- Willamette Valley larkspur
- Willamette Valley daisy
- thin-leaved peavine
- Nelson's sidalcea
- Northern Pacific pond turtle
- Steelhead (Upper Willamette River ESU, winter run)
- Chinook salmon (Upper Willamette River ESU, spring run)
- Oregon chub
- Oregon vesper sparrow

While surveys for sensitive species were not part of this inventory, any wildlife or wildlife sign observed in the field were noted on the wetland summary sheets included in the appendix.

The Oregon Department of State Lands (DSL) website provided essential salmonid habitat maps. Data sources used for gathering water quality data within the study area include Oregon Department of Environmental Quality (DEQ) 1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution and current DEQ website (see useful websites for wetland assessment at the end of the References section). Thomas Creek is water quality limited for temperature year round. Additional information was gathered from the Oregon Explorer Website.

3 WETLAND INVENTORY PROCESS AND METHODOLOGY

3.1 Public Involvement

LCOG organized the public outreach efforts for this project. Letters explaining the project and seeking permission for access were sent to all property owners whose tax lots intercepted hydric soil layers and/or National Wetland Inventory (NWI) mapped wetlands and streams, or showed a potential wetland signature in the aerial photographs. SWCA reviewed the base maps and added additional tax lots that had a hydrologic signature or that provided access to tax lots that might have potential wetlands.

The initial public kickoff meeting was held in Scio on February 24, 2010, from 7 to 9 p.m. at the IOOF Hall on 38952 Highway 226. Approximately 22 members of the public attended the meeting. The number of parcels requested for access within the study area was 128. Access was granted to 52, a 41% permission rate (includes six city owned parcels).

The final public meeting to present the results of the LWI for the City of Scio was held on May 4, 2011 at 6:00 pm at Scio City Hall located at 38957 NW 1st Avenue. Stacey Reed of SWCA and Denise Kalakay of LCOG presented the results; and Peter Ryan represented DSL. Dave Kinney, Planning Consultant for the City of Scio, was present, along with Ginger Griffith, City Manager, and Cathy Martin, Administrative Assistant. A total of 11 people were present.

3.2 Local Wetlands Inventory and Assessment Methodology

Wetlands are those areas that are inundated or saturated by surface water or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Both on-site and off-site methods of the LWI are geared towards determining if a site contains wetland soils, hydrology, and vegetation.

Wetland determination methodology followed the routine approach of the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Western Mountains, Valleys, and Coast Region, as adopted by the Oregon Department of State Lands (DSL) and the U.S. Army Corps of Engineers. (Fieldwork was conducted prior to the adoption of Version 2.0 of the Supplement.)

Creation of base maps support the initial screening for potential wetlands, as well as both the on- and off-site wetland determination work. LCOG prepared the base maps for this project including mapped NWI wetlands, NRCS-mapped hydric soils and soils with hydric inclusions, Federal Emergency Management Agency (FEMA) 100-year floodplain, 2-foot contours derived from light detection and ranging (LiDAR) data, tax lots from county geographic information system (GIS) departments, study area boundary, and summer 2005 or 2008 aerial photographs. Black and white aerial photographs dating from spring 2000 were also received from LCOG, and historic aerials were obtained from the U.S. Army Corps of Engineers for agricultural sites.

3.2.1 Off-site and Probable Wetland Determination Procedures

Where access was not granted wetlands were determined to be present by visually confirming the presence of hydrology and/or hydrophytic vegetation where possible from adjacent areas (roads, public property, sites with access, etc.). Wetland boundaries mapped on these sites were based primarily on aerial photograph interpretation and the extent of mapped hydric soils.

Wetlands less than 0.5 acres (148 by 148 feet) were mapped when possible where property access was not granted. Off-site wetlands less than 0.5 acre were either mapped as a polygon or as a point labeled Probable Wetland (“PW”). “PW” means an area noted during the course of LWI development that appears to meet wetland criteria but is less than one half of an acre in size or is small and of undetermined size, and is mapped as a point rather than a polygon on the LWI maps. These areas were identified based on 1) the presence of wetland (hydrophytic) vegetation as documented in aerial photographs or via binoculars from off-site viewing locations; 2) an

aerial signature showing saturation or ponding (a hydrologic signature); or 3) the presence of mapped hydric soils.

3.2.2 On-site Wetland Determination Procedures

Where property access permission was granted, each wetland was verified with at least one sample plot that best characterized the wetland. SWCA used a resource-grade Trimble GeoExplorer XT global positioning system (GPS) unit to collect wetland determination sample plot locations in the field. Field-collected data were downloaded into a GIS format using the industry standard ESRI ArcGIS software, version 9.3.

Wetlands were determined to be present by documenting hydrophytic vegetation, hydric soils, and wetland hydrology. Each potential wetland where land use activities such as ditching, water diversion, or agricultural practices are likely to have significantly altered site conditions was verified with at least one sample plot. Any potential wetlands with unreliable indicators (e.g., a dominant plant that grows in both wetlands and non-wetlands, such as reed canarygrass, *Phalaris arundinacea*) were verified with at least one sample plot. Wetland determination data forms are included in Appendix D.

Any previously mapped wetlands no longer apparent in aerial photos were verified with a sample plot or, where access was not obtained, their absence was visually confirmed. All newly identified wetlands were verified.

Where property access was granted, all wetlands 0.1 acre (66 by 66 feet) or greater were field mapped. (This differs from the LWI rule, which states all wetlands greater than or equal to 0.5 acre must be mapped.).

3.3 Wetland Quality Assessment

3.3.1 The Oregon Freshwater Wetland Assessment Methodology

Wetlands are grouped into assessment units based on their close proximity, similar vegetation characteristics and similar hydrologic characteristics. The quality of wetlands in the study area was assessed using the *Oregon Freshwater Wetland Assessment Methodology* (OFWAM; Roth et al. 1996). OFWAM is used to evaluate the relative quality of wetlands primarily for planning and educational purposes. OFWAM evaluates wildlife habitat, fish habitat, water quality, and hydrologic control functions. Where applicable, other measures to determine Locally Significant Wetlands were implemented, as discussed later in this report.

Wetland Functions and Values

Wetlands vary greatly by type and location; therefore not all perform the same functions and not all are equally valued. Wetland assessment may involve one or all of the following aspects:

- Functions—the ecological processes in wetlands, such as nitrogen cycling
- Values—the societal importance attached to those functions, such as water quality improvement
- Condition—the degree to which a wetland is altered or degraded, generally by human impacts

The Oregon Freshwater Wetland Assessment Methodology uses indicators that allow an evaluation of the extent to which a specific wetland may perform a given function, and help compare wetlands and evaluate their relative importance (value). Wetland functions evaluated by OFWAM include:

Wildlife habitat: Wetlands provide essential water, food, cover, and reproductive areas for many wildlife species. OFWAM evaluates the habitat diversity for species usually associated with wetlands, without emphasizing one particular species.

Fish habitat: OFWAM evaluates how a wetland provides fish habitat in streams, ponds or lakes associated with a wetland. The questions are suitable for both warm water and coldwater fish, and no particular species is emphasized.

Water Quality: Wetlands are highly effective at removing nitrogen and phosphorous, some chemicals, heavy metals, and other pollutants from water. For this reason, artificial wetlands are often constructed for cleaning stormwater runoff and for tertiary treatment (polishing) of wastewater. Wetlands bordering streams and rivers and those that intercept runoff from fields and roads may provide this function.

Hydrologic control: Wetlands can hold water during storm events reducing flooding impacts. OFWAM evaluates the effectiveness of a wetland to reduce downstream flood peaks and store floodwaters.

The OFWAM methodology for this study was streamlined to include only those wetland characterization questions that were relevant for determining whether the wetlands were Locally Significant Wetlands. Therefore, questions 39-58 of the methodology were not included.

3.3.2 Wetlands of Special Interest for Protection

The first filter of OFWAM is to determine whether the wetland is in a management plan, is protected by regulatory rules or statutes, or is uncommon in Oregon. A “yes” answer to any of the ten questions places the wetland into the “special interest for protection” category. Wetlands of Special Interest for Protection do not need to be labeled on the LWI maps. According to OFWAM, Wetlands of Special Interest for Protection indicate that management decisions should be made to protect the site. The worksheet regarding wetlands of special interest for protection is found in Appendix E.

3.4 Riparian Stream Reach Designation

Riparian stream reaches were determined based on the methodology contained in the Urban Riparian Inventory and Assessment Guide (Pacific Habitat Services, Inc. 1998). Riparian stream reaches generally have homogeneous physical characteristics; new reaches were defined by changes in vegetation type, slope, geomorphic stream features (pool, riffle, run), and/or by changes in land use. Each reach has a left and right side, looking downstream.

Thomas Creek is considered one stream reach for its entire length as it flows through the City of Scio. It has a well-vegetated riparian corridor dominated by black cottonwood, Oregon ash, beaked hazelnut, red elderberry, red-osier dogwood, and Himalayan blackberry. Peters Ditch has little or no riparian cover and is also considered one reach within the study area boundary.

4 MAPPING AND MAP TRANSFER PROCEDURES

Base maps were prepared by LCOG and transferred digitally to SWCA. Base data included aerial photograph imagery from summer 2005, with 1 foot resolution. The base maps were printed at a scale of 1 inch = 200 feet on a D size map (22 by 34 inches) for field use. The field maps included the following layers:

- 2009 color aerial photograph imagery from the National Agricultural Inventory Project (NAIP; 1 meter resolution)
- Parcel ID
- Parcels coded with permission to access granted, call first before accessing, and no access (no response or not contacted)
- NWI-mapped wetlands
- Hydric soils, soils with hydric inclusions, and upland soils (polygons and unit ID numbers)
- DSL wetland determination / delineation polygons (digitized by LCOG)
- LWI study area
- Urban growth boundary
- City limits
- Streams (combination of National Hydrography Dataset data and county GIS, supplied by LCOG)
- Streets and street names
- 4th Field HUC ID and boundary line, where applicable
- County line, where applicable

Accuracy for the GPS-mapped features is estimated at one meter or less based on the manufacturer's reported tolerance for the instrument and the post-processing report. Mapping and initial cartography were completed in ArcGIS 9.3. Wetlands were mapped in the field by hand drawing on the field maps, and then wetland boundaries, stream banks, ditch centerlines, and photo points were digitized in the office by the wetland field personnel. SWCA GIS staff developed a geodatabase for the five-city LWI project. The digital data were then exported to LCOG for final map development.

Each wetland unit was labeled with a unique code in each identified polygon. Each wetland code label point has attribute data including its site code, on-site/off-site determination, prior determination or delineation DSL file number, Cowardin classification and modifiers, Hydrogeomorphic Method of Wetland Assessment (HGM) classification, and Locally Significant Wetland determination. Attribute data were provided to LCOG by SWCA in an Excel spreadsheet.

LCOG provided second-draft digital maps in PDF format to SWCA for review; edited maps were submitted to DSL and to the city for review before presentation at a second public meeting and final submittal to DSL for approval. Public and local government comments on draft LWI products were provided to DSL. DSL reviewed the final products to ensure that requested changes were adequately addressed.

In addition to the March 31 and April 1, 2000 black and white aerial photographs received from LCOG, which showed hydrology signatures and were printed to a scale of 1 inch = 400 feet,

historic aerials were received from the Corps of Engineers for May 1972, April 1961, and May 1944. Google Earth aerials were also reviewed for hydrology and ditching patterns; photo dates included August 14, 2005, July 23, 2000 and May 22, 1994.

5 LOCAL WETLAND INVENTORY RESULTS

5.1 Wetland Acreage and Distribution

The total acreage of the Scio study area is 384. The total number of wetlands identified within the study area was six, totaling 16.22 acres (not including rivers and streams, deepwater habitats, or artificially created ponds such as detention ponds or treatment lagoons). Wetlands were mostly emergent or forested with a small component of open water. One Probable Wetland (PW) was identified west of Hamilton Way in the northern portion of the study area.

Confirmed NWI-mapped wetlands in Scio consist of SC-4, adjacent to Thomas Creek in the southeast portion of the study area. Four NWI-mapped wetlands were not confirmed and were found to be absent:

- PEMC north of Thomas Creek documented at sample plot SCP-1
- PEMA south of Thomas Creek documented at sample plot SCP-8
- PSSC north of Thomas Creek documented at sample plot SCP-9
- PSSC south of Thomas Creek documented at sample plot SCP-11

Wetland Summary Sheets for each wetland are found in Appendix F.

5.2 Wetland Classification

Each wetland was classified according to the classification of wetlands as defined by plants, soils, and the frequency of flooding known as the "Cowardin system" (see Appendix B). At 72%, palustrine emergent wetland (PEM) is the dominant type within the study area, totaling 11.72 acres. Palustrine forested wetland (PFO), were the next most common at 24%, totaling 3.80 acres within the study area. The palustrine unconsolidated bottom (i.e., open water) wetland (PUB) were the third most common at 4%, totaling 0.70 acres. Palustrine scrub-shrub wetland was not present in appreciable amounts in the study area. The following tables summarize the wetland classifications for the LWI study area. Table 5.1 is a break down of wetland class by acres and percent of total wetlands. Table 5.2 includes the total acres for each wetland broken into Cowardin class.

Table 5.1. Types of Wetlands within the Scio LWI Study Area

Wetland Classification	Classification Description	Area (acres)	Percent of Wetlands
Palustrine Emergent Wetland (PEM)	Wetlands with rooted herbaceous vegetation that stand erect above the water or ground surface.	11.72	72%
Palustrine Scrub-shrub Wetland (PSS)	Wetlands dominated by shrubs and tree saplings less than 20 feet high.	0	0%
Palustrine Forested Wetland (PFO)	Wetlands dominated by trees that are greater than 20 feet high.	3.80	24%
Palustrine Unconsolidated Bottom Wetland (PUB)	PUB: At least 25% cover of particles smaller than stones, and a vegetative cover less than 30%.	0.70	4%
Total		**16.22**	**100%**

Table 5.2. Cowardin Classification of all Wetlands Identified in the Scio LWI

Wetland Code	USFWS Wetland Classification				Total Acreage
	PEM	PSS	PFO	PUB	
SC-1	2.64	0	1.07	0.70	4.41
SC-2	1.04	0	1.63	0	2.93
SC-3	1.96	0	0	0	1.96
SC-4	0	0	0.81	0	0.95
SC-5	3.82	0	0	0	3.82
SC-6	2.14	0	0	0	2.14
Total	11.61	0.00	3.51	0.70	16.22

6 OREGON FRESHWATER WETLAND ASSESSMENT RESULTS

6.1 Wetland Quality Assessment

The Oregon Freshwater Wetland Assessment Method (OFWAM) provides qualitative information on the relative value of wetlands. Categories of “H” (high), “M” (medium) and “L” (low) were assigned to the assessment criteria to easily compare the results. “H” was assigned to wetlands receiving the highest function or condition result (e.g., intact, diverse), “L” was assigned to the wetlands receiving the lowest result (lost or not present), and “M” was assigned to the results which do not fit the other criteria (impacted or degraded, potential). This system is summarized in Table 6.1.

Table 6.1. Key to OFWAM Ranking

Wildlife Habitat	H. *Wetland provides diverse wildlife habitat* M. *Wetland provides habitat for some wildlife species* L. *Wetland does not provide wildlife habitat*
Fish Habitat	H. *Wetland's fish habitat function is intact* M. *Wetland's fish habitat function is impacted or degraded* L. *Wetland's fish habitat function is lost or not present*
Water Quality	H. *Wetland's water-quality function is intact* M. *Wetland's water-quality function is impacted or degraded* L. *Wetland's water quality function is lost or not present*
Hydrologic Control	H. *Wetland's hydrologic control function is intact* M. *Wetland's hydrologic control function is impacted or degraded* L. *Wetland's hydrologic control function is lost or not present*

Modified from *Pacific Habitat Services, Inc. 2010*

6.2 OFWAM Results

OFWAM results for each wetland are shown in Table 6.2. There are no known wetlands of special interest for protection within Scio, although Wetlands SC-1, SC-2 and SC-4 have the potential for containing threatened Chinook salmon and steelhead, and Wetland SC-3 has the potential for containing the species of concern and state Northern Pacific pond turtle. OFWAM questions regarding wetlands of special interest for protection are included in Appendix E.

Table 6.2. OFWAM Ranking Results for the Scio LWI

Wetland Code	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	Size (acres)
SC-1	H	M	H	H	4.41
SC-2	H	M	H	H	2.93
SC-3	H	NA	M	M	1.96
SC-4	H	H	H	H	0.95
SC-5	H	NA	M	M	3.82
SC-6	H	NA	M	M	2.14

NA means not applicable and indicates that no streams or ponds are associated with the wetland.

All of the assessed wetlands provide diverse wildlife habitat. Two of the wetlands' fish habitat functions are impacted or degraded and one wetland has an intact fish habitat function. Three wetlands' water quality functions are intact and three wetlands' water quality functions are impacted or degraded. Additionally, three wetlands' hydrologic control functions are intact while three wetlands' hydrologic control function are impacted or degraded.

Details of OFWAM function questions and rationale are included in Appendix G. OFWAM wetland characterization questions, function answer sheets, and function and condition summary are included in Appendix H.

7 SIGNIFICANT WETLANDS DETERMINATION

7.1 Goal 5 Locally Significant Wetlands Criteria

Wetlands are determined to be Locally Significant Wetlands (LSWs) based on Oregon Administrative Rules for Identifying Significant Wetlands (OAR 141-86-300 through 141-86-350). If the assessed wetland unit provides "diverse" wildlife habitat, "intact" fish habitat, "intact" water quality function, or "intact" hydrologic control function, then the wetland is locally significant. Table 7.1 provides the criteria for determining whether a wetland is Locally Significant. All wetlands, even those not determined to be Locally Significant, may still be regulated by the DSL and the U.S. Army Corps of Engineers.

Wetlands determined to be Locally Significant are listed in Table 7.2. Refer to Appendix I for details of each wetland.

Table 7.1. Criteria for Determining Goal 5 Locally Significant Wetlands

***Exclusions*: A wetland cannot be designated as significant if the answer to any of the criteria below is "Yes".**
1 Is this wetland artificially created entirely from upland and:
a. created for the purpose of controlling, storing, or maintaining storm water
b. is used for active surface mining or as a log pond
c. is a ditch without a free and open connection to natural waters of the state and does not contain food or game fish
d. is less than 1 acre and created unintentionally from irrigation or construction
e. created for the purpose of wastewater treatment, cranberry production, farm watering, sediment settling, cooling industrial water, or a golf hazard
2 Is the wetland or portion of the wetland contaminated by hazardous substances, materials or wastes as per the conditions of ORS 141-86-350 1(b)
***Mandatory Locally Significant Wetland Criteria*:** **A wetland is locally significant if "Yes" is the answer to any of the criteria below.**
1 Does the wetland provide *diverse wildlife habitat*?
2 Is the wetland's *fish habitat function intact*?
3 Is the wetland's *water quality function intact*?
4 Is the wetland's *hydrologic control function intact*?
5 Is the wetland less than 1/4 mile from a water body listed by DEQ as a water quality limited water body (303(d) list) and is the wetland's *water quality function intact, or impacted or degraded*?
6 Does the wetland contain a rare plant community?
7 Is the wetland inhabited by any species listed federally as threatened or endangered, or state listed as sensitive, threatened or endangered?
8 Does the wetland have a direct surface water connection to a stream segment mapped by ODFW as habitat for indigenous anadromous salmonids and is the wetland's *fish habitat function intact, or impacted or degraded*?

***Optional Locally Significant Wetland Criteria*:**
Local governments may identify a wetland as significant if "Yes" is the answer to the criteria below

1 Does the wetland represent a locally unique native plant community and
provides *diverse wildlife habitat or habitat for some species* or
has a *intact, or impacted or degraded fish habitat function* or
has a *intact, or impacted or degraded water quality function* or
has a *intact, or impacted or degraded hydrologic control function*.

2 Is the wetland publicly owned and used by a school or organization and
does the wetland provide *educational uses*?

Pacific Habitat Services, Inc. 2010

7.2 Significance Determination

Since all of the wetlands identified were determined to be locally significant using the required criteria, the optional criteria of recreation and educational value were not assessed. Water bodies excluded include the two sewage treatment lagoons located in the south end of the city.

Table 7.2. Locally Significant Wetland Determination

Wetland Code	Locally Significant Wetland?
SC-1	Yes
SC-2	Yes
SC-3	Yes
SC-4	Yes
SC-5	Yes
SC-6	Yes

8 CONCLUSION

Six wetland units were documented in this study totaling 16.22 acres. Wetlands were assessed using OFWAM, and after analysis units SC-1 and SC-2 were combined and SC-5 and SC-6 were combined due to similar characteristics and close proximity. All six wetlands were determined to be Locally Significant. Inventory and assessment forms in the appendices E-I provide specific wetland data. Local wetland inventory maps are found in Appendix K.

Once the inventory is approved by DSL, then it can be incorporated into the State Wetlands Inventory (and posted on the Oregon Explorer Website). It can then be used in lieu of the NWI for wetland land use notification purposes, and by the city for Goal 5 and/or Goal 6 purposes and for other statewide planning goals.

Staff qualifications are included in Appendix J.

9 REFERENCES

Adamus, P.R. 2001. Guidebook for Hydrogeomorphic (HGM)-based Assessment of Oregon Wetland and Riparian Sites: Statewide Classification and Profiles. Oregon Division of State Lands, Salem, OR.

Adamus, P.R. and D. Field. 2001. Guidebook for Hydrogeomorphic (HGM)-based Assessment of Oregon Wetland and Riparian Sites. I. Willamette Valley Ecoregion, Riverine Impounding and Slope/Flats Subclasses. Volume IA: Assessment Methods. Oregon Division of State Lands, Salem, OR.

Adamus, P.R. 2001. Guidebook for Hydrogeomorphic (HGM)-based Assessment of Oregon Wetland and Riparian Sites. I. Willamette Valley Ecoregion, Riverine Impounding and Slope/Flats Subclasses. Volume IB. Technical Report. Report to Oregon Division of State Lands, Salem, OR.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service. http://www.fws.gov/wetlands/_documents/gNSDI/ClassificationWetlandsDeepwaterHabitatsUS.pdf

Department of State Lands: http://www.oregon.gov/DSL/

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf

Hitchcock, C.L. and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle.

HUC: 5th Field Hydrologic Unit Codes from http://www.oregon.gov/DSL/PERMITS/docs/huc5.pdf

Munsell Color by x-rite. Year 2000 Revised Washable Edition. Munsell Soil Color Charts. Grand Rapids, MI.

National Weather Service, Portland, OR: http://www.weather.gov/climate/index.php?wfo=pqr

Oregon Administrative Rules:
LWI: http://arcweb.sos.state.or.us/rules/OARS_100/OAR_141/141_086.html
Jurisdiction: http://arcweb.sos.state.or.us/rules/OARS_100/OAR_141/141_090.html
Removal/Fill: http://arcweb.sos.state.or.us/rules/OARS_100/OAR_141/141_085.html
Goal 5: http://arcweb.sos.state.or.us/rules/OARS_600/OAR_660/660_023.html
Current links to these rules can be found at DSL's website:
http://www.oregon.gov/DSL/all_rules.shtml#Removal_Fill_Wetlands

Oregon Department of Environmental Quality, Planning & Monitoring Section, Water Quality Division. 1988. 1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution.

Pacific Habitat Services, Inc. 2010. Local Wetland Inventory and Riparian Corridor Assessment for the Glenwood Area of Springfield, Oregon. Prepared for Lane Council of Governments and the City of Springfield. Prepared by J. van Staveren, M. Eccleston, and S. Eisner. PHS Project Number 4495.

Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands: Northwest (Region 9). U.S. Fish and Wildlife Service Biological Report No. 88 (26.9).

Reed, P.B., Jr., D. Peters, J. Goudzwaard, I. Lines, and F. Weinmann. 1993. Supplement to the National List of Plant Species that Occur in Wetlands: Northwest (Region 9). Biology Report 88(26.9). Washington, DC: U.S. Fish and Wildlife Service.

Roth, E.M., R.D. Olsen, P.L. Snow, and R.R. Sumner. 1996 Revised Edition (including July 1997 Addendum). Oregon Freshwater Wetland Assessment Methodology. Ed. by S.G. McCannell. Oregon Division of State Lands, Salem, OR.

Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and W.D. Broderson (eds). 2002. Field Book for Describing and Sampling Soils, Version 2.0. U.S. Department of Agriculture Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.

Pacific Habitat Services, Inc. (van Staveren, J., P. Farrell, and D. Shank). 1988. Urban Riparian Inventory & Assessment Guide. Prepared for Oregon Division of State Lands.

Tax lot map: www.ormap.org

U.S. Army Corps of Engineers. 2008. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region. Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/ EL TR-08-13. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USDA NRCS. 2010. The PLANTS Database. National Plant Data Center, Baton Rouge, LA 70874-4490 USA. http://www.plants.usda.gov/

USDA NRCS. 2006. Hydric Soils in Linn County Area, Oregon. http://www.or.nrcs.usda.gov/technical/soil/hydric.html

USDA online soil survey: http://websoilsurvey.nrcs.usda.gov/app/
Official soil survey descriptions:
http://soils.usda.gov/technical/classification/osd/index.html

U.S. Fish and Wildlife Service. 1994. Scio, Oregon. 7.5' National Wetlands Inventory map. Color infrared aerial photography flown 7/82 at 1:58,000.

U.S. Geological Survey. 1969, photorevised 1986. Scio, Oregon 7.5' topographic quadrangle. Figure 1 maps (1:24,000 7.5' USGS topographic quadrangle maps) downloaded from the Oregon Geospatial Enterprise Office: http://www.oregon.gov/DAS/EISPD/GEO/index.shtml

Wilson, B.L., R. Brainerd, D. Lytjen, B. Newhouse, and N. Otting of the Carex Working Group. 2008. Field Guide to the Sedges of the Pacific Northwest. Oregon State University Press, Corvallis.

Useful Websites for Wetland Assessment:

Oregon Explorer: http://oregonexplorer.info/wetlands/orwap/
DEQ: http://deq12.deq.state.or.us/lasar2/data.aspx?dt=0&mw=889&mh=432
DEQ: http://www.deq.state.or.us/WQ/assessment/docs/rpt98.pdf
ESH Maps: http://www.oregon.gov/DSL/PERMITS/esshabitat.shtml and http://www.oregon.gov/DSL/PERMITS/counties_ess.shtml

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APPENDIX A

Oregon LWI Administrative Rules

The Oregon Administrative Rules contain OARs filed through January 15, 2010

DEPARTMENT OF STATE LANDS

DIVISION 86

Local Wetlands Inventory (LWI) Standards and Guidelines

141-086-0180

Purpose

Pursuant to ORS 196.674 pertaining to the Statewide Wetlands Inventory (SWI), these rules establish a system for uniform wetland identification and comprehensive mapping. These rules also establish wetlands inventory standards for cities or counties developing a wetland conservation plan (WCP) pursuant to ORS 196.678. A Local Wetlands Inventory (LWI) is developed for all or a portion of a city or county according to the standards and guidelines contained in these rules (OAR 141-086-0180 through 141-086-0240).

Stat. Auth.: ORS 196.674 – 196.681 & 196.692
Stats. Implemented: ORS 196.668 – 196.692
Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01

141-086-0185

Applicability

(1) Once approved by the Department of State Lands (Department), the LWI must be used in place of the National Wetlands Inventory (NWI) and is incorporated into the SWI.

(2) The approved LWI must be used by cities and counties in lieu of the NWI for notifying the Department of land use applications affecting mapped wetlands and other waters (ORS 215.418 and ORS 227.350).

(3) An LWI fulfills the wetlands inventory requirements for Goal 5 and Goal 17 (OAR 660-015 and 660-023). An LWI that meets the additional WCP requirements specified in these rules must be used as the wetlands inventory basis for a WCP.

(4) A wetland function and condition assessment of mapped wetlands must be conducted as part of the LWI using the *Oregon Freshwater Wetland Assessment Methodology* (*OFWAM*) published by the Department in 1996. An equivalent functional assessment methodology may be used or adjustments may be made to OFWAM upon written approval by the Director. The assessment results are used to determine the relative quality (functions, values, and condition) of the mapped wetlands and to designate significant wetlands (OAR 141-086-0300 through 141-086-0350) as required for Goal 5, or to assess wetland functions and values for a WCP.

(5) An LWI is used by the Department, other agencies and the public to help determine if wetlands or other waters are present on particular land parcels.

(6) An LWI provides information for planning purposes on the location of potentially regulated wetlands and other waters such as lakes and streams, but is not of sufficient detail for permitting purposes under the state Removal-Fill Law (ORS 196.800 through 196.990). Smaller wetlands may not be mapped, and wetlands may be missed due to lack of onsite access, tree canopy cover and other constraints. A wetland delineation or determination report may be needed for parcels without LWI-mapped wetlands. A Department-approved wetland delineation report for wetlands identified in an LWI is usually needed prior to site development.

(7) All wetlands inventory procedures and products are subject to review and approval by the Department before the products:

(a) Are incorporated into the SWI;

(b) Can be used in lieu of the NWI for Wetland Land Use Notification purposes; or

(c) Can be used by a city or county for Goal 5, Goal 17 or WCP purposes.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 196.674 - 196.681 & 196.692
Stats. Implemented: ORS 196.668 - 196.692
Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94, Renumbered from 141-086-0190(1) & (4); DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0200

Definitions

(1) "Cowardin class or subclass" means the wetland classification according to the U.S. Fish and Wildlife Service's *Classification of Wetlands and Deepwater Habitats of the United States,* Cowardin et al., 1979.

(2) "Director" means the Director of the Oregon Department of State Lands or designee.

(3) "Department" means the Oregon Department of State Lands.

(4) "Georeferenced" means linking geographic data to known coordinates on the surface of the earth.

(5) "GIS" or "Geographic Information System" means a system of hardware, software and data storage that allows for the analysis and display of information that has been geographically referenced.

(6) "HGM class and subclass" means the hydrogeomorphic classification of the wetland based upon its landscape position and hydrology characteristics, according to the HGM classification developed by the Department.

(7) "Indicator" means the soil, vegetation, and hydrology characteristics or other field evidence that indicate that wetlands are present.

(8) "Inventory" means a systematic survey of an area to identify, classify and map the approximate boundaries of wetlands, and includes the supporting documentation required by these rules.

(9) "Mapping" means representing the identified wetlands and their approximate boundaries on a map.

(10) "Offsite Determination" means a wetland determination conducted without field verification using NWI maps, soils maps, and aerial photographs.

(11) "Other Waters" means waters of the state other than wetlands, such as streams and non-vegetated ponds.

(12) "Probable Wetland" or “PW” means an area noted during the course of LWI development that appears to meet wetland criteria but is less than one half of an acre in size or is small and of undetermined size, and is mapped as a point rather than a polygon on the LWI maps.

(13) "Sample Plot" means a specific area on the ground where soils, vegetation and hydrology data are recorded on a field data form per OAR 141-90-0035(14) in order to make a wetland determination.

(14) "Statewide Wetlands Inventory" or "SWI" means an inventory that contains at minimum the location, type (e.g. classification) and approximate extent of wetlands in the State of Oregon. This inventory is continually revised as additional information is received or obtained by the Department.

(15) "Stream" means a watercourse created by natural processes, or one that would be in a natural state if it were not for human-caused alterations. Stream includes a channelized or relocated stream.

(16) “Visually confirm” or “visual confirmation” means to walk over and/or visually check an area to make a wetland determination and map wetlands and other waters.

(17) "Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (ORS 196.800(16)).

(18) "Wetland Delineation Report" means a written document that contains the methods, data, conclusions and maps used to determine if wetlands and/or other waters of the state are present

on a land parcel and, if so, describes and maps their location and geographic extent. A wetland determination report documenting wetland presence or absence is included within this definition (OAR 141-090 et seq.).

(19) "Wetland Determination" means a decision that a site may, does, is unlikely to, or does not contain wetlands. A determination does not include the precise location or boundaries of any wetlands determined to be present (OAR 141-090 et seq).

(20) "Wetland Mosaic" means a complex of several wetlands that are interspersed between areas of non-wetland each less than one half of an acre in size, or less than one tenth of an acre in size for a WCP, making them difficult to map.

Stat. Auth.: ORS 196.674 - 196.681 & 196.692
Stats. Implemented: ORS 196.668 - 196.692
Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0210

Inventory Development Process and Standards

(1) Wetland determinations conducted for the purpose of developing the LWI must be conducted according to the criteria, methodologies and guidance currently accepted by the Department (OAR 141-090 et seq.).

(2) Sources of inventory information must include:

(a) U.S.D.A. Natural Resources Conservation Service county soil survey and county list of hydric soils and soils with hydric inclusions, or other available soil surveys;

(b) NWI maps;

(c) USGS topographic maps;

(d) Federal Emergency Management Act floodplain maps, where available;

(e) Other available local wetlands inventories or wildlife habitat inventories that include wetlands;

(f) Department wetland determination/delineation files; and

(g) High resolution (1 meter or finer) color and color infrared (where available) aerial photos taken within five years of inventory initiation. The minimum photo scale must be 1 inch = 200 feet unless another scale is approved by the Department.

(3) Sources of inventory information may include but are not limited to:

(a) LIDAR (Light Detection and Ranging) topographic data;

(b) Irrigation drainage district maps;

(c) Local knowledge of area (e.g., residents);

(d) Oregon State University Institute for Natural Resources Oregon Explorer data;

(e) Department permit files; and

(f) Resource agencies, including the Oregon Department of Fish and Wildlife and U.S. Fish and Wildlife Service.

(4) Before beginning fieldwork, prepare a field map using an aerial photograph and include the approximate location of:

(a) Any wetlands, deepwater habitats, and streams from the NWI;

(b) Any wetlands from the Department's wetland determination/delineation files or from other inventories;

(c) Hydric soils and soils with hydric inclusions (each coded separately);

(d) Wetlands or potential wetlands identified on aerial photos;

(e) Sites to visually confirm based on other leads; and

(f) Properties where access was granted.

(5) Aerial photo interpretation must be tested early in the inventory process by interpreting several wetland types, ground truthing the interpretations, and then completing the aerial photo interpretations.

(6) The local government must be responsible for requesting property access permission from landowners in the study area for parcels identified by inventory staff and/or the Department as possibly containing wetlands.

(7) All potential wetlands that are not assessed with a sample plot and other waters identified through the process described in OAR 141-086-0210(1) through (4) must be visually confirmed to the extent practicable.

(8) Where property access is granted, sample plot data must be provided according to the following minimum standards:

(a) Verify each wetland with at least one sample plot that best characterizes the wetland;

(b) Verify with at least one sample plot each potential wetland where land use activities such as ditching, water diversion, or agricultural practices are likely to have significantly altered site conditions, making observations from a distance or a site walk-over unreliable; and

(c) Verify with at least one-sample plot potential wetlands with unreliable indicators (e.g., one dominant plant that grows in both wetlands and non-wetlands, such as *Phalaris arundinacea*).

(9) If the LWI will be used for a WCP, in addition to the requirements in OAR 141-086-0210(7) and (8), a minimum of one sample plot must be provided that best characterizes each dominant wetland plant community.

(10) If the landowner denies access permission and if visual confirmation from an adjacent property or road is not possible, employ off-site wetland determination methods.

(11) All wetlands greater than or equal to one half of an acre and all wetlands identified in a Department-approved wetland delineation report must be identified and mapped as polygons. Wetlands that are less then one half of an acre may be mapped as polygons or as probable wetlands. Probable wetlands must be represented as points on the appropriate parcel(s) and should be labeled as "PW" on the maps. No further characterization or assessment is required for probable wetlands in the LWI. Probable wetlands will trigger cities and counties to notify the Department of proposed land use activities affecting mapped wetlands and other waters (ORS 215.418 and 227.350). For a WCP, all wetlands one-tenth acre and larger shall be identified and mapped as polygons.

(12) The aim of the LWI is to map the location of wetlands at an accuracy of approximately 5 meters (16.4 feet). However, the actual accuracy may be less for some wetlands such as seasonal or forested wetlands that could not be visually confirmed.

(13) Each wetland must be assigned a unique identification code.

(14) All previously delineated wetlands from the Department's files must be field-verified, if possible, to determine if wetlands are still present and are approximately the same size and configuration as when delineated.

(15) All identified wetlands must be classified:

(a) To the class level of Cowardin (and to subclass for scrub-shrub and forested classes) and must include water regime and special modifiers (e.g., "farmed" or "diked/impounded); and

(b) By dominant HGM class and subclass.

(16) When a wetland contains more than one adjoining Cowardin classification, different classes or subclasses greater than 0.25 acres in size must be mapped and labeled as separate polygons.

(17) Artificially created wetlands or other waters (such as irrigation canals and drains, industrial ponds, log ponds, golf course features, and storm water detention ponds that are greater than one

half of an acre in size) must be included in the inventory regardless of their jurisdictional status, and their original purpose must be labeled on the inventory maps.

(18) Where a wetland mosaic occurs, the site must be labeled as a wetland/upland mosaic on all inventory maps and so described on the wetland summary sheet.

(19) Streams and other waters must be mapped, but no further documentation such as wetland summary sheets or OFWAM assessment is required. If an existing stream geospatial dataset is used, it may be necessary to adjust the layer to align with riparian or other linear wetlands.

(20) Using OFWAM, each wetland in its entirety must be assessed for all four ecological functions: water quality, hydrologic control, wildlife habitat and fish habitat. Any wetlands that may qualify as a Locally Significant Wetland due to education or recreation use must also be evaluated for those social functions (values) in OFWAM. The remaining functions and conditions in OFWAM do not need to be applied to any of the wetland assessment units. Contiguous wetlands or those in close proximity and assigned different codes may be grouped into a single OFWAM assessment unit based upon the guidance in OFWAM and/or in consultation with the Department.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 196.674 - 196.681 & 196.692
Stats. Implemented: ORS 196.668 - 196.692
Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0220

LWI Reports

(1) A report that meets the requirements in OAR 141-086-0220 (2) and (3) must be developed and submitted to the Department for approval. A minimum of two sets of the final Department-approved LWI report in both paper and electronic format (.pdf file format) must be prepared; one set must be provided to the Department for inclusion in the SWI and the other must be provided to the local government.

(2) The report must document the inventory and mapping processes and results, and include the following information:

(a) A general description of the study area including a description of the landscape setting;

(b) A description of the wetland inventory process including the public involvement process; the inventory methods including the date(s) and scale(s) of source maps and aerial photos used; the offsite and onsite wetland determination procedures including procedures used for visual confirmation and probable wetland identification; and all mapping and map transfer procedures used;

(c) A summary of the inventory results including the total acreage of the study area and the total number and acreage of wetlands identified within the study area, excluding the acreage of deepwater habitat and artificially created wetlands such as detention ponds or aggregate extraction ponds;

(d) A discussion of the OFWAM assessment process (e.g. how assessment units were defined) and the results;

(e) A summary of Locally Significant Wetlands, if identified (may be in table format); and

(f) All figures, with the study area clearly outlined.

(3) Appendices must include:

(a) Sample plot data on standard field data forms per OAR 141-090 et seq.

(b) A summary sheet for each wetland that must at a minimum include:

(A) The unique wetland code;

(B) Street address or equivalent location description;

(C) Township, Range, Section, Quarter Quarter Section and tax lot(s) that contain the mapped wetland;

(D) Approximate wetland size (in acres);

(E) Cowardin classification(s);

(F) HGM classification(s);

(G) Mapped soil unit(s);

(H) Watershed boundaries at the 6th field Hydrologic Unit Code scale as defined by the US Geological Survey or finer;

(I) Sample plot numbers, if any;

(J) Department wetland determination or delineation file numbers, where applicable;

(K) Scientific and common names of dominant plant species;

(L) Primary hydrology sources;

(M) Sampling or visual confirmation date(s) and method;

(N) Locally Significant Wetland determination, if made; and

(O) Comments that describe the wetland, including topographic position, land uses and significant alterations (including agricultural).

(c) OFWAM assessment results for each wetland assessment unit that must include:

(A) Wetlands of Special Interest for Protection (OFWAM, Chapter Five);

(B) Wetland Characterization results (OFWAM, Appendix B);

(C) Assessment results represented in table format;

(D) Answer sheets for all wetland assessment questions (OFWAM, Appendix C);

(E) Function and condition summary sheets for fish habitat, wildlife habitat, water quality, hydrologic control and, if applicable, education and recreation (OFWAM, Appendix C); and

(F) Watershed summary sheet (OFWAM, Appendix C).

(d) Technical staff members and qualifications.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 196.674 - 196.681 & 196.692
Stats. Implemented: ORS 196.668 - 196.692
Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0222

Paper Map Standards

(1) Maps that meet the requirements in OAR 141-086-0222 (2) through (5) must be developed and submitted to the Department for approval. A minimum of two sets of the final Department-approved LWI maps in both paper and electronic format (.pdf file) must be prepared; one set must be provided to the Department for inclusion in the SWI and the other must be provided to the local government.

(2) If the study area is covered by more than one wetland map, a single, smaller scale reference map of the complete study area is required. The reference map shall be indexed to the individual, large-scale maps and show, at a minimum, the Public Land Survey System grid, the location and code of all identified wetlands, streams, the study area boundary, and major, named streets.

(3) Wetland maps must include:

(a) Map name;

(b) Scale bar;

(c) Geographic reference to the Public Land Survey System;

(d) Roads, with major roads named, and railroads;

(e) Streams and stream names;

(f) Artificially created wetlands and other waters labeled with their purpose (e.g. storm water pond);

(g) Tax lot lines;

(h) Watershed boundaries at the 6th field Hydrologic Unit Code scale as defined by the US Geological Survey or finer;

(i) Legend that explains all map symbols, line work, and patterns;

(j) Map date (month and year final map prepared);

(k) All wetlands, clearly and accurately drawn and clearly identified by a unique wetland code that relates each wetland to field data forms, tables, databases, wetland summary sheets, and OFWAM summary forms;

(l) Cowardin classification(s) of each wetland per 141-086-0210(15a & 16);

(m) Disclaimer that reads: "Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions."

(n) Numbered sample plots; and

(o) Study area boundary as defined by the local government.

(4) Minimum map scale must be 1 inch = 200 feet (1:2,400).

Stat. Auth.: ORS 196.674 - 196.681 & 196.692
Stats. Implemented: ORS 196.668 - 196.692
Hist.: DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0225

Digital Data Standards

(1) A minimum of two sets of the final Department-approved LWI geospatial datasets must be prepared; one set must be provided to the Department for inclusion in the SWI and the other must be provided to the local government.

(2) A georeferenced ArcGIS compatible dataset with attribute tables and metadata must be developed for each of the following:

(a) Wetland polygons with a unique wetland identification label, Cowardin classification code(s) and modifiers, HGM classification, approximate wetland size, Locally Significant Wetland significance determination (if made), whether it was visually confirmed, and the Department's wetland delineation report file number, if any.

(b) Probable wetland points with PW label;

(c) Streams with unique identification labels and, where available, names;

(d) Other natural bodies of water with names;

(e) Artificially created wetlands and water features (such as irrigation canals and ditches, industrial ponds, log ponds, golf course features, and storm water detention ponds) uniquely identified and purpose of artificially-created feature, if known;

(f) Watershed boundaries (6th order Hydrologic Unit Code scale or finer);

(g) Study area boundary;

(h) Tax lot lines and numbers;

(i) Sample plot dataset with unique identification labels that correspond to the field data form; and

(j) Major streets with name labels.

(3) All georeferenced data sets must be projected using the Oregon Geographic Information Council-endorsed state standard: Oregon Lambert conformal conic (Datum: NAD 83; Units: International feet: 3.28084; Spheroid: GRS1980).

(4) Metadata must be completed for each layer, conform to the current Oregon Geographic Information Council Metadata Standard, and must include a disclaimer as described in OAR 141-086-0222(3m).

Stat. Auth.: ORS 273.045
Stats. Implemented: ORS 196.668 - 196.686 & 196.692
Hist.: DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0228

Review and Approval Process

(1) A draft of all the LWI products required in OAR 141-086-0210 through – 0225 of these rules must be provided to the Department (if the inventory was not developed by the Department) and the local government(s) for review.

(2) The local government must provide opportunity for public review of and comment on the draft LWI products.

(3) Public and local government comments on draft LWI products must be provided to the Department. The Department will request in writing from the party responsible for preparing the LWI any revisions or additions required in order for the LWI to be approved.

(4) The Department will review final products to ensure that all changes requested by the Department have been adequately addressed.

(5) If the final LWI products meet the requirements in these rules, the Department will send a letter of approval to the local government.

Stat. Auth.: ORS 273.045
Stats. Implemented: ORS 196.668 - 196.686 & 196.692
Hist.: DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0230

Revisions

(1) A city or county may elect to or may be required by the Department of Land Conservation and Development (DLCD) to revise their LWI. An LWI revision consists of either expanding the study area of an existing LWI or incorporating new wetland location and information into an existing LWI study area. The provisions in subsections (a) through (d) must be followed when an LWI is being revised.

(a) All Urban Growth Boundary expansion areas or other areas not included in the original LWI study area must be inventoried according to the requirements in these rules. If the original LWI area is not updated at the same time, it may still be necessary to update the LWI area adjacent to the new LWI area in order to align wetlands that are continuous between the two areas.

(b) When an LWI is being updated, newly identified wetlands or wetland boundary changes equal to or greater than one half of an acre must be identified, mapped and assessed using OFWAM.

(c) Sources of information for review of the previous study area to update the LWI must at a minimum include:

(A) Wetland delineation reports approved by the Department or map errors verified by the Department after the date of the approved LWI;

(B) Aerial photos approved by the Department, taken within five years of inventory revision initiation; and

(C) A field reconnaissance of the study area.

(d) Wetlands not previously mapped on the LWI must be verified by establishing a sample plot or by visual confirmation as required in OAR 141-086-0210(7) and (8) of this rule; previously mapped wetlands no longer apparent on aerial photos must also be verified with a sample plot or visually confirmed as necessary to confirm their absence.

(2) A draft of the revised LWI products as required in OAR 141-086-0228 (1) through (5) must be provided to the Department and is subject to Department review and approval.

(3) If the LWI was used as the basis for an approved WCP, the local jurisdiction must instead:

(a) Provide to the Department, as part of the annual report (OAR 141-086-0035), a revised map and report indicating wetlands filled and wetlands restored, enhanced or created for mitigation; and

(b) Every five years, in conjunction with the Department's five year WCP review (ORS 196.684(6)), conduct an LWI review and incorporate new information, as required in OAR 141-086-0230(1)(b) through (1)(d).

(4) Newly-identified wetlands as identified by a Department-approved wetland delineation report or a removal-fill permit must not be added to the Department-approved Local Wetlands Inventory map without following the procedures outlined by OAR 141-086-0230(1)(a) through (d).

(5) Refinements to the location, extent, and/or absence of wetlands mapped on the LWI, as identified by a Department-approved wetland delineation or a Department wetland determination report, may be made at any time through an administrative process, by annotating the approved LWI or by creating a separate geospatial dataset containing the boundary adjustments, preserving the approved LWI mapping.

Stat. Auth.: ORS 196.674 - 196.681 & 196.692
Stats. Implemented: ORS 196.668 - 196.692
Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0240

Landowner Notification

(1) When the LWI is approved by the Department, the local jurisdiction must notify by mail within one hundred twenty (120) calendar days all landowners of record whose parcel contains or abuts a mapped wetland or probable wetland.

(2) The local jurisdiction must provide one copy of the landowner notification letter to the Department.

Stat. Auth.: ORS 196.674 - 196.681 & 196.692
Stats. Implemented: ORS 196.668 - 196.692
Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

Identifying Significant Wetlands

141-086-0300

Purpose

ORS 197.279 (3) directs the Division of State Lands to establish these criteria and procedures for the identification of significant wetlands under Statewide Planning Goal 5. Local governments will use these technical standards to complete their planning responsibilities for wetlands, which are established by the Land Conservation and Development Commission (OAR 660-023-0100).

Stat. Auth.: ORS 273.360
Stats. Implemented: ORS 197.299
Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0310

Policy

To protect the state's wetland resources, the functions and services they provide, and all interests, it is important that clear and consistent criteria be used to identify significant wetlands for planning purposes.

Stat. Auth.: : ORS 273.360
Stats. Implemented: ORS 197.299
Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0320

Uses and Applicability

(1) These rules provide standard criteria for local governments to use to meet their obligations for freshwater wetland planning as set forth by the Land Conservation and Development Commission (LCDC) in Goal 5. These rules do not address planning requirements for estuarine wetlands, which are covered under Statewide Planning Goal 16.

(2) Local governments shall apply the criteria for identifying locally significant wetlands (LSW). As specified in LCDC's Goal 5 rules (OAR 660-023-0100), the use of these criteria is required within urban growth boundaries (UGBs) and urban unincorporated communities (UUCs). The

Goal 5 rules also authorize an option for counties to conduct detailed wetland planning in areas outside of UGBs and UUCs. Should a county choose to do so, the same rules and procedures as for UGBs and UUCs shall apply, including these criteria for significant wetlands.

(3) As provided by LCDC's Goal 5 rules (OAR Chapter 660, Division 23), local government planning and zoning responsibilities include the determination, designation, and protection of significant wetlands. A community that has identified significant wetlands prior to this rule should proceed under the provisions of OAR 660-023-0250.

Stat. Auth.: ORS 273.360
Stats. Implemented: ORS 197.299
Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0330

Definitions

(1) "Director" means the Director of the Division of State Lands or the Director's designee.

(2) "Division" means the Division of State Lands.

(3) "Indigenous Anadromous Salmonids" are chum, sockeye, Chinook and Coho salmon, and steelhead and cutthroat trout, that are members of the family Salmonidae and are listed as sensitive, threatened or endangered by a state or federal authority.

(4) "Inhabited by" means that a plant or animal species uses the site for rearing, feeding, or breeding or as a migration or dispersal corridor. This does not include incidental use of the site by an animal species.

(5) "Locally Significant Wetlands" or "LSW" are those wetland sites that provide functions or exhibit characteristics that are pertinent to community planning decisions made at a local scale, for example within a UGB. These wetland sites shall be identified by local governments according to the criteria and procedures in sections 141-086-0340 and 141-086-0350.

(6) "Native Plant Community" is used here to indicate a recognized assemblage of plant species indigenous to Oregon. All such wetland plant communities are listed in the most recent version of Classification and Catalog of Native Wetland Plant Communities in Oregon (Oregon Natural Heritage Program).

(7) "Rare Plant Community" is defined as relictual, uncommon or unique in Oregon, determined by number of occurrences and threats following national heritage program criteria (i.e., rarity ranking of G1-G3 or S1-S3). The most concise listing of wetland plant communities in Oregon that meet this standard for rarity is found in Appendix G of the Oregon Freshwater Wetland Assessment Methodology (Oregon Division of State Lands, 1996). The rarity rank of all wetland plant communities is also listed in the most recent version of Classification and Catalog of Native Wetland Plant Communities in Oregon (Oregon Natural Heritage Program).

(8) "Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Stat. Auth.: ORS 273.360
Stats. Implemented: ORS 197.299
Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0340

Procedures for Identifying Locally Significant Wetlands

(1) LSW criteria are applied by the local government.

(2) The following base information is required prior to applying the LSW criteria:

(a) An approved Local Wetlands Inventory (OAR 141-086-0110 through 141-086-0240) covering the plan area; and

(b) A function and quality assessment of all inventoried wetlands using the Oregon Freshwater Wetland Assessment Methodology (OFWAM; Oregon Division of State Lands, 1996). Functional assessment descriptors from OFWAM appear in quotation marks in section 146-086-0350 of these rules. An equivalent functional assessment methodology may be used, or adjustments may be made, upon written approval by the Director. If a different assessment methodology is approved, then equivalent terminology will be set out in the Division's letter of approval.

Stat. Auth.: ORS 273.360
Stats. Implemented: ORS 197.299
Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0350

Locally Significant Wetland Criteria

(1) Exclusions. Regardless of their standing in relation to the criteria in OAR 141-086-0350(2) or (3) of these rules, wetlands shall not be designated as locally significant if they fall within any one of the following categories:

(a) Wetlands artificially created entirely from upland that are:

(A) Created for the purpose of controlling, storing, or maintaining stormwater; or

(B) Active surface mining or active log ponds; or

(C) Ditches without a free and open connection to natural waters of the state (as defined in OAR 141-085-0010(9)) and which do not contain food or game fish (as defined in ORS 496.009); or:

(D) Less than one acre in size and created unintentionally as the result of:

(i) Irrigation water overflow or leakage; or

(ii) Construction activity not related to compensatory mitigation for permitted wetland impacts; or

(E) Of any size and created for the purpose of wastewater treatment, cranberry production, farm or stock watering, settling of sediment, cooling industrial water, or as a golf course hazard.

(b) Wetlands or portions of wetlands that are contaminated by hazardous substances, materials or wastes as per the following conditions:

(A) The wetland is documented as contaminated on either the U.S. Environmental Protection Agency's (EPA) National Priority List (NPL, also known as the "superfund list"), or the Department of Environmental Quality's (DEQ) Inventory of Hazardous Substance Sites (ORS 465.225).

(B) Only the portion of the wetland affected by such hazardous substances or wastes shall be excluded from the LSW analysis. Affected portions shall be delineated in consultation with EPA and DEQ, and shall include areas potentially disturbed by clean-up activities.

(C) Contaminated wetlands that have subsequently been removed from the NPL or DEQ Inventory following clean-up shall be re-evaluated under the LSW criteria at the next periodic review.

(2) Mandatory LSW Criteria. A local government shall identify a wetland as locally significant if it meets one or more of the following criteria:

(a) The wetland performs any of the following functions at the levels indicated below using the Oregon Freshwater Wetland Assessment Methodology:

(A) "Diverse" wildlife habitat; or

(B) "Intact" fish habitat; or

(C) "Intact" water quality function; or

(D) "Intact" hydrologic control function.

(b) The wetland or a portion of the wetland occurs within a horizontal distance less than one-fourth mile from a water body listed by the Department of Environmental Quality as a water quality limited water body (303 (d) list), and the wetland's water quality function is described as "intact" or "impacted or degraded" using OFWAM. The 303(d) list specifies which parameters (e.g., temperature, pH) do not meet state water quality standards for each water body. A local government may determine that a wetland is not significant under this subsection upon

documentation that the wetland does not provide water quality improvements for the specified parameter(s).

(c) The wetland contains one or more rare plant communities, as defined in this rule.

(d) The wetland is inhabited by any species listed by the federal government as threatened or endangered, or listed by the state as sensitive, threatened or endangered, unless the appropriate state or federal agency indicates that the wetland is not important for the maintenance of the species.

(A) The use of the site by listed species must be documented, not anecdotal. Acceptable sources of documentation may include but are not limited to: field observations at the wetland sites during the local wetlands inventory and functional assessments, and existing information on rare species occurrences at agencies such as the Oregon Natural Heritage Program, Oregon Department of Fish and Wildlife, Oregon Department of Agriculture and the U.S. Fish and Wildlife Service.

(B) Input originating from other locally knowledgeable sources constitutes "documentation" if verified by one of the above agencies or a university or college reference collection.

(e) The wetland has a direct surface water connection to a stream segment mapped by the Oregon Department of Fish and Wildlife as habitat for indigenous anadromous salmonids, and the wetland is determined to have "intact" or "impacted or degraded" fish habitat function using OFWAM.

(3) Optional LSW Criteria. At the discretion of the local government, wetlands that meet one or more of the following criteria may be identified as locally significant wetlands:

(a) The wetland represents a locally unique native plant community: wetland is or contains the only representative of a particular native wetland plant community in the UGB/UUC, which is only applicable if the entire UGB/UUC is inventoried. To be identified as a LSW, such a wetland must also have been assessed to perform at least one of the following functions at the levels indicated below using OFWAM:

(A) Its wildlife habitat descriptor is either "provides diverse habitat", or "provides habitat for some wildlife species"; or

(B) Its fish habitat descriptor is either "intact", or "impacted or degraded"; or

(C) Its water quality function descriptor is either "intact", or "impacted or degraded"; or

(D) Its hydrologic control function descriptor is either "intact", or "impacted or degraded".

(b) The wetland is publicly owned and determined to "have educational uses" using OFWAM, and such use by a school or organization is documented for that site.

Stat. Auth.: ORS 273.360
Stats. Implemented: ORS 197.299
Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0360

Purpose

Pursuant to ORS 197.279, 196.672 and 196.674, these rules establish procedures and criteria for identifying wetlands of statewide significance, called "outstanding state wetlands." These rules complement the rules for identifying locally significant wetlands (OAR 141-086-0300 through 141-086-0350).

Stat. Auth.: ORS 273.045 & ORS 273.051
Stats. Implemented: ORS 197.279(3), ORS 196.672 & ORS 196.674
Hist.: LB 4-1997, f. 4-15-97, cert. ef. 5-1-97

141-086-0370

Definitions

(1) **"Classification"** means the designation of wetlands into hydrogeomorphic classes and subclasses. For example, "riverine" would be one class of wetlands.

(2) **"Director"** means the Director of the Division of State Lands or the Director's designee.

(3) **"Division"** means the Division of State Lands.

(4) **"Functional Assessment"** means the process by which the capacity of a wetland to perform a certain function or group of functions is measured. Such functions would include but are not limited to: surface water storage, sediment removal, and maintenance of characteristic plant communities.

(5) The "**Hydrogeomorphic Method**" or **"HGM"** is a scientific method of wetland classification and functional assessment based on a wetland's location in the landscape and the sources and duration of water flow. The HGM approach identifies the wetland classes present in each region, defines the functions that each class of wetlands performs, and establishes reference sites to define the range of functioning of each wetland class.

(6) **"Outstanding State Wetlands"** or **"OSWs"** are reference standard wetlands identified within each Oregon region.

(7) **"Reference Standard Wetlands"** are one component of an HGM and, for the purposes of these rules, are those sites that best exhibit the highest sustainable level of functional capacity for the functions performed by the regional wetland class or subclass.

(8) **"Region"** means an ecosystem-based geographical subdivision of the state, such as the Level III and IV Ecoregions of Oregon (e.g., the Willamette Valley) mapped by the U. S. Environmental Protection Agency.

(9) **"Wetlands"** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Stat. Auth.: ORS 273.045 & ORS 273.051
Stats. Implemented: ORS 197.279(3), ORS 196.672 & ORS 196.674
Hist.: LB 4-1997, f. 4-15-97, cert. ef. 5-1-97

141-086-0380

Applicability

(1) These rules set forth the criteria and procedures by which the Division will identify outstanding state wetlands and provide the information to local governments. Due to the state's interest in OSWs and the expertise required for their identification, the Division is responsible for applying these rules.

(2) The Land Conservation and Development Commission will determine any local land use planning responsibilities regarding OSWs identified by the Division.

(3) OSWs identified according to these rules become part of the Statewide Wetlands Inventory.

Stat. Auth.: ORS 273.045 & ORS 273.051
Stats. Implemented: ORS 197.279(3), ORS 196.672 & ORS 196.674
Hist.: LB 4-1997, f. 4-15-97, cert. ef. 5-1-97

141-086-0390

Criteria and Procedures

(1) A wetland shall be identified as an OSW if it is judged by the Division to be a reference standard wetland as defined in sections 141-086-0370(7).

(2) The Division may convene one or more technical panel(s) of wetland scientists with expertise in wetland functions, wetland classification, and/or regional wetland types in Oregon. The technical panel(s) will assist the Division in developing the hydrogeomorphic classification and functional assessment method (HGM) for Oregon, identifying the regional wetland classes and subclasses, primary functions, and reference standard wetlands. The Oregon HGM will be developed in stages, region by region, as resources allow. The Oregon HGM will be developed in cooperation with the Army Corps of Engineers, Environmental Protection Agency, Natural Resources Conservation Service, state resource agencies, and others as appropriate, and will incorporate protocols developed by the U.S. Army Corps of Engineers Waterways Experiment Station (for example, Technical Report WRP-DE-9, R. D. Smith et al., 1995).

(3) Prior to designating a reference standard wetland as an OSW, the Division shall:

(a) Identify and map site boundaries;

(b) Develop management recommendations to conserve and protect the documented wetland functions of the site;

(c) Develop draft findings describing how the site has met the standards for an OSW;

(d) Provide public notice on the draft findings to the local government, affected landowners and land managers and other interested parties, and provide a 45-day public comment period;

(e) Hold at least one public meeting within the area of the proposed OSW(s) during the comment period; and

(f) Finalize the findings and site boundaries after consideration of public comment.

(4) The Division shall provide all maps, criteria findings and supporting information regarding an identified OSW to the appropriate local government(s) for their use in land use planning activities.

Stat. Auth.: ORS 273.045 & ORS 273.051
Stats. Implemented: ORS 197.279(3), ORS 196.672 & ORS 196.674
Hist.: LB 4-1997, f. 4-15-97, cert. ef. 5-1-97

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APPENDIX B

Acronyms and Definitions

ACRONYMS

DEQ	Department of Environmental Quality
DSL	Department of State Lands
DLCD	Department of Land Conservation and Development
ESH	Essential Salmonid Habitat
FEMA	Federal Emergency Management Agency
FH	Fish Habitat
FIRM	Flood Insurance Rate Map
HC	Hydrologic Control
HGM	Hydrogeomorphic Method of Wetland Assessment
HUC	Hydrologic Unit Code
LCDC	Land Conservation and Development Commission
LWI	Local Wetland Inventory
LSW	Locally Significant Wetland
NAIP	National Agriculture Imagery Program (supplied by USDA Farm Service Agency)
NHD	National Hydrography Dataset (supplied by USGS)
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OAR	Oregon Administrative Rule
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
OFWAM	Oregon Freshwater Wetland Assessment Method
ORWAP	Oregon Rapid Wetland Assessment Protocol
PAB	Palustrine Aquatic Bed Wetland
PEM	Palustrine Emergent Wetland
PFO	Palustrine Forested Wetland
POW	Palustrine Open Water Wetland
PSS	Palustrine Scrub-Shrub Wetland
PUB	Palustrine Unconsolidated Bottom Wetland
PW	Probable Wetland
SCS	Soil Conservation Service
UGB	Urban Growth Boundary
URIAG	Urban Riparian Inventory & Assessment Guide
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WETS	Precipitation and Temperature Station Data, short for wetlands climate analysis
WH	Wildlife Habitat
WQ	Water Quality

DEFINITIONS

Wetlands

Wetlands are federally defined as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987). In other words, wetlands typically display three wetland criteria: a predominance of hydrophytic (wetland) vegetation, the presence of hydric (wet) soils, and wetland hydrology (ponding or near-surface saturated soils for at least 5% of the growing season; typically 11 to 14 consecutive days during the growing season.

Goal 5

Goal 5 is one of Oregon's Statewide Planning Goals and Guidelines for Natural Resources, Scenic and Historic Areas, and Open Spaces (OAR 660-015-0000(5) and 660-023-0000). To protect natural resources and conserve scenic and historic areas and open spaces, local governments shall adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability. The following resources shall be inventoried:

a. Riparian corridors, including water and riparian areas and fish habitat;
b. Wetlands;
c. Wildlife Habitat;
d. Federal Wild and Scenic Rivers;
e. State Scenic Waterways;
f. Groundwater Resources;
g. Approved Oregon Recreation Trails;
h. Natural Areas;
i. Wilderness Areas;
j. Mineral and Aggregate Resources;
k. Energy sources; and
l. Cultural areas.

Following procedures, standards, and definitions contained in commission rules, local governments shall determine significant sites for inventoried resources and develop programs to achieve the goal.

Goal 5 Safe Harbor provides an inventory method for riparian corridors, including water and riparian areas and fish habitat, wetlands, and wildlife habitat. A "safe harbor" approach allows local governments to identify "significant" habitats using the safe harbor criteria, which, for example, has required buffer setbacks from streams based on water flow and fish presence. The rule states:

As a safe harbor in order to address the requirements under OAR 660-023-0030, a local government may determine the boundaries of significant riparian corridors within its jurisdiction using a standard setback distance from all fish-bearing lakes and streams shown on ODF stream classification maps, USGS 7.5-minute quadrangle maps, NWI maps, ODFW maps indicating

fish habitat, FEMA flood maps; and/or aerial photographs, as follows (http://arcweb.sos.state.or.us/rules/OARS_600/OAR_660/660_023.html):

(a) Along all streams with average annual stream flow greater than 1,000 cubic feet per second (cfs) the riparian corridor boundary shall be 75 feet upland from the top of each bank.

(b) Along all lakes, and fish-bearing streams with average annual stream flow less than 1,000 cfs, the riparian corridor boundary shall be 50 feet from the top of bank.

(c) Where the riparian corridor includes all or portions of a significant wetland as set out in OAR 660-023-0100, the standard distance to the riparian corridor boundary shall be measured from, and include, the upland edge of the wetland.

(d) In areas where the top of each bank is not clearly defined, or where the predominant terrain consists of steep cliffs, local governments shall apply OAR 660-023-0030 rather than apply the safe harbor provisions of this section.

Cowardin Wetland Classification (adapted from Cowardin et al., 1979)

Palustrine System

Definition. The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ‰. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m at low water; and (4) salinity due to ocean-derived salts less than 0.5 ‰.

Limits. The Palustrine System is bounded by upland or by any of the other four systems: Marine (ocean), Estuarine (estuary), Riverine (freshwater rivers and their tributaries), or Lacustrine (open water greater than 8 ha (20 acres) in size).

Description. The Palustrine System was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes the small, shallow, permanent or intermittent water bodies often called ponds. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers. The erosive forces of wind and water are of minor importance except during severe floods.

The emergent vegetation adjacent to rivers and lakes is often referred to as “the shore zone” or the “zone of emergent vegetation”, and is generally considered separately from the river or lake. As an example, one researcher wrote in reference to riverine habitats, “We will not here consider the long list of emergent plants which may occur along the banks out of the current, as they do not belong, strictly speaking, to the running water habitat.” There are often great similarities between wetlands lying adjacent to lakes or rivers and isolated wetlands of the same class in basins without open water.

Subsystems. None.

Classes. Rock Bottom, Unconsolidated Bottom, Aquatic Bed, Unconsolidated Shore, Moss-Lichen Wetland, Emergent Wetland, Scrub-Shrub Wetland, and Forested Wetland.

Classes

Emergent Wetland

Definition. The Emergent Wetland Class is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except subtidal and irregularly exposed.

Description. In areas with relatively stable climatic conditions, Emergent Wetlands maintain the same appearance year after year. In other areas, such as the prairies of the central United States, violent climatic fluctuations cause them to revert to an open water phase in some years. Emergent Wetlands are found throughout the United States and occur in all Systems except the Marine. Emergent Wetlands are known by many names, including marsh, meadow, fen, prairie pothole, and slough. Areas that are dominated by pioneer plants which become established during periods of low water are not Emergent Wetlands and should be classified as Vegetated Unconsolidated Shores or Vegetated Streambeds.

Subclasses and Dominance Types:

Persistent (1). Persistent Emergent Wetlands are dominated by species that normally remain standing at least until the beginning of the next growing season. This Subclass is found only in the Estuarine and Palustrine Systems.

Persistent Emergent Wetlands dominated by saltmarsh cordgrass (*Spartina alterniflora*), saltmeadow cordgrass (*S. patens*), big cordgrass (*S. cynosuroides*), needlerush (*Juncus roemerianus*), narrowleaved cattail (*Typha angustifolia*), and southern wild rice (*Zizaniopsis miliacea*) are major components of the Estuarine systems of the Atlantic and Gulf Coasts of the United States. On the Pacific Coast, common pickleweed (*Salicornica virginica*), sea blite (*Suaeda californica*), arrow grass (*Triglochin maritimum*), and California cordgrass (*Spartina foliosa*) are common dominants.

Palustrine Persistent Emergent Wetlands contain a vast array of grass-like plants such as cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), saw grass (*Cladium jamaicense*), sedges (*Carex* spp.); and true grasses such as reed (*Phragmites australis*), manna grasses (*Glyceria* spp.), slough grass (*Beckmannia syzigachne*), and whitetop (*Scolochloa festucacea*). There is also a variety of broadleaved persistent emergents such as purple loosestrife (*Lythrum salicaria*), dock (*Rumex mexicanus*), waterwillow (*Decodon verticillatus*), and many species of smartweeds (*Polygonum*).

Nonpersistent (2). Wetlands in this Subclass are dominated by plants which fall to the surface of the substrate or below the surface of the water at the end of the growing season so that, at certain seasons of the year, there is no obvious sign of emergent vegetation. For example, wild rice (*Zizania aquatica*) does not become apparent in the North Central States until midsummer and fall, when it may form dense emergent stands. Nonpersistant emergents also include species such as arrow arum (*Peltandra virginica*), pickerelweed (*Pontederia cordata*), and arrowheads (*Sagittaria* spp.). Movement of ice in Estuarine, Riverine, or Lacustrine Systems often removes

all traces of emergent vegetation during the winter. Where this occurs the area should be classified as Nonpersistant Emergent Wetland.

Scrub-Shrub Wetland

Definition. The Class Scrub-Shrub Wetland includes areas dominated by woody vegetation less than 6 meters (m [20 feet]) tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. All water regimes except subtidal are included.

Description. Scrub-Shrub Wetlands may represent a successional stage leading to Forested Wetland, or they may be relatively stable communities. They occur only in the Estuarine and Palustrine Systems, but are one of the most widespread classes in the United States. Scrub-Shrub Wetlands are known by many names, such as shrub swamp, shrub carr, bog, and pocosin. For practical reasons the class also includes forests composed of young trees less than 6 m tall.

Subclasses and Dominance Types:

Broad-leaved Deciduous (1). In Estuarine System Wetlands the predominant deciduous and broadleaved trees or shrubs are plants such as sea-myrtle (*Baccharis halimifolia*) and marsh elder (*Iva frutescens*). In the Palustrine System typical Dominance Types are alders (*Alnus* spp.), willows (*Salix* spp.), buttonbush (*Cephalanthus occidentalis*), red-osier dogwood (*Cornus stolonifera*), honeycup (*Zenobia pulverulenta*), spirea (*Spiraea douglasii*), bog birch (*Betula pumila*), and young trees of species such as red maple (*Acer rubrum*) or black spruce (*Picea mariana*).

Needle-leaved Deciduous (2). This Subclass, consisting of wetlands where trees or shrubs are predominantly deciduous and needleleaved, is represented by young or stunted trees such as tamarack or bald cypress (*Taxodium distichum*).

Broad-leaved Evergreen (3). In the Estuarine System, vast wetland acreages are dominated by mangroves (*Rhizophora mangle, Languncularia racemosa, Conocarpus erectus,* and *Avicennia germinans*) that are less than 6 m tall. In the Palustrine System, the broad-leaved evergreen species are typically found on organic soils. Northern representatives are labrador tea (*Ledum groenlandicum*), bog rosemary (*Andromeda glaucophylla*), bog laurel (*Kalmia polifolia*), and the semi-evergreen leatherleaf (*Chamaedaphne calyculata*). In the south, fetterbush (*Lyonia lucida*), coastal sweetbells (*Leucothoe axillaris*), inkberry (*Ilex glabra*), and the semi-evergreen black ti-ti (*Cyrilla racemiflora*) are characteristic broad-leaved evergreen species.

Needle-leaved Evergreen (4). The dominant species in Needle-leaved Evergreen Wetlands are young or stunted trees such as black spruce or pond pine (*Pinus serotina*).

Dead (5). Dead woody plants less than 6 m tall dominate Dead Scrub-Shrub Wetlands. These wetlands are usually produced by a prolonged rise in the water table resulting from impoundment of water by landslides, man, or beavers. Such wetlands may also result from various other factors such as fire, salt spray, insect infestation, air pollution, and herbicides.

Forested Wetland

Definition. The Class Forested Wetland is characterized by woody vegetation that is 6 m tall or taller. All water regimes are included except subtidal.

Description. Forested Wetlands are most common in the eastern United States and in those sections of the West where moisture is relatively abundant, particularly along rivers and in the mountains. They occur only in the Palustrine and Estuarine Systems and normally possess an overstory of trees, an understory of young trees or shrubs, and an herbaceous layer. Forested Wetlands in the Estuarine System, which include the mangrove forests of Florida, Puerto Rico, and the Virgin Islands, are known by such names as swamps, hammocks, heads, and bottoms. These names often occur in combination with species names or plant associations such as cedar swamp or bottomland hardwoods.

Subclasses and Dominance Types:

Broad-leaved Deciduous (1). Dominant trees typical of Broadleaved Deciduous Wetlands, which are represented throughout the United States, are most common in the South and East. Common dominants are species such as red maple, American elm (*Ulmus americana*), ashes (*Fraxinus pennsylvanica* and *F. nigra*), black gum (*Nyssa sylvatica*), tupelo gum (*N. aquatica*), swamp white oak (*Quercus bicolor*), overcup oak (*Q. lyrata*), and basket oak (*Q. michauxii*). Wetlands in this subclass generally occur on mineral soils or highly decomposed organic soils.

Needle-leaved Deciduous (2). The southern representative of the Needle-leaved Deciduous Subclass is bald cypress (*Taxodium distichum*), which is noted for its ability to tolerate long periods of surface inundation. Tamarack is characteristic of the Boreal Forest Region, where it occurs as a dominant on organic soils. Relatively few other species are included in this Subclass.

Broad-Leaved Evergreen (3). In the Southeast, Broadleaved Evergreen Wetlands reach their greatest development. Red bay (*Persea borbonia*), loblolly bay (*Gordonia lasianthus*), and sweet bay (*Magnolia virginiana*) are prevalent, especially on organic soils. This Subclass also includes red mangrove, black mangrove (*Avicennia germinans*), and white mangrove (*Languncularia racemosa*), which are adapted to varying levels of salinity.

Needle-leaved Evergreen (4). Black spruce, growing on organic soils, represents a major dominant of the Needle-leaved Evergreen Subclass in the North. Though black spruce is common on nutrient poor soils, Northern white cedar (*Thuja occidentalis*) dominates northern wetlands on more nutrient rich sites. Along the Atlantic Coast, Atlantic white cedar (*Chamaecyparis thyoides*) is one of the most common dominants on organic soils. Pond pine is a common needle-leaved evergreen found in the Southeast in association with dense stands of broad-leaved evergreen and deciduous shrubs.

Dead (5). Dead Forested Wetlands are dominated by dead woody vegetation taller than 6 m (20 feet). Like Dead Scrub-Shrub Wetlands, they are most common in, or around the edges of, man-made impoundments and beaver ponds. The same factors that produce Dead Scrub-Shrub Wetlands produce Dead Forested Wetlands.

Aquatic Bed and Open Water

Definition. The Class Aquatic Bed includes wetlands and deepwater habitats dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Water regimes include subtidal, irregularly exposed, regularly flooded, permanently flooded, intermittently exposed, semi-permanently flooded, and seasonally flooded. While the Class Open Water is not used in the Cowardin classification system, it is used on NWI

maps to indicate areas of water where there are no beds of emergent, submergent or floating vegetation.

Description. Aquatic Beds represent a diverse group of plant communities that requires surface water for optimum growth and reproduction. They are best developed in relatively permanent water or under conditions of repeated flooding. The plants are either attached to the substrate or float freely in the water above the bottom or on the surface.

Unconsolidated Bottom

Definition. The Class Unconsolidated Bottom includes all wetland and deepwater habitats with at least 25% cover of particles smaller than stones, and a vegetative cover less than 30%. Water regimes are restricted to subtidal, permanently flooded, intermittently exposed, and semi-permanently flooded.

Description: Unconsolidated Bottoms are characterized by the lack of large stable surfaces for plant and animal attachment. They are usually found in areas with lower energy than Rock Bottoms and may be very unstable. Exposure to wave and current action, temperature, salinity, and light penetration determines the composition and distribution of organisms. Most macroalgae attach to the substrate by means of basal hold-fast cells or discs; in sand and mud, however, algae penetrate the substrate and higher plants can successfully root if wave action and currents are not too strong. Most animals in unconsolidated sediments live within the substrate, e.g., *Macoma* and the amphipod *Melita*. Some, such as the polychaete worm *Chaetopterus*, maintain permanent burrows, and others may live on the surface, especially in coarse-grained sediments.

In the Marine and Estuarine Systems, Unconsolidated Bottom communities are relatively stable. They vary from the Arctic to the tropics, depending largely on temperature, and from the open ocean to the upper end of the estuary, depending on salinity.

In the Riverine System, the substrate type is largely determined by current velocity, and plants and animals exhibit a high degree of morphologic and behavioral adaptation to flowing water. Certain species are confined to specific substrates and some are at least more abundant in one type of substrate than in others. One researcher commented “The larger the stones, and hence the more complex the substratum, the more diverse is the invertebrate fauna.”

In the Lacustrine and Palustrine Systems, there is usually a high correlation, within a given water body, between the nature of the substrate and the number of species and individuals. For example, in the profundal bottom of eutrophic lakes where light is absent, oxygen content is low, and carbon dioxide concentration is high, the sediments are ooze-like organic materials and species diversity is low. Each substrate type typically supports a relatively distinct community of organisms.

Nontidal Water Regime Modifiers

Though not influenced by oceanic tides, nontidal water regimes may be affected by wind or seiches in lakes. Water regimes are defined in terms of the growing season, which we equate to the frost-free period. The rest of the year is defined as the dormant season, a time when even extended periods of flooding may have little influence on the development of plant communities.

Permanently Flooded (H). Water covers the land surface throughout the year in all years. Vegetation is composed of obligate hydrophytes.

Intermittently Exposed (Z). Surface water is present throughout the year except in years of extreme drought.

Semi-permanently Flooded (F). Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land surface.

Seasonally Flooded (C). Surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.

Saturated (B). The substrate is saturated to the surface for extended periods during the growing season, but surface water is seldom present.

Temporarily Flooded (A). Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season. Plants that grow both in uplands and wetlands are characteristic of the temporarily flooded regime.

Intermittently Flooded (J). The substrate is usually exposed, but surface water is present for variable periods without detectable seasonal periodicity. Weeks, months, or even years may intervene between periods of inundation. The dominant plant communities under this regime may change as soil moisture conditions change. Some areas exhibiting this regime do not fall within our definition of wetland because they do not have hydric soils or support hydrophytes.

Artificially Flooded (K). The amount and duration of flooding is controlled by means of pumps or siphons in combination with dikes or dams. The vegetation growing on these areas cannot be considered a reliable indicator of water regime. Examples of artificially flooded wetlands are some agricultural lands managed under a rice-soybean rotation, and wildlife management areas where forests, crops, or pioneer plants may be flooded or dewatered to attract wetland wildlife. Neither wetlands within or resulting from leakage from man-made impoundments, nor irrigated pasture lands supplied by diversion ditches or artesian wells, are included under this modifier.

Special Modifiers

Many wetlands and deepwater habitats are man-made, and natural ones have been modified to some degree by the activities of man or beavers. Since the nature of these modifications often greatly influences the character of such habitats, special modifying terms have been included here to emphasize their importance. The following modifiers should be used singly or in combination wherever they apply to wetlands and deepwater habitats.

Excavated (x)
Lies within a basin or channel excavated by man.

Impounded (h)
Created or modified by a barrier or dam which purposefully or unintentionally obstructs the outflow of water. Both man-made dams and beaver dams are included.

Diked (h)
Created or modified by a man-made barrier or dike designed to obstruct the inflow of water.

Partially drained/ditched (d)
The water level has been artificially lowered, but the area is still classified as wetland because soil moisture is sufficient to support hydrophytes. Drained areas are not considered wetlands if they can no longer support hydrophytes.

Farmed (f)
The soil surface has been mechanically or physically altered for production of crops, but hydrophytes will become reestablished if farming is discontinued.

Artificial substrate (r)
Refers to substrates classified as Rock Bottom, Unconsolidated Bottom, Rocky Shore, and Unconsolidated Shore that were emplaced by man, using either natural materials such as dredge spoil or synthetic materials such as discarded automobiles, tires, or concrete. Jetties and breakwaters are examples of Artificial Rocky Shores. Man-made reefs are an example of Artificial Rock Bottoms.

HGM Wetland Classification - Key to Oregon Subclasses

(Key from the Guidebook for Hydrogeomorphic (HGM)–based Assessment of Oregon Wetland and Riparian Sites: Statewide Classification and Profiles by Adamus, P.R. 2001)

Note: Frequently, areas belonging to one HGM subclass will be situated within or adjacent to an area belonging to another HGM subclass. Normally, each area should be assessed separately. However, for practical purposes the areas may be combined into one site (assessment unit) if the smaller of the two areas comprises less than 20% of their total combined acreage. An example is a perennial channel (Riverine Flow-through subclass) that bisects an ash swale (Slope subclass) and which, even including the channel's 2-year floodplain, occupies less than 20% of their combined acreage. In this example, for most purposes the entire site should be classified as Slope.

1. Exposed at least annually to tidal surface water. Note that salinity is not considered in this determination.
   YES: **Estuarine** class, go to 2 (Note that salinity is not considered in this determination).
   NO: Go to 3

2. Site receives significant marine-sourced water during all or part of the year. Often located within or along the fringes of a major estuarine embayment or a slough off the embayment, rather than adjacent to a narrower tidal river channel. Typically located within zones classified as "Marine" or "Brackish" on maps published by Hamilton (1984), the National Estuarine Inventory (NOAA 1988), and/or as "Estuarine"on maps of the National Wetland Inventory. The site and its immediate receiving waters have one or more of the following indicators suggestive of marine water: barnacles, stranded seaweed, salt marsh plant species, springtide high tide minimum salinities of >5 ppt, or a preponderance (in adjacent flats) of rounded sediment particles indicative of recent marine-derived sediments
   YES: Estuarine Marine-sourced (EMS) subclasses (High Marsh EMS and Low Marsh EMS)
   NO: Estuarine River-sourced (EMR) subclass

3. Closely associated with a channel or floodplain. Upland wetted edge of site expands at least once every other year (biennial flood) primarily as a result of overbank flow, channel inflow, or pumped water from a nearby and/or connected or bisecting channel. Includes active(2-yr) floodplain wetlands, sloughs, and riparian areas.

On NWI maps, includes many sites labeled R or PUB, PEM, PSS, or PFO with –A, –C, -F, or -H water regime codes appended, and others.
YES: **Riverine** class, Go to 4
NO: Go to 5

4. Water throughout most of site flows visibly during most of wet season. The site may be a channel, an island in a channel, or border a channel or ditch. It should include any channel to the 2 m depth. It often bisects or is bordered by a wetland in another HGM subclass.
YES: **Riverine Flow-through (RFT)** subclass, Figure 2
Includes scoured floodplains with no seasonal ponding of floodwater, wetlands that comprise entire islands within channels, and some ditches and channels.
NO: **Riverine Impounding (RI)** subclass, Figure 2
Includes sloughs connected (seasonally or permanently) to main channels, channels dammed by beavers or humans (such wetlands may be broader at their downhill/ outlet side), wetlands sustained primarily by water diverted or pumped from offsite channels, river alcoves with seasonally stagnant conditions, and depressions or temporarily ponded areas within active biennial floodplains.

5. Consists mostly of permanent or seasonal standing water with pH>8. Situated in a depression or lake basin without an outlet channel. Includes areas that are shallower than 2 m during annual maximum inundation.
YES: **Depressional Alkaline (DA)** subclass
NO: Go to 6

6. Located on margin of or within a lake, i.e., a body of permanent standing water that is deeper than 2 m over an area of >8 hectares (20 acres).
On NWI maps, includes most sites labeled "L" and others with –A, -C, -F, or –H water regime codes that border an L site.
YES: **Lacustrine Fringe** class, go to 7
NO: Go to 8

7. Located in headwater position (i.e., closer to a region's major drainage divides than to lowlands in the region) and usually higher than the mean elevation of the region[1].
YES: **Lacustrine Fringe Headwater (LFH)** subclass
NO: **Lacustrine Fringe Valley (LFV)** subclass

8. Consists of >10% cover of Sphagnum moss over an area of >0.25 acre, and has a mean annual water pH of <5.5. Usually situated in a depression with little if any standing water.
YES: **Depressional Bog (DB)** subclass
NO: Go to 9

9. Lacks permanent inlet channel. Has a surface water outlet that connects to a permanent river or lake less than once every 2 years. Not located on a noticeable slope. Water level fluctuations are mainly in response to runoff and direct precipitation.
YES: **Depressional Outflow (DO)** subclass
NO: Go to 10

10. Located on, or near base of, a slope, but the slope may be barely perceptible. Inlet channel absent or very short. Outlet channel frequently present. Downhill-flowing sheet flow may be visible at land surface, especially during wet months. Downhill side of site sometimes partly blocked by berm or dam (natural or manmade). Fed by runoff and precipitation but with a proportionally large (compared with other wetlands) component of lateral subsurface flow or discharging groundwater. Soil moisture (and surface water, if present and shallow) tends to persist more into the summer than in other wetlands of similar size, depth, climate, and soil type. Ratio of wetland surface area to area of the apparently contributing watershed is relatively large.

[1] Approximate mean elevations of regions (in meters): Blue Mountains= 1351, Basin & Range= 1515, Columbia Basin= 539, Coast/Range= 256, East Cascades Slope= 1435, Klamath Mountains= 734, High Lava Plains= 1179, Owyhee Uplands= 1269, West Cascade Slope= 1037, Western Interior (Willamette) Valley= 191.

Includes springs, seeps, sites sustained in summer mainly by seepage (not runoff) from upslope irrigated fields, some sites with water impounded seasonally by push-up dams at their downhill side, and some ash swales.
On NWI maps, includes many sites labeled PEM, PSS, or PFO with –B water regime codes, and less often with –A, -C, or –F codes.
YES: **Slope** class, Go to 11
NO: Go to 12.

11. Outlet channel is present (but may be small and partly dammed by beaver, roads, slides). Slope may be slight but is always noticeable. No inlet channel. Located in topographically high or intermediate positions such as stream heads, montane wet meadows, avalanche chutes. Usually closer to a region's major drainage divides than to lowlands in the region, and usually higher than the average elevation of the region.
YES: **Slope Headwater (SH)**
NO: **Slope Valley (SV)**

12. Fed mainly by direct precipitation, secondarily by lateral subsurface flow or surface runoff. Precipitation may be "ponded" at the site due to surrounding natural levees, ridge-swale topography, humocks or constructed dikes; and/or due to soils with subsurface layers that strongly impede infiltration; and/or due to high water table due to subsurface seepage from nearby river, lake, or irrigated fields. Usually in a shallow (<2 ft.) basin situated on a broad flat terrace. Includes wet prairie, wet wooded flats, some fens and some ash swales. On NWI maps, includes many sites labeled PUS, PEM, PFO, or PSS with –A, -B, or -C water regime codes.
YES: **Flats class**. No subclasses defined yet.
Many are inundated only seasonally. Altered (diked) flats sites may function similar to depressional class sites, but their only significant water comes from runoff from dike surfaces and precipitation.
NO: **Depressional class**, Go to 13
Fed mainly by overland runoff (sheet flow) which enters from all 3 or 4 compass directions, and/or by stormwater pipes, drainage ditches. Usually in a deep (>2 ft.) basin, which may have been deepened by excavation. Usually is inundated permanently. Often in natural depressions in rolling or mountainous terrain. On NWI maps, includes many of the sites labeled PUB or PAB, some L, and a few others.

13. More than 0.25 acre of standing water remains in the basin during the driest season of most years.
YES: **Depressional Closed Permanent (DCP)** subclass

OFWAM Functions

Diverse Wildlife Habitat. Two or more Cowardin wetland classes (i.e., Forested, Scrub-Shrub, Emergent) are present; woody vegetation is the dominant wetland vegetation cover type; there is high interspersion among Cowardin classes; more than 1 acre of open water is present; the wetland is connected to other wetlands or bodies of water by surface water (stream, lake, pond, ditch, or culvert); no upstream or adjacent stream reaches are listed as water quality limited; the dominant existing land use within 500 feet of the wetland's edge is exclusive forest use or open space; and greater than 40% of the wetland's edge is bordered by a vegetated buffer at least 25 feet wide.

Intact Fish Habitat. More than 75% of the stream is shaded by stream-side (riparian) vegetation; the stream is in a natural channel, or modified portions of the stream are returning to a natural channel; more than 25% of the entire stream contains instream structures such as large woody debris, floating submerged vegetation, large rocks, or boulders; no upstream or adjacent stream reaches are listed as water quality limited; the dominant existing land use within 500 feet of the wetland's edge is exclusive forest use or open space; and salmon, trout or sensitive species are present in a stream, lake or pond associated with the wetland at some time during the year.

Intact Water Quality Protection. The wetland's primary source of water is surface flow, including streams and ditches, or precipitation; there is evidence of flooding or ponding during a portion of the growing season; wetland vegetation cover is greater than 60%; the wetland is greater than 5 acres in size or is between 0.5 acre and 5 acres in size and is connected to other wetlands within a 3-mile radius by surface water (stream, ditch, canal or lake); the dominant existing land use within 500 feet of the wetland's edge is developed uses or agriculture; and one or more upstream or adjacent stream reaches are listed as water quality limited.

Intact Hydrologic Control. The wetland is located within the 100-year floodplain or within an enclosed basin; there is evidence of flooding or ponding during a portion of the growing season; the wetland is greater than 5 acres in size; waterflow out of the wetland is restricted (beaver dam, concrete structure, undersized culvert) or the wetland has no outlet; woody vegetation is the dominant wetland vegetation cover type; the dominant existing land use within 500 feet of the wetland on the downstream or downslope edge of the wetland is developed uses; and the dominant land use in the watershed upstream from the assessment area is urban or urbanizing.

Riparian Corridor Goal 5 Definitions

Riparian area is the area adjacent to a river, lake, or stream, consisting of the area of transition from an aquatic ecosystem to a terrestrial ecosystem.

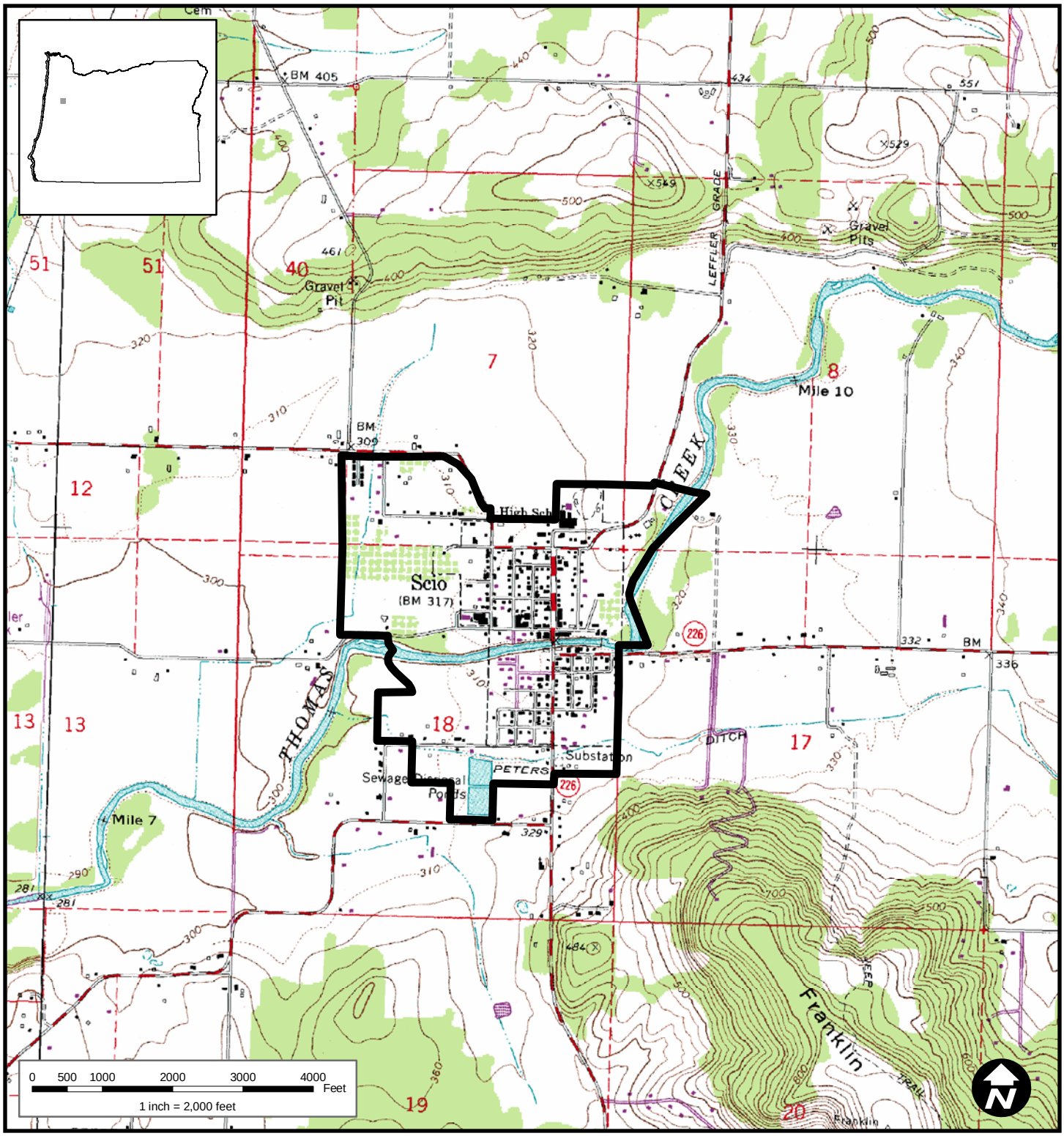
Riparian corridor is a Goal 5 resource that includes the water areas, fish habitat, adjacent riparian areas, and wetlands within the riparian area boundary.

Riparian corridor boundary is an imaginary line that is a certain distance upland from the top of bank.

APPENDIX C

Figures

Figure 1. Site Location Map (USGS base)
Figure 2a. National Wetland Inventory Map – Paper Scan
Figure 2b. National Wetland Inventory Map – Digital Base
Figure 3. Soils Map



Legend

Study Area Boundary

Source: USGS 7.5' topographic quadrangle: Scio, OR (1969, photorevised 1986). 1:24,000 quadrangle map downloaded from the Oregon Geospatial Enterprise Office: http://www.oregon.gov/DAS/EISPD/GEO/index.shtml

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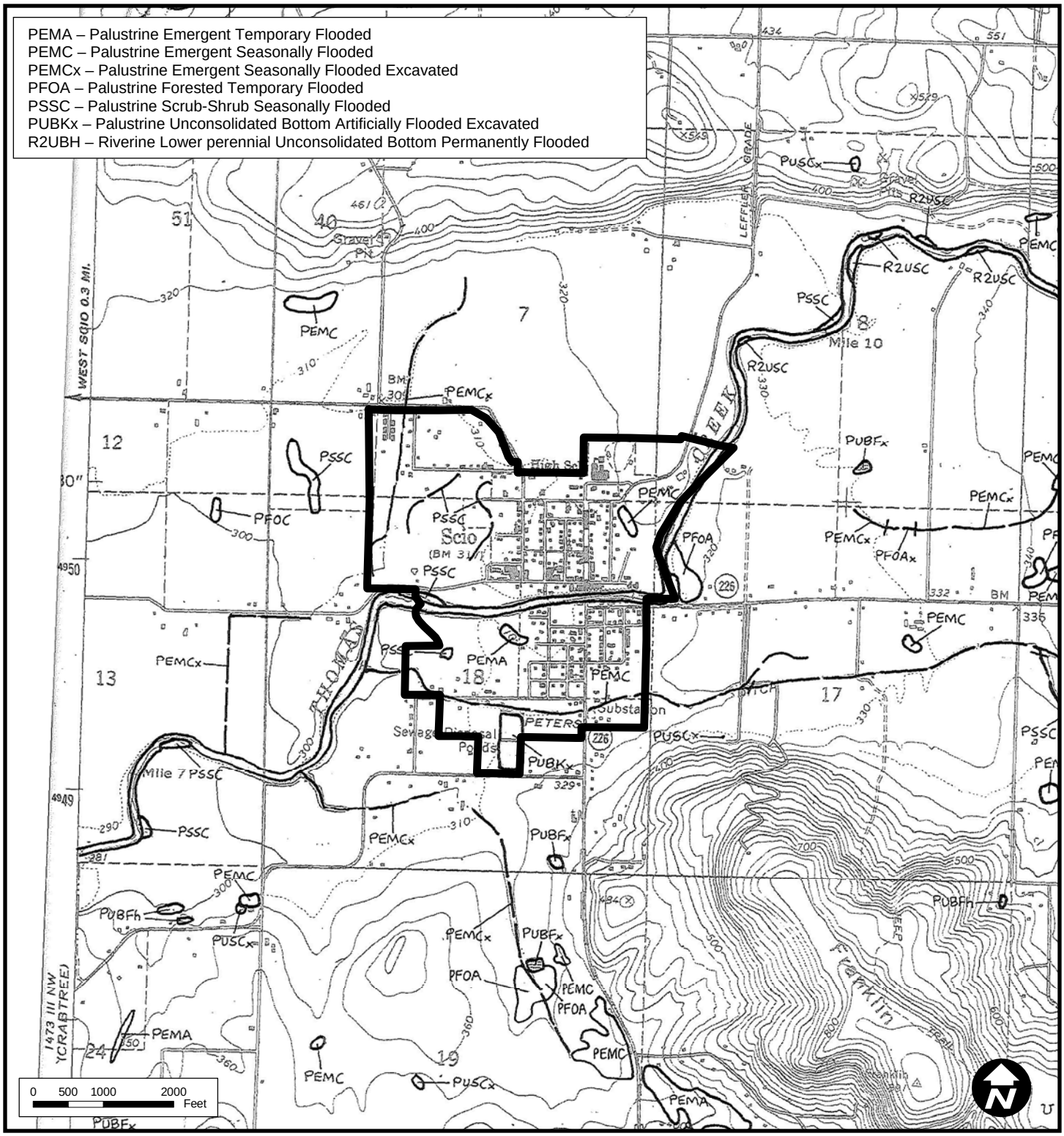
Fax 503.224.1851

Local Wetland Inventory
Scio, Linn County, Oregon

Figure 1. Site Location Map

Project 16272
March 25, 2010



Legend

Study Area Boundary

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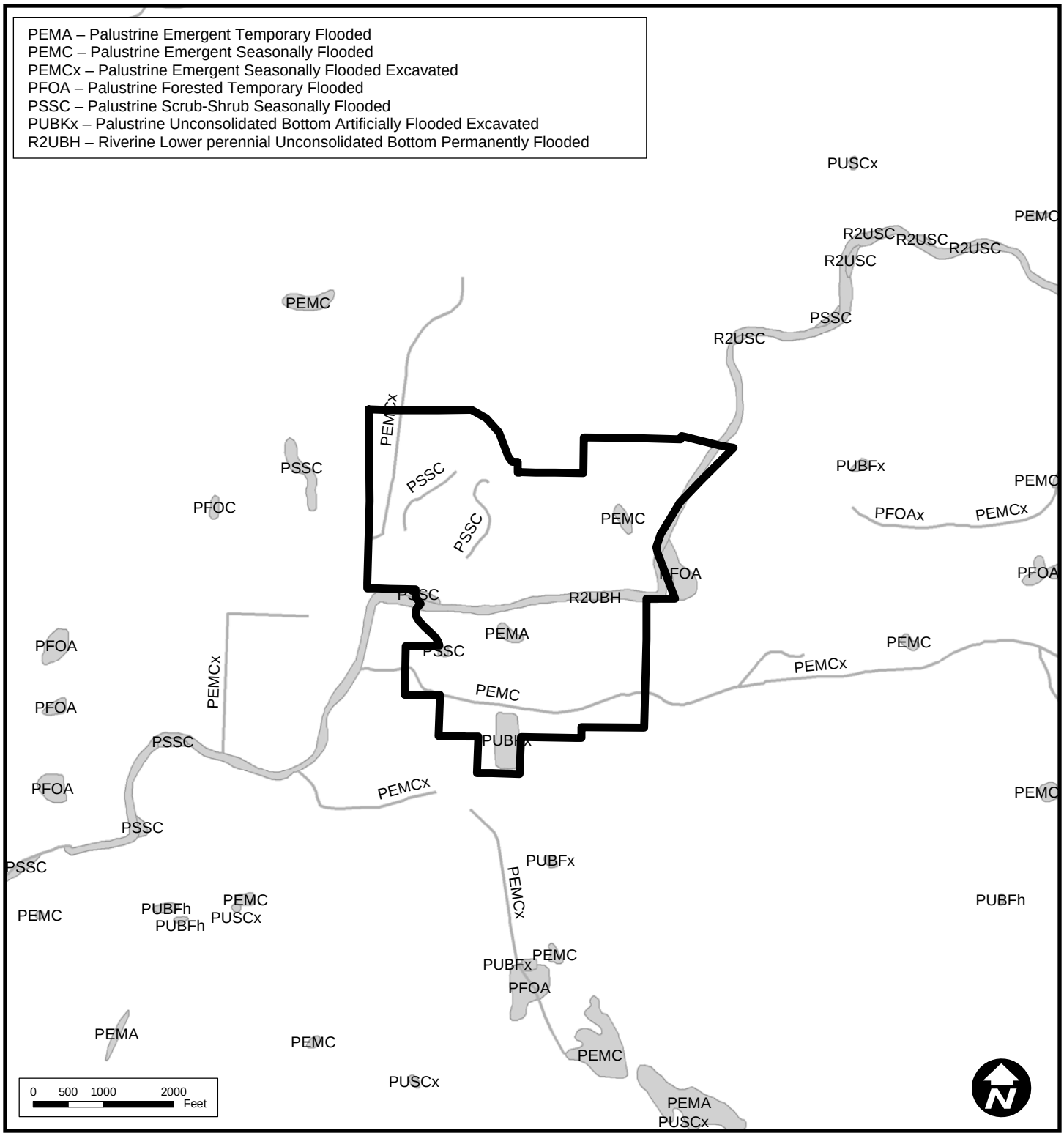
Source: U.S. Fish & Wildlife Service National Wetland Inventory, Scio (1994), OR.

Local Wetland Inventory
Scio, Linn County, Oregon

Figure 2a. National Wetlands Inventory

Project 16272
June, 2010



Legend

Study Area Boundary

National Wetland Inventory

Source: U. S. Fish and Wildlife Service. 2009. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/

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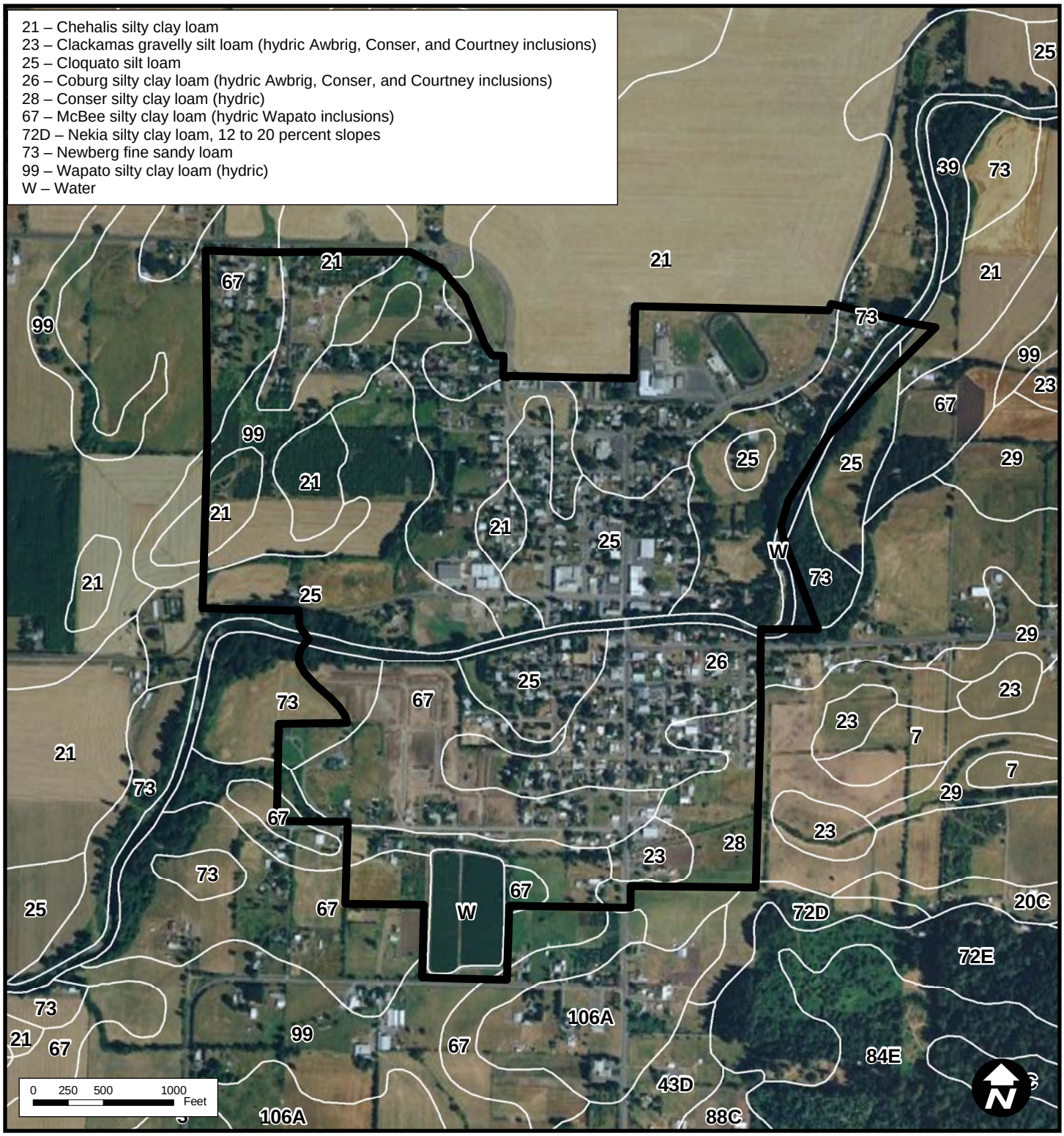
Local Wetland Inventory
Scio, Linn County, Oregon

Figure 2b. National Wetlands Inventory

Project 16272
June, 2010



Legend

Study Area Boundary

Linn County Soils

Source: NRCS SSURGO data for Linn County (2010); USA Prime Imagery, ESRI Online Service (© 2009 i-cubed, ESRI, AND, TANA)

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Local Wetland Inventory
Scio, Linn County, Oregon

Figure 3. Soils

Project 16272
November, 2010

APPENDIX D

Sample Plot Data—Wetland Determination Data Forms

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-1(U)**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #118 10S01W18AA00100

Landform (hillslope, terrace, etc.): Broad swale | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.707173 | Long: -122.846357 | Datum: NAD 1983

Soil Map Unit Name: (73) Newberg fine sandy loam | NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes **X**	No _____	
Hydric Soil Present?	Yes _____	No **X**	**Is the Sampled Area within a Wetland?** Yes _____ No **X**
Wetland Hydrology Present?	Yes _____	No **X**	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Map A. NWI mapped PEMC not present.

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Dactylis glomerata*	40%	Yes	FACU
2. *Poa pratensis*	20%	Yes	FAC
3. *Poa palustris*	20%	Yes	FAC
4. *Schedonorus phoenix*	10%	No	FAC
5. *Alopecurus pratensis*	10%	No	FACW
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 10	x 2 =	20
FAC species 50	x 3 =	150
FACU species 40	x 4 =	160
UPL species 0	x 5 =	0
Column Totals: 100 (A)		330 (B)

Prevalence Index = B/A = 3.30

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes **X** No _____

Remarks: *identifies indicator status is tentative
ID tentative on #2 and #3.

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-1(U)**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	98	7.5YR 4/6	2	C	M	sil	
16-20	10YR 3/2	95	7.5YR 4/6	5	C	M	sil+	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes ___	No X	Depth (inches): >20	**Wetland Hydrology Present?**	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >20	**Yes** ___	**No** X

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

Remarks:

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-2**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #33 10S01W07CD01000

Landform (hillslope, terrace, etc.): Valley Bottom / swale | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.708014 | Long: -122.859308 | Datum: NAD 1983

Soil Map Unit Name: (99) Wapato silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	
Hydric Soil Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Wetland Hydrology Present?	Yes X	No _____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-1 Map A

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1. *Salix lucida var. lasiandra*	5%	Yes	FACW
2.			
3.			
4.			
5.			
	5% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	100%	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	105	x 2 =	210
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	105 (A)		210 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: *identifies indicator status is tentative
Trace Oregon ash and black cottonwood. Plot near hazelnut orchard.

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-2**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16+	10YR 3/2	80	7.5YR 4/6	20	C	M	sic	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

Sidewall seeps near the test pit surface. Ponding 6-inches deep to west of plot.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-3**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #499 10S01W18B 00100

Landform (hillslope, terrace, etc.): Swale | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.707696 | Long: -122.854554 | Datum: NAD 1983

Soil Map Unit Name: (67) McBee silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-2 Map A

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	30%	Yes	FACW
2. *Poa annua*	25%	Yes	FAC
3. *Poa palustris*	25%	Yes	FAC
4. *Alopecurus pratensis*	20%	Yes	FACW
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		250 (B)

Prevalence Index = B/A = 2.50

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: *identifies indicator status is tentative
Grasses mowed.

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-3**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	90	10YR 4/6	10	C	M	sil	
11-16	10YR 3/2	95	10YR 4/1	5	D	M	sil	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Few angular gravels in 11-16-inch profile

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	
Water Table Present?	Yes X	No ___	Depth (inches):	10
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	8

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-4**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #505 10S01W18B 00400

Landform (hillslope, terrace, etc.): Swale | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.706457 | Long: -122.854180 | Datum: NAD 1983

Soil Map Unit Name: (67) McBee silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-2 Map A

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	80%	Yes	FACW
2.			
3.			
4.			
	80% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1. *Rubus armeniacus*	10%	Yes	FACU
2. *Fraxinus latifolia*	5%	Yes	FACW
3.			
4.			
5.			
	15% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	80%	Yes	FACW
2. *Urtica dioica*	10%	No	FAC
3. *Ranunculus repens*	10%	No	FACW
4.			
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	175	x 2 =	350
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	195 (A)		420 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: *identifies indicator status is tentative

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-4**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	90	7.5YR 3/4	10	C	M	sicl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	___
Water Table Present?	Yes X	No ___	Depth (inches):	4
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	Surface

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:
Ponding up to 2+-feet in center of wetland.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-5**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #281 10S01W18AB04400

Landform (hillslope, terrace, etc.): Valley Bottom swale | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.706789 | Long: -122.853085 | Datum: NAD 1983

Soil Map Unit Name: (67) McBee silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-2 Map A

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Alopecurus pratensis*	70%	Yes	FACW
2. *Juncus effusus*	30%	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: *identifies indicator status is tentative

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-5**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	80	7.5YR 3/4	20	C	M	sicl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	X	No	___	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:
Up to 4-inch deep ponding in wetland near plot.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-6(U)**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #281 10S01W18AB04400

Landform (hillslope, terrace, etc.): Valley bottom | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.707803 | Long: -122.853291 | Datum: NAD 1983

Soil Map Unit Name: (67) McBee silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes **X**	No _____	
Hydric Soil Present?	Yes _____	No **X**	**Is the Sampled Area within a Wetland?** Yes _____ No **X**
Wetland Hydrology Present?	Yes _____	No **X**	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Map A. Upland east of Wetland SC-2.

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Alopecurus pratensis*	50%	Yes	FACW
2. *Schedonorus phoenix*	20%	Yes	FAC
3. *Daucus carota*	20%	Yes	NOL
4. *Trifolium pratense*	5%	No	FACU
5. *Taraxacum officinale*	5%	No	FACU
6.			
7.			
8.			
	100%	= Total Cover	
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	20	x 3 =	60
FACU species	10	x 4 =	40
UPL species	20	x 5 =	100
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes **X** No _____

Remarks: *identifies indicator status is tentative

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-6(U)**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	100					sicl	
11-23	10YR 3/2	85	10YR 4/6	15	C	M	sicl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Few angular gravels throughout surface to 11-inches bgs.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes X	No ___	Depth (inches): 14	**Wetland Hydrology Present?**	
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 13	**Yes** ___	**No** X

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

Remarks:

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-7**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #578 10S01W18D 01400

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): <2

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.699576 | Long: -122.850659 | Datum: NAD 1983

Soil Map Unit Name: (99) Wapato silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-3 Map B. See WD#1998-0482, 2006-0414, and 2008-0162. Near Zion NRC Sample Plot 8.

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Centaurium erythraea*	20%	Yes	FAC
2. *Agrostis species*	20%	Yes	FAC ?
3. *Juncus tenuis*	20%	Yes	FACW
4. *Elymus repens*	20%	Yes	FAC
5. *Alopecurus pratensis*	20%	Yes	FACW
6. *Prunella vulgaris*	5%	No	FACU
7. *Allium species*	5%	No	OBL to NOL
8. *Schedonorus phoenix*	5%	No	FAC
	115% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	65	x 3 =	195
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	110 (A)		295 (B)

Prevalence Index = B/A = 2.68

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: *identifies indicator status is tentative
ID tentative on #6. Trace amounts of cinquefoil.

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-7**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	95	10YR 3/4	5	C	M	sil	
8-16	10YR 3/2	90	7.5YR 5/6	10	C	M	sicl	
16-18	10YR 4/1	90	7.5YR 3/4	10	C	M	sic	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Rounded gravels throughout soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	___
Water Table Present?	Yes X	No ___	Depth (inches):	11
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	7

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:
Sidewall seeps at 9-inches bgs.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-8(U)**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #291 10S01W18AC00400

Landform (hillslope, terrace, etc.): Valley bottom | Local relief (concave, convex, none): Concave | Slope (%): <2

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.702661 | Long: -122.852553 | Datum: NAD 1983

Soil Map Unit Name: (25) Conser silty clay loam | NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes **X**	No _____	
Hydric Soil Present?	Yes _____	No **X**	**Is the Sampled Area within a Wetland?** Yes _____ No **X**
Wetland Hydrology Present?	Yes _____	No **X**	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Map B. NWI mapped PEMA not present.

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	20%	Yes	FAC
2.			
3.			
4.			
	20% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Schedonorus phoenix*	80%	Yes	FAC
2. *Alopecurus pratensis*	10%	No	FACW
3. *Dactylis glomerata*	10%	No	FACU
4.			
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	100	x 3 =	300
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	120 (A)		360 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes **X** No _____

Remarks: *identifies indicator status is tentative
Grasses mowed. Apple orchard and grape vineyard in center of NWI mapped wetland.

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-8(U)**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					sil	
12-16	10YR 3/2	90	7.5YR 4/6	10	C	M	sicl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes ___	No X	Depth (inches): >16	**Wetland Hydrology Present?**	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16	**Yes** ___	**No** X

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

Remarks:
Soils slightly moist 12-16-inches bgs.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/18/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-9(U)**

Investigator(s): C. Mirth Walker and Stacey Reed | Section, Township, Range: #504 10S01W18B 00300

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.704226 | Long: -122.858229 | Datum: NAD 1983

Soil Map Unit Name: (25) Conser silty clay loam | NWI classification: PSSC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No **X**
Hydric Soil Present?	Yes _____	No **X**
Wetland Hydrology Present?	Yes _____	No **X**

Is the Sampled Area within a Wetland? Yes _____ No **X**

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Map B NWI mapped PSSC not present. Topography rises to east and site to east is fenced.

VEGETATION

	Absolute	Dominant	Indicator
Tree Stratum (Plot size: 30' r)	% Cover	Species?	Status
1. *Populus balsamifera*	90%	Yes	FAC
2.			
3.			
4.			
	90% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1. *Corylus cornuta*	20%	Yes	FACU
2. *Sambucus racemosa*	10%	Yes	FACU
3.			
4.			
5.			
	30% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Vinca major*	90%	Yes	NOL
2. *Hedera helix*	5%	No	NOL
3. *Geranium molle*	5%	No	NOL
4.			
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		
% Bare Ground in Herb Stratum 0%			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	90	x 3 =	270
FACU species	30	x 4 =	120
UPL species	100	x 5 =	500
Column Totals:	220 (A)		890 (B)

Prevalence Index = B/A = 4.05

Hydrophytic Vegetation Indicators:
_____ Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No **X**

Remarks: *identifies indicator status is tentative

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-9(U)**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					sil	
7-18	10YR 3/2	60					sa	
	10YR 8/1	15						
	7.5YR 4/6	15						
	10YR 2/1	10						

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes ___	No X	Depth (inches): >18	**Wetland Hydrology Present?**	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >18	**Yes** ___	**No** X

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

Remarks:

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/19/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-10**

Investigator(s): Stacey Reed and Taya Cummins | Section, Township, Range: #97 10S01W17 00700

Landform (hillslope, terrace, etc.): Floodplain terrace | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.704259 | Long: -122.844061 | Datum: NAD 1983

Soil Map Unit Name: (73) Newberg fine sandy loam | NWI classification: PFOA to east

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-4 Map A

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	15%	Yes	FACW
2. *Populus balsamifera*	15%	Yes	FAC
3.			
4.			
	30% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1. *Rubus armeniacus*	30%	Yes	FACU
2. *Cornus sericea*	15%	Yes	FACW
3. *Rosa nutkana*	5%	No	FAC
4.			
5.			
	50% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	95%	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	125	x 2 =	250
FAC species	20	x 3 =	60
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	175 (A)		430 (B)

Prevalence Index = B/A = 2.46

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: *identifies indicator status is tentative

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-10**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/2	100					sicl	
8-30	10YR3/2	95	10YR 4/4	5	C	M	sacl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	X	No	___	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches): 11

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:
Sidewall seeps at 14-inches bgs.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/19/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-11(U)**

Investigator(s): Stacey Reed and Taya Cummins | Section, Township, Range: #512 10S01W18B 01002

Landform (hillslope, terrace, etc.): Valley bottom | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.701913 | Long: -122.856287 | Datum: NAD 1983

Soil Map Unit Name: (73) Newberg fine sandy loam | NWI classification: PSSC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes **X**	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No **X**
Hydric Soil Present?	Yes _____	No **X**	
Wetland Hydrology Present?	Yes _____	No **X**	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Map B NWI mapped PSSC not present.

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	10%	Yes	FAC
2.			
3.			
4.			
	10% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1. *Rubus armeniacus*	50%	Yes	FACU
2.			
3.			
4.			
5.			
	50% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Schedonorus phoenix*	40%	Yes	FAC
2. *Poa species*	40%	Yes	FAC ?
3. *Dipsacus fullonum*	3%	No	FAC
4. *Cirsium arvense*	2%	No	FACU
5.			
6.			
7.			
8.			
	85% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	93	x 3 =	279
FACU species	52	x 4 =	208
UPL species	0	x 5 =	0
Column Totals:	145 (A)		487 (B)

Prevalence Index = B/A = 3.36

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes **X** No _____

Remarks: *identifies indicator status is tentative
Grasses had been mowed.

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-11(U**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-22	10YR 3/3	100					sil	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	
Water Table Present?	Yes ___	No X	Depth (inches):	>22
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	>22

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/19/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-12**

Investigator(s): Stacey Reed and Taya Cummins | Section, Township, Range: #563 10S01W18D 00101

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.700095 | Long: -122.846537 | Datum: NAD 1983

Soil Map Unit Name: (28) Conser silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-5 Map B

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1. *Crataegus douglasii*	2%	No	FAC
2.			
3.			
4.			
5.			
	2% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Alopecurus pratensis*	80%	Yes	FACW
2. *Geranium robertianum*	10%	No	NOL
3. *Ranunculus repens*	5%	No	FACW
4. *Taraxacum officinale*	3%	No	FACU
5.			
6.			
7.			
8.			
	98% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 2%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	85	x 2 =	170
FAC species	2	x 3 =	6
FACU species	3	x 4 =	12
UPL species	10	x 5 =	50
Column Totals:	100 (A)		238 (B)

Prevalence Index = B/A = 2.38

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: *identifies indicator status is tentative
Vegetation had been recently mowed.

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-12**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					sil	
6-20	10YR 3/1	90	10YR 3/6	10	C	M	sicl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___	
Water Table Present?	Yes X	No ___	Depth (inches): 14	**Wetland Hydrology Present?**
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 5	**Yes** X **No** ___

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

Remarks:
Sidewall seeps at 9-inches bgs.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/19/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-13(U)**

Investigator(s): Stacey Reed and Taya Cummins | Section, Township, Range: #563 10S01W18D 00101

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Convex | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.700230 | Long: -122.845966 | Datum: NAD 1983

Soil Map Unit Name: (28) Conser silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No **X**
Hydric Soil Present?	Yes _____	No **X**
Wetland Hydrology Present?	Yes _____	No **X**

Is the Sampled Area within a Wetland? Yes _____ No **X**

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Map B Upland island within Wetland SC-5

VEGETATION

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1. *Crataegus douglasii*	25%	Yes	FAC
2. *Rosa species*	5%	No	FACW* to NOL
3.			
4.			
5.			
	30% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Alopecurus pratensis*	20%	Yes	FACW
2. *Daucus carota*	15%	Yes	NOL
3. *Geranium robertianum*	15%	Yes	NOL
4. *Ranunculus repens*	5%	No	FACW
5. *Fragaria virginiana*	5%	No	FACU*
6.			
7.			
8.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 40%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 25	x 2 =	50
FAC species 25	x 3 =	75
FACU species 5	x 4 =	20
UPL species 30	x 5 =	150
Column Totals: 85 (A)		295 (B)

Prevalence Index = B/A = 3.47

Hydrophytic Vegetation Indicators:
- ___ Dominance Test is >50%
- ___ Prevalence Index is≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No **X**

Remarks: *identifies indicator status is tentative
Grasses and shrubs had been mowed.

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-13(U**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					sil	
12-16	10YR 3/1	95	10YR 4/4	5	C	M	sil	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	
Water Table Present?	Yes ___	No X	Depth (inches):	>16
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	16

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/19/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-14**

Investigator(s): Stacey Reed and Taya Cummins | Section, Township, Range: #565 10S01W18D 00300

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.699443 | Long: -122.845950 | Datum: NAD 1983

Soil Map Unit Name: (28) Conser silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-5 Map B

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Alopecurus pratensis*	40%	Yes	FACW
2. *Hypochaeris radicata*	25%	Yes	FACU*
3. *Elymus repens*	25%	Yes	FAC
4. *Lotus species*	10%	No	FACW to NOL
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	25	x 3 =	75
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	90 (A)		255 (B)

Prevalence Index = B/A = 2.83

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *identifies indicator status is tentative

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-14**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	80	5YR 3/4	20	C	M & PL	sicl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	___
Water Table Present?	Yes X	No ___	Depth (inches):	9
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	2

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:
Sidewall seeps at 4-inches bgs.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/19/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-15**

Investigator(s): Stacey Reed and Taya Cummins | Section, Township, Range: #489 10S01W18AD07202

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.701112 | Long: -122.846540 | Datum: NAD 1983

Soil Map Unit Name: (28) Conser silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Wetland SC-6 Map B

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	5%	Yes	FACW
2.			
3.			
4.			
	5% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Alopecurus pratensis*	100%	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	105	x 2 =	210
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	105 (A)		210 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: *identifies indicator status is tentative

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-15**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/2	80	7.5YR 4/6	20	C	M and PL	sicl	
9-16	10YR 3/1	80	5YR 3/4	20	C	M	sicl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Few angular gravels in 9-16-inch layer.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth (inches): ___
Water Table Present?	Yes	___	No	X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches): 5

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:
Sidewall seeps at 10-inches bgs.

Entered by: SAR QC by: CMW

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

Project/Site: Local Wetland Inventory | City/County: Scio / Linn | Sampling Date: 3/19/2010

Applicant/Owner: LCOG and the City of Scio | State: Oregon | Sampling Point: **SCP-16(U)**

Investigator(s): Stacey Reed and Taya Cummins | Section, Township, Range: #489 10S01W18AD07202

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None | Slope (%): <3

Subregion (LRR): A, Northwest Forests and Coast | Lat: 44.700912 | Long: -122.846751 | Datum: NAD 1983

Soil Map Unit Name: (28) Conser silty clay loam | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes **X**	No _____	
Hydric Soil Present?	Yes **X**	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No **X**
Wetland Hydrology Present?	Yes _____	No **X**	

Remarks: NA means Not Applicable (used on plowed and planted agricultural crop sites in reference to the vegetation).
Precipitation prior to fieldwork: No rainfall day of and 1.33-inches 2 weeks prior to site visit in Salem.
Map B Upland south of Wetland SC-6

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Alopecurus pratensis*	100%	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
_____ Prevalence Index is≤3.0[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Wetland Non-Vascular Plants[1]
_____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes **X** No _____

Remarks: *identifies indicator status is tentative

Entered by: SAR QC by: CMW

SOIL

Sampling Point: **SCP-16(U**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100					sil	
5-16+	10YR 3/1	80	7.5YR 3/3	20	C	M	sicl	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No** ___

Remarks: s = sand; si = silt; c = clay; l = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Manganese concretions in soil profile below 5-inches. Common angular and rounded gravels throughout profile.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	___	
Water Table Present?	Yes ___	No X	Depth (inches):	>16	**Wetland Hydrology Present?**
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	>16	**Yes** ___ **No** X

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

Remarks:
Plot located near recently installed6-inch drain pipe.

Entered by: SAR QC by: CMW

APPENDIX E

Watershed Summary and Wetlands of Special Interest for Protection

LCOG LWI Watershed Setting **City of Scio**

OFWAM Questions 1-4 and 9-14 (see Wetland Characterization Sheets for the remaining questions 5-8 and 15-40)

1. Middle Willamette Drainage Basin Watershed Name

Lower Thomas Creek (170900060705)

2. Watershed size in square miles

40.57

3. Average slope

6.79 percent

4. Is the stream flow in the watershed modified by dams, channelization or levees?
   a. Tributary streams to the main stem stream are modified.
   b. Main stem stream is modified.
   c. Stream flow is not modified (free-flowing).

a and b

5. Is water being taken out of the streams through active diking, drainage or irrigation districts upstream of the assessment area?

Yes

see note above for Qs 6-8

9. Fisheries - list type if known.
   a. Cold water
   b. Warm water
   c. Anadromous
   d. Wild population
   e. Introduced or hatchery population
   f. None
   g. Other (list)

a, b, c, d, e

10. List any known sensitive, threatened or endangered fish species present in the watershed.

Steelhead (Upper Willamette River ESU, winter run)
Chinook salmon (Upper Willamette River ESU, spring run)
Oregon chub

11. Wildlife species: Select all that are appropriate and list species if known.
   a. Migratory birds
   b. Big game
   c. Nesting birds

a, b, c

12. List any known sensitive, threatened or endangered plant species or wildlife species present in the watershed.

Willamette Valley larkspur
Willamette Valley daisy
thin-leaved peavine
Nelson's sidalcea
Northern Pacific pond turtle
Oregon vesper sparrow

13. Does the watershed provide a natural corridor for fish or wildlife movement?
   a. There are contiguous natural areas that allow species movement, and if barriers exist, they do not stop animal or fish movement.
   b. The natural areas are fragmented, but species movement is still possible.
   c. The habitat system is fragmented, and there are barriers to species movement.

a

14. What are the landscape features at both ends of the movement corridor?
   a. Large natural habitat areas are at both ends.
   b. One end has a natural habitat area and the other end is developed.
   c. Both ends are developed.

b - agriculture in the west end

Common Name	Scientific Name
Steelhead (Upper Willamette River ESU, winter run)	*Oncorhynchus mykiss pop. 33*
Chinook salmon (Upper Willamette River ESU, spring run)	*Oncorhynchus tshawytscha pop. 23*
Oregon chub	*Oregonichthys cramer*
Willamette Valley larkspur	*Delphinium oreganum*
Willamette Valley daisy	*Erigeron decumbens*
thin-leaved peavine	*Lathyrus holochlorus*
Nelson's sidalcea	*Sidalcea nelsoniana*
Northern Pacific pond turtle	*Actinemys marmorata marmorata*
Oregon vesper sparrow	*Pooecetes gramineus affinis*

LCOG LWI Wetlands of Special Interest for Protection							
	Wetland:	**SC-1**	**SC-2**	**SC-3**	**SC-4**	**SC-5**	**SC-6**
Q1	Does the wetland contain threatened, endangered or sensitive species of wildlife, plants, invertebrates or fish? (Either federal- or state-listed.) Yes/No/Unknown	Unknown	Unknown	Unknown	Unknown	No	No
	If yes, list species (potential for):	fish	fish	pond turtle	fish		
Q2	Is the wetland designated as critical habitat or essential habitat for federal- or state-listed threatened or endangered species of wildlife, plants, invertebrates or fish? Yes/No/Unknown	No	No	No	No	No	No
	If yes, list species:						
Q3	Is the wetland a dedicated or proposed Registered State Natural Area or Area of Critical Environmental Concern, State Natural Heritage Conservation Area, Federal Research Natural Area, or a Nature Conservancy Preserve? Yes/No/Unknown	No	No	No	No	No	No
	If yes, list which it is:						
Q4	Is the wetland of regional or national significance for migratory birds? Yes/No/Unknown	No	No	No	No	No	No
	If yes, list which species:						
Q5	Is the wetland protected in a local wetland conservation plan or a local comprehensive plan as a Goal 5 or Goal 17 resource? Yes/No/Unknown	No	No	No	No	No	No
Q6	Is the wetland protected a designated State Outstanding Resource Water? Yes/No/Unknown	No	No	No	No	No	No
Q7	Is the wetland a protected area in a recognized federal, state or local management plan, e.g., for a park, refuge or scenic river? Yes/No/Unknown	No	No	No	No	No	No
	If yes, list name:						

LCOG LWI Wetlands of Special Interest for Protection							
	Wetland:	**SC-1**	**SC-2**	**SC-3**	**SC-4**	**SC-5**	**SC-6**
Q8	Is the wetland a protected mitigation site for a removal-fill permit, federal 404 fill permit, or enforcement action? Protected means there is a legal instrument, such as a conservation easement, that will preclude a wetland impact permit from being issued for this site. Yes/No/Unknown	No	No	No	No	No	No
	Notes:						
Q9	Is the wetland a restoration or protected area included in the wetland reserve program administered by the Natural Resources Conservation Service? The length of protection may very depending on landowner agreements. Yes/No/Unknown	No	No	No	No	No	No
Q10	Is the wetland considered rare or unique in Oregon? Examples include bogs, vernal pools and old growth forested wetlands (See OFWAM Appendix G). Yes/No/Unknown	No	No	No	No	No	No

APPENDIX F

Wetland Summary Sheets

LOCAL WETLAND INVENTORY SUMMARY SHEET

City: Scio County: Linn Wetland Code: **SC-1**

Street Address: 38716, 38732, 38738, 38773, 38814 GARDEN DR; 38941 STOLLER RD

T, R, S, tax lots: 10S01W07CD tax lots 700, 800, 812, 808, 1000, 1101; 10S01W18B tax lot 102, 500

Investigators: Stacey Reed, Mirth Walker Sampling Date: 3/18/2010 Sample Plot Numbers: SCP-2

Onsite? Yes Observation Point: Photopoint Numbers: 11-19, 22, 23

Onsite parcels: (33) 10S01W07CD01000, (501) 10S01W18B 00102, (506) 10S01W18B 00500

Offsite parcels: (15) 10S01W07CD00700, (16) 10S01W07CD00800, (24) 10S01W07CD00808, (27) 10S01W07CD00812, (35) 10S01W07CD01101

Map: A Site #: 33, 506, 24, 27, 16, 501, 35, 15

Cowardin Class (%): 60 PEM ___ PSS 24 PFO ___ POW 16 PUB Wetland Size (ac): 4.41

SS, FO subclass: X 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7

1 Broad-leaved deciduous, 2 Needle-leaved deciduous, 3 Broad-leaved evergreen, 4 Needle-leaved evergreen, 5 Dead, 6 Deciduous, 7 Evergreen

Water Regime: ___ A ___ B X C ___ D ___ E X F ___ G ___ H ___ J ___ K ___ W ___ Y ___ Z ___ U

A Temporarily Flooded, B Saturated, C Seasonally Flooded, D Seasonally Flooded/Well-drained, E Seasonally Flooded/Saturated, F Semipermanently Flooded, G Intermittently Exposed, H Permanently Flooded, J Intermittently Flooded, K Artificially Flooded, W Intermittently Flooded/Temporary, Y Saturated/Semipermanent/Seasonal, Z Intermittently Exposed/Permanent, U Unknown

Special Modifier: ___ b ___ d ___ f X h ___ r ___ s X x

b beaver, d partially drained/ditched, f farmed, h diked/impounded, r artificial substrate, s spoil, x excavated

HGM Class: X riverine flowthrough X riverine impounding ___ lake fringe ___ depressional ___ slope ___ flats

Mapped Soil Unit(s): (99) Wapato silty clay loam and (21) Chehalis silty clay loam

Watershed Boundary (6th Field HUC) # : 170900060705 Name: Lower Thomas Creek

DSL File Numbers: None

Hydrology Sources: 2 groundwater 1 stream inflow ___ overbank flooding ___ runoff ___ precipitation

Topographic position: ___ hillslope ___ toeslope ___ depression ___ flood plain ___ terrace X valley bottom ___ swale ___ ridgetop

Onsite land uses: Hazelnut orchard, Residential

Surrounding land uses: Residential, Agricultural to west

Disturbance: Excavated ditches, ponds with berms

Locally Significant Wetland Determination: Yes

H Wildlife Habitat M Fish Habitat H Water Quality H Hydrologic Control Other:

Comments: Two No Name Seasonal Drainages flow southerly through wetland. Ditches present along the northern and western boundary of ID #505 and receives inflow from SC-2. The ditch is culverted under NW 1st Ave to outfall into Thomas Creek. Portions of the wetland on ID# 506 have been excavated/bermed to create ponds. The western tributary is essentially an excavated swale that flows southwesterly through two excavated bermed ponds on ID# 506. The eastern tributary is forked.

Dominant Vegetation (Scientific and Common Name) Entered by: sar QC by: cmw

Tree		
Fraxinus latifolia	Oregon ash	
Populus balsamifera	black cottonwood	
Salix scouleriana	Scouler willow	
Pinus ponderosa	ponderosa pine	(1)
Shrub		
Rubus armeniacus	Himalayan blackberry	
Physocarpus capitatus	Pacific ninebark	
Herb		
Phalaris arundinacea	reed canarygrass	
Iris pseudacorus	yellow iris	

Additional Comments: Water regime modifiers include PEMC, PFOC and PUBFh. PSS component smaller than 1/4 acre. The larger forested component displays flood debris two feet higher than water level. The smaller forested component is dominated by Scouler Willow. Larger pond reported to be 11 feet deep, dries in Summer. Wild turkeys present, abundant wood duck; excellent bird and small mammal habitat. Owner of hazelnut orchard suggests "Nut Farm Creek" as name for stream and reports fish from Thomas Creek. Upland agricultural field to the south is tiled.

LOCAL WETLAND INVENTORY SUMMARY SHEET

City: Scio County: Linn Wetland Code: **SC-2**

Street Address: 38814 GARDEN DR, 38810 NW CHERRY ST, 38830 NW 4TH AVE, 38743 ROBINSON DR

T, R, S, tax lots: 10S01W07CD0110; 10S01W18B tax lots 400, 100; 10S01W18AB04400

Investigators: Stacey Reed, Mirth Walker Sampling Date: 3/18/2010 Sample Plot Numbers: SCP-3, 4, 5

Onsite? Yes Observation Point: Photopoint Numbers: 29, 30, 31, 32

Onsite parcels: (281) 10S01W18AB04400, (499) 10S01W18B 00100, (505) 10S01W18B 00400

Offsite parcels: (35) 10S01W07CD01101

Map: A Site #: 35, 281, 499, 505

Cowardin Class (%): 39 PEM ___ PSS 61 PFO ___ POW ___ PUB Wetland Size (ac): 2.93

SS, FO subclass: X 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7

1 Broad-leaved deciduous, 2 Needle-leaved deciduous, 3 Broad-leaved evergreen, 4 Needle-leaved evergreen, 5 Dead, 6 Deciduous, 7 Evergreen

Water Regime: ___ A ___ B X C ___ D ___ E X F ___ G ___ H ___ J ___ K

___ W ___ Y ___ Z ___ U

A Temporarily Flooded, B Saturated, C Seasonally Flooded, D Seasonally Flooded/Well-drained, E Seasonally Flooded/Saturated, F Semipermanently Flooded, G Intermittently Exposed, H Permanently Flooded, J Intermittently Flooded, K Artificially Flooded, W Intermittently Flooded/Temporary, Y Saturated/Semipermanent/Seasonal, Z Intermittently Exposed/Permanent, U Unknown

Special Modifier: ___ b ___ d ___ f ___ h ___ r ___ s X x

b beaver, d partially drained/ditched, f farmed, h diked/impounded, r artificial substrate, s spoil, x excavated

HGM Class: X riverine flowthrough ___ riverine impounding ___ lake fringe ___ depressional X slope ___ flats

Mapped Soil Unit(s): (67) McBee silty clay loam

Watershed Boundary (6th Field HUC) # : 170900060705 Name: Lower Thomas Creek

DSL File Numbers: None

Hydrology Sources: 2 groundwater 1 stream inflow ___ overbank flooding ___ runoff ___ precipitation

Topographic position: ___ hillslope ___ toeslope ___ depression ___ flood plain ___ terrace X valley bottom ___ swale ___ ridgetop

Onsite land uses: Residential

Surrounding land uses: Residential; School to south; Hazelnut orchard to west

Disturbance: Mowing and is culverted under access driveways.

Locally Significant Wetland Determination: Yes

H Wildlife Habitat M Fish Habitat H Water Quality H Hydrologic Control Other:

Comments: Surface waters drains from SC-2 through ditches along the north and south boundary of ID #504 and connects to SC-1. Outflow from the ditch drains to Thomas Creek. SC-2 contains patches of PSS and POW less than 0.25 acre in size. Forested portion provides excellent wildlife habitat.

Dominant Vegetation (Scientific and Common Name) Entered by: sar QC by: cmw

Tree	
Fraxinus latifolia	Oregon ash
Populus balsamifera	black cottonwood
Salix scouleriana	Scouler willow
Shrub	
Salix scouleriana	Scouler willow
Fraxinus latifolia	Oregon ash
Rubus armeniacus	Himalayan blackberry
Herb	
Phalaris arundinacea	reed canarygrass
Alopecurus pratensis	meadow foxtail
Juncus effusus	soft rush
Urtica dioica	stinging nettle
Ranunculus repens	creeping buttercup

LOCAL WETLAND INVENTORY SUMMARY SHEET

City: Scio County: Linn Wetland Code: **SC-3**

Street Address: South of 6th Ave (west of Main), east of sewage lagoons

T, R, S, tax lots: 10S01W18D 01400

Investigators: Stacey Reed, Mirth Walker Sampling Date: 3/18/2010 Sample Plot Numbers: SCP-7

Onsite? Yes Observation Point: Photopoint Numbers: 33

Onsite parcels: All

Offsite parcels: None

Map: B Site #: 578

Cowardin Class (%): 100 PEM ___ PSS ___ PFO ___ POW ___ PUB Wetland Size (ac): 1.96

SS, FO subclass: ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7

1 Broad-leaved deciduous, 2 Needle-leaved deciduous, 3 Broad-leaved evergreen, 4 Needle-leaved evergreen, 5 Dead, 6 Deciduous, 7 Evergreen

Water Regime: ___ A ___ B X C ___ D ___ E ___ F ___ G ___ H ___ J ___ K

___ W ___ Y ___ Z ___ U

A Temporarily Flooded, B Saturated, C Seasonally Flooded, D Seasonally Flooded/Well-drained, E Seasonally Flooded/Saturated, F Semipermanently Flooded, G Intermittently Exposed, H Permanently Flooded, J Intermittently Flooded, K Artificially Flooded, W Intermittently Flooded/Temporary, Y Saturated/Semipermanent/Seasonal, Z Intermittently Exposed/Permanent, U Unknown

Special Modifier: ___ b X d ___ f ___ h ___ r ___ s ___ x

b beaver, d partially drained/ditched, f farmed, h diked/impounded, r artificial substrate, s spoil, x excavated

HGM Class: ___ riverine flowthrough ___ riverine impounding ___ lake fringe ___ depressional X slope ___ flats

Mapped Soil Unit(s): (99) Wapato silty clay loam

Watershed Boundary (6th Field HUC) # : 170900060705 Name: Lower Thomas Creek

DSL File Numbers: WD#1998-0482, 2006-0414, 2008-0162

Hydrology Sources: 1 groundwater ___ stream inflow ___ overbank flooding ___ runoff ___ precipitation

Topographic position: ___ hillslope ___ toeslope ___ depression ___ flood plain X terrace ___ valley bottom ___ swale ___ ridgetop

Onsite land uses: Undeveloped

Surrounding land uses: Residential, Wastewater Treatment lagoons to west

Disturbance: Fill, Mowing

Locally Significant Wetland Determination: Yes

H Wildlife Habitat NA Fish Habitat M Water Quality M Hydrologic Control Other:

Comments: Wetland drains into Peters Ditch to the north through ditch along western property boundary. Zion Natural Resources Consulting conducted wetland delineation in 2008; it was not submitted to DSL for concurrence. 2008 delineated wetland was larger than 1998 concurred delineation. Many species listed in previous wetland delineations. SC-3 contains a patch of PSS less than 0.25 acre in size.

Dominant Vegetation (Scientific and Common Name) Entered by: sar QC by: cmw

Tree		
Populus balsamifera	black cottonwood	along western boundary
Shrub		
Crataegus douglasii	black hawthorn	
Spiraea douglasii	Douglas' spirea	
Salix lucida var. lasiandra	Pacific willow	
Herb		
Centaurium erythraea	common centaury	
Agrostis species	bentgrass	
Juncus tenuis	slender rush	
Elymus repens	quackgrass	
Carex species	sedge	

Additional Comments: Upland portion of site north of Peters Ditch dominated by the noxious spotted knapweed, *Centaurea maculosa* (*C. stoebe* ssp. *micranthos*).

LOCAL WETLAND INVENTORY SUMMARY SHEET

City: Scio County: Linn Wetland Code: **SC-4**

Street Address: North of SE 1st Ave / Hwy 226, East of Thomas Creek

T, R, S, tax lots: 10S01W17 00700

Investigators: Stacey Reed, Taya Cummins Sampling Date: 3/19/2010 Sample Plot Numbers: SCP-10

Onsite? Yes Observation Point: Photopoint Numbers: 43, 44

Onsite parcels: All

Offsite parcels: None

Map: A Site #: 97

Cowardin Class (%): PEM PSS 100 PFO POW PUB Wetland Size (ac): 0.96

SS, FO subclass: X 1 2 3 4 5 6 7

1 Broad-leaved deciduous, 2 Needle-leaved deciduous, 3 Broad-leaved evergreen, 4 Needle-leaved evergreen, 5 Dead, 6 Deciduous, 7 Evergreen

Water Regime: X A B C D E F G H J K

W Y Z U

A Temporarily Flooded, B Saturated, C Seasonally Flooded, D Seasonally Flooded/Well-drained, E Seasonally Flooded/Saturated, F Semipermanently Flooded, G Intermittently Exposed, H Permanently Flooded, J Intermittently Flooded, K Artificially Flooded, W Intermittently Flooded/Temporary, Y Saturated/Semipermanent/Seasonal, Z Intermittently Exposed/Permanent, U Unknown

Special Modifier: b d f h r s x

b beaver, d partially drained/ditched, f farmed, h diked/impounded, r artificial substrate, s spoil, x excavated

HGM Class: riverine flowthrough riverine impounding lake fringe depressional X slope flats

Mapped Soil Unit(s): (73) Newberg fine sandy loam

Watershed Boundary (6th Field HUC) # : 170900060705 Name: Lower Thomas Creek

DSL File Numbers: None

Hydrology Sources: 2 groundwater 1 stream inflow overbank flooding runoff precipitation

Topographic position: hillslope toeslope depression flood plain X terrace valley bottom swale ridgetop

Onsite land uses: Undeveloped Forest

Surrounding land uses: Residential, Thomas Creek, Paved Road

Disturbance: None

agriculture (plowed and planted), grazing, mowing, untreated stormwater, ditching, fill, paved or gravel roads

Locally Significant Wetland Determination: Yes

H Wildlife Habitat H Fish Habitat H Water Quality H Hydrologic Control Other:

Comments: Wetland extends outside study area to the east and is part of larger NWI mapped PFOA wetland. A narrow seasonal drainage (4-foot wide with 3-foot tall banks) flows westerly through wetland and outfalls into Thomas Creek (Essential Salmonid Habitat). Approx. 1-foot deep flow was present in the channel on the day of our site visit. Foot bridge plank present.

Dominant Vegetation (Scientific and Common Name) Entered by: sar QC by: cmw

Tree	
Fraxinus latifolia	Oregon ash
Populus balsamifera	black cottonwood
Shrub	
Rubus armeniacus	Himalayan blackberry
Cornus sericea	red-osier dogwood
Rosa nutkana	Nootka rose
Herb	
Phalaris arundinacea	reed canarygrass

LOCAL WETLAND INVENTORY SUMMARY SHEET

City: Scio County: Linn Wetland Code: **SC-5**

Street Address: 38848 S HIGHWAY 226 (S of Peters Ditch, E of SW Hwy 226)

T, R, S, tax lots: 10S01W18D tax lots 100, 101, 300

Investigators: Stacey Reed, Taya Cummins Sampling Date: 3/19/2010 Sample Plot Numbers: SCP-12, 14

Onsite? Yes Observation Point: Photopoint Numbers: 47, 48, 49

Onsite parcels: (563) 10S01W18D 00101, (565) 10S01W18D 00300

Offsite parcels: (562) 10S01W18D 00100

Map: B Site #: 562, 563 and 565

Cowardin Class (%): 100 PEM ___ PSS ___ PFO ___ POW ___ PUB Wetland Size (ac): 3.82

SS, FO subclass: ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7

1 Broad-leaved deciduous, 2 Needle-leaved deciduous, 3 Broad-leaved evergreen, 4 Needle-leaved evergreen, 5 Dead, 6 Deciduous, 7 Evergreen

Water Regime: ___ A ___ B X C ___ D ___ E ___ F ___ G ___ H ___ J ___ K

___ W ___ Y ___ Z ___ U

A Temporarily Flooded, B Saturated, C Seasonally Flooded, D Seasonally Flooded/Well-drained, E Seasonally Flooded/Saturated, F Semipermanently Flooded, G Intermittently Exposed, H Permanently Flooded, J Intermittently Flooded, K Artificially Flooded, W Intermittently Flooded/Temporary, Y Saturated/Semipermanent/Seasonal, Z Intermittently Exposed/Permanent, U Unknown

Special Modifier: ___ b X d ___ f ___ h ___ r ___ s ___ x

b beaver, d partially drained/ditched, f farmed, h diked/impounded, r artificial substrate, s spoil, x excavated

HGM Class: ___ riverine flowthrough ___ riverine impounding ___ lake fringe ___ depressional ___ slope X flats

Mapped Soil Unit(s): (28) Conser silty clay loam

Watershed Boundary (6th Field HUC) # : 170900060705 Name: Lower Thomas Creek

DSL File Numbers: None

Hydrology Sources: X groundwater ___ stream inflow ___ overbank flooding ___ runoff ___ precipitation

Topographic position: ___ hillslope ___ toeslope ___ depression ___ flood plain X terrace ___ valley bottom ___ swale ___ ridgetop

Onsite land uses: Pasture

Surrounding land uses: Pasture and rural residential

Disturbance: Mowing

Locally Significant Wetland Determination: Yes

H Wildlife Habitat NA Fish Habitat M Water Quality M Hydrologic Control Other:

Comments: Hydrology discharges from wetland into Peters Ditch through a ditch on ID #563. Site was mowed recently; scrub-shrub component if left un-mowed. Wetland conditions appear to extend off-site to the east and to the south of the study area. Likely connected to SC-6.

Dominant Vegetation (Scientific and Common Name) Entered by: sar QC by: cmw

Tree

Shrub

Spiraea douglasii	Douglas' spirea
Crataegus douglasii	black hawthorn

Herb

Alopecurus pratensis	meadow foxtail
Phalaris arundinacea	reed canarygrass
Juncus effusus	soft rush
Juncus tenuis	slender rush
Ranunculus repens	creeping buttercup

LOCAL WETLAND INVENTORY SUMMARY SHEET

City: Scio County: Linn Wetland Code: **SC-6**

Street Address: 39022 SE 4TH AVE

T, R, S, tax lots: 10S01W18AD07300; 10S01W18AD07202; 10S01W18D 00100

Investigators: Stacey Reed, Taya Cummins Sampling Date: 3/19/2010 Sample Plot Numbers: SCP-15

Onsite? Yes Observation Point: Photopoint Numbers: 50, 51, 52

Onsite parcels: (489) 10S01W18AD07202

Offsite parcels: (492) 10S01W18AD07300, (562) 10S01W18D 00100

Map: B Site #: 489, 492, 562

Cowardin Class (%): 100 PEM ___ PSS ___ PFO ___ POW ___ PUB Wetland Size (ac): 2.14

SS, FO subclass: ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7

1 Broad-leaved deciduous, 2 Needle-leaved deciduous, 3 Broad-leaved evergreen, 4 Needle-leaved evergreen, 5 Dead, 6 Deciduous, 7 Evergreen

Water Regime: ___ A ___ B X C ___ D ___ E ___ F ___ G ___ H ___ J ___ K

___ W ___ Y ___ Z ___ U

A Temporarily Flooded, B Saturated, C Seasonally Flooded, D Seasonally Flooded/Well-drained, E Seasonally Flooded/Saturated, F Semipermanently Flooded, G Intermittently Exposed, H Permanently Flooded, J Intermittently Flooded, K Artificially Flooded, W Intermittently Flooded/Temporary, Y Saturated/Semipermanent/Seasonal, Z Intermittently Exposed/Permanent, U Unknown

Special Modifier: ___ b X d ___ f ___ h ___ r ___ s ___ x

b beaver, d partially drained/ditched, f farmed, h diked/impounded, r artificial substrate, s spoil, x excavated

HGM Class: ___ riverine flowthrough ___ riverine impounding ___ lake fringe ___ depressional ___ slope X flats

Mapped Soil Unit(s): (28) Conser silty clay loam

Watershed Boundary (6th Field HUC) # : 170900060705 Name: Lower Thomas Creek

DSL File Numbers: None

Hydrology Sources: X groundwater ___ stream inflow ___ overbank flooding ___ runoff ___ precipitation

Topographic position: ___ hillslope ___ toeslope ___ depression ___ flood plain X terrace ___ valley bottom ___ swale ___ ridgetop

Onsite land uses: Residential and undeveloped

Surrounding land uses: Residential and undeveloped fields

Disturbance: French drain on ID#489, mowing, fill

Locally Significant Wetland Determination: Yes

H Wildlife Habitat NA Fish Habitat M Water Quality M Hydrologic Control Other:

Comments: The wetland on ID# 489 is drained through recently installed french drain. The french drain outfalls into a ditch along the southern property boundary. The ditch and wetland do not appear to have a surface water connection to Peters Ditch to the south (but may). Wetland extends east out of study area boundary and is likely connected to SC-5.

Dominant Vegetation (Scientific and Common Name) Entered by: sar QC by: cmw

Tree

Fraxinus latifolia Oregon ash

Shrub

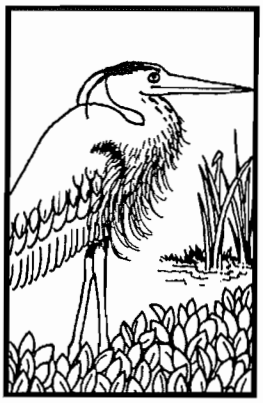
Herb

Alopecurus pratensis meadow foxtail

Schedonorus phoenix tall fescue

APPENDIX G

OFWAM Function Questions and Rationale



Wildlife habitat

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

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

Assessment questions

Question 1

How many Cowardin wetland classes are present?

Directions

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

Rural areas:

a. Three or four.
b. Two.
c. One.

Urban areas:

a. Two or more.
b. One class with more than five plant species.
c. One class with five or fewer plant species.

Rationale

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

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

Notes

Question 2

What is the dominant wetland vegetation cover type?

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

Directions

See question 23 in the Wetland Characterization.

Rationale

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

Question 3

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

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

Directions

See question 24 in the Wetland Characterization.

Rationale

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

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

WH2
see 23

Notes

24 p37

Question 4

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

Directions

See question 28 in the Wetland Characterization.

Rural areas:

a. More than 3 acres .
b. Between 0.5 and 3 acres.
c. Less than 0.5 acres.

Urban areas:

a. More than 1 acre.
b. Between 0.5 and 1 acre.
c. Less than 0.5 acres.

Rationale

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

Question 5

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

Directions

See question 18 in the Wetland Characterization.

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

Rationale

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

WH4

Notes

28

a+b

c

d

18

WH6

27

Notes

Question 6 *(for Western OR only)*

How is the wetland connected to other wetlands?

Directions

See question 27 in the Wetland Characterization.

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

Rationale

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

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

7+8

Question 7

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

Directions

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

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

Rationale

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

WHB
see 15

Question 8

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

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

Directions

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

Rationale

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

Notes

WH9b

Question 9a

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

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

Question 9b

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

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

Directions

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

Notes

26

Rationale

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

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

Wildlife habitat: assessment criteria

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

Fish habitat

Notes

This index assesses the contribution of wetlands connected to streams, rivers, lakes or ponds to fish habitat. **For this index, "connected to" implies a surface-water connection.** The assessment should be done on the reach of the stream or on a section of lake that actually borders the wetland or is contained within the wetland.

A stream is defined as a waterbody with a distinct channel and flow. Examples include sloughs, perennial streams and intermittent streams. If dikes or berms have been built on the stream banks between the stream and wetland that do not allow continual exchange of surface water, do not complete this index. If both a stream and lake are present, choose the one with the longest wetland surface connection.

Wetlands that contribute to habitat for fish include areas with dense, overhanging vegetation. This vegetation provides shade, cover and food sources to related waterways and lakes. Wetlands also provide spawning, rearing and resting opportunities for fish. However, a wetland need not actually contain fish to contribute to fish habitat because wetlands may perform important functions for fish-bearing waters downstream.

The assessment of fish habitat is divided into two parts. Part A evaluates the wetland habitat connected to rivers and streams. If there is no stream or river associated with the wetland, then leave Part A out of the assessment. Part B evaluates the wetland habitat connected to ponds (water greater than 6 feet deep) and lakes. If there is no lake or pond connected to the wetland, then leave Part B out of the assessment. If no stream, river, pond or lake is connected to the wetland, then leave this index out of the assessment altogether.

FH51

Assessment questions: Part A—streams

Question 1

What percentage of the stream is shaded by stream-side (riparian) vegetation?

Directions

See question 31 in the Wetland Characterization.

Western Oregon:
a. More than 75%.
b. Between 50% and 75%.
c. Less than 50%.

Eastern Oregon:
a. 50% or more. a+b
b. 25% or more, but less than 50%. c
c. Less than 25%. d

Rationale

Many Oregon streams are unsuitable for anadromous and resident fish because riparian vegetation has been cleared. High water temperatures that result from removal of stream-side vegetation can make a stream unsuitable for some fish species. Salmonids and some resident fish are particularly susceptible to elevated water temperatures. The amount and type of stream-bank cover also affects the amount of large woody debris in the stream or river system. In addition, stream-bank vegetation provides habitat for insects, an important food source for salmonids.

Question 2

What is the physical character of the stream channel?

Directions

See question 30 in the Wetland Characterization.

a. The stream is in a natural channel, or modified portions of the stream are returning to a natural channel.
b. Only portions of the stream channel are modified.
c. The stream is extensively modified or confined in a non-vegetated channel or pipe.

Rationale

Although the species or age composition of low- and high-gradient streams is different, both can provide habitat for fish. Artificially channelized or extensively modified streams, however, usually do not provide fish habitat as well as natural stream channels.

Notes

31

c+d

30

PHS3

32

Question 3

What percentage of the entire stream contains instream structures such as large woody debris, floating submerged vegetation, large rocks or boulders?

a. More than 25%.
b. Between 10% and 25%.
c. Less than 10%.

Directions

See question 32 in the Wetland Characterization.

Rationale

Cover is essential for good fish habitat. It provides refuge from predators and serves as substrate for insect larva, which are a good food source for some fish species. The presence of large pieces of woody material in pools is essential for providing adequate winter habitat for salmonid species. In addition, large pieces of woody material contribute to bank stability, dissipate energy, generate pool formation and encourage meandering. The breakdown of this material is also important in the nutrient cycle of the stream or river.

Question 4

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

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

Directions

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

Rationale

Poor water quality can harm many aquatic species. The whole character of a wetland ecosystem can change when it is exposed to nutrients and other chemicals beyond tolerable limits. Excess nutrients, for example, can cause oxygen deficiencies, which in turn can cause a species composition change in both plant and animal communities.

Notes

(7+8) = WH7

FHS 5

Question 5

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

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

Directions

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

Rationale

Fish habitat generally deteriorates as land use becomes more intensive, e.g., changes from forested land to agricultural land (including rangeland) to urban land. The change in intensity often changes the structure of the habitat and increases runoff, pollutant loading and sedimentation.

Question 6

Are fish present in a stream, lake or pond associated with the wetland?

a. Salmon, trout or sensitive species are present at some time during the year.
b. Species not covered in "a" are present at some time during the year.
c. No species are present at any time during the year.

Directions

See question 29 in the Wetland Characterization.

Rationale

The potential for a wetland to benefit fish is directly related to the presence of fish in the stream or river reach within or adjacent to the wetland.

Part B—lakes and ponds

Question 1

Does the lake or pond contain areas of both deep and shallow water?

a. Yes.
b. Cannot be determined.
c. No.

Directions

See question 33 in the Wetland Characterization.

Rationale

The depth of the pond or lake is important for spawning and may be important for rearing. A mixture of shallow, medium and deeper water is optimum to provide different habitat types.

Notes

WH 8

FHS 6

29

33

FHLP 2

Question 2

What percentage of the wetland complex contains cover objects such as submerged logs, floating or submerged vegetation, large rocks or boulders?

a. More than 25%.
b. Between 10% and 25%.
c. Less than 10%.

Directions

See question 35 in the Wetland Characterization.

35

Notes

Rationale

Cover is essential for good fish habitat. It provides refuge from predators and serves as substrate for insect larva, which are a food source for some fish species. The presence of large pieces of woody material in wetlands is essential for providing adequate winter habitat for salmonid species. In addition, large pieces of woody material contribute to bank stability and dissipate energy. The breakdown of this material is also important in the nutrient cycle of the pond or lake.

Question 3

What percentage of the shoreline is shaded at the water's edge by forested or scrub-shrub vegetation?

a. 60% or more.
b. 20% or more, but less than 60%.
c. Less than 20%.

Directions

See question 34 in the Wetland Characterization.

34

Rationale

Shoreline cover provides shading, which moderates water temperature in lakes and ponds. High water temperatures that result from removal of lake-side vegetation can make a lake unsuitable for some fish species. Shoreline vegetation also provides food, large pieces of woody debris and cover from predators. Woodland and scrubland vegetation provides more shading than herbaceous vegetation.

Question 4

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

Directions

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

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

Rationale

See Part A question 4.

Question 5

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

Directions

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

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

Rationale

See Part A question 5.

Question 6

Are fish in a stream, lake or pond associated with the wetland?

Directions

See question 29 in the Wetland Characterization.

a. Salmon, trout or sensitive species are present at some time during the year.
b. Species not covered in "a" are present at some time during the year.
c. No species are present at any time during the year.

Rationale

The potential for a wetland to benefit fish is directly related to the presence of fish in the pond or lake.

FHLP4

(7+8) Notes

=WH7

=WH 8

29

Fish habitat: assessment criteria

The wetland's fish habitat function is intact if:	Any three or more questions are answered "a," and no more than one is answered "c."
The wetland's fish habitat function is impacted or degraded if:	Answers do not satisfy the above- or below-listed criteria.
The wetland's fish habitat function is lost or not present if:	All questions are answered "c."

Notes

Water quality (pollutant removal)

Sediment trapping

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

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

Nutrient attenuation

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

Assessment questions

Question 1

What is the wetland's primary source of water?

Directions

See question 36 in the Wetland Characterization.

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

Rationale

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

Notes

WQ1
36

WQ2
37

Question 2

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

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

Directions

See question 37 in the Wetland Characterization.

Rationale

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

Notes

21
OW < 40%
OW = 40%
OW > 40%

Question 3

What is the degree of wetland vegetation cover?

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

Directions

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

Rationale

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

WQ4

17+27

Question 4

What is the wetland's area in acres?

Directions

See questions 17 and 27 in the Wetland Characterization.

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

Notes

Rationale

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

Question 5

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

Directions

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

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

15 or (WH18 c) same (WH18 a)

Rationale

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

WQ6
see 7+8

Question 6

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

Directions

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

a. One or more upstream or adjacent reaches are listed as *water quality limited* or in *severe* water quality condition for nonpoint source pollutants.

b. One or more upstream or adjacent reaches are listed in *moderate* water quality condition for nonpoint source pollutants.

c. No upstream or adjacent reaches are listed as *water quality limited,* and all upstream or adjacent reaches are listed as *no problem* (or no data available) for nonpoint source pollutants.

Notes

W1|7c

W1|7a

Rationale

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

Water quality: assessment criteria

A wetland's water-quality function is intact if:	Question 1 is answered "a" or "b," questions 2 and 3 are answered "a," and any other question is answered "a" or "b."
A wetland's water-quality function is impacted or degraded if:	Answers do not satisfy the above- or below-listed criteria.
A wetland's water-quality function is lost or not present if:	Four out of six questions are answered "c."

Hydrologic control
(flood control & water supply)

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

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

Notes

HC1
19

Assessment questions

Question 1

Is all or part of the wetland located within the 100-year floodplain or within an enclosed basin?

a. Yes.
b. No.

Directions

See question 19 in the Wetland Characterization.

Rationale

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

Question 2

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

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

Directions

See question 37 in the Wetland Characterization.

Rationale

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

Question 3

What is the wetland's area in acres?

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

Directions

See question 17 in the Wetland Characterization.

Rationale

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

Question 4

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

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

Directions

See question 38 in the Wetland Characterization.

Rationale

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

HC2

37

=WQ2

17

38

Notes

Question 5

What is the dominant wetland vegetation cover type?

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

Directions

See question 23 in the Wetland Characterization.

Rationale

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

Question 6

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

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

Directions

See question 16 in the Wetland Characterization.

Rationale

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

Question 7

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

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

Directions

See question 6 in the Wetland Characterization.

Rationale

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

Notes

HCS
23 same
= WH 2

(c should have higher value than b for the rationale)

16

6
a+b (mostly a in Wilsonville)
d in Lakeside

mostly b in Scio

Hydrologic control: assessment criteria

A wetland's hydrologic control function is intact if:	Four or more questions are answered "a."
A wetland's hydrologic control function is is impacted or degraded if:	Answers do not satisify the above- or below-listed criteria.
A wetland's hydrologic control function is lost or not present if:	Four or more questions are answered "c."

Notes

APPENDIX H

OFWAM Wetland Characterization Questions, Function Answer Sheets, and Function and Condition Summary Sheets

Oregon Freshwater Wetland Assessment Method (OFWAM) Questions
LCOG LWI Wetland(s) SC-1

(Questions 1-5 are watershed questions; see Section 2.2 in LWI Report)

WETLAND CHARACTERIZATION QUESTIONS

Land uses within the watershed

6. What is the dominant land use in the watershed upstream from the assessment area? (Modified for HC7)
   a. Urban or urbanizing (mix of urban, agriculture and forest uses).
   b. Agriculture (farming, ranching or grazing).
   c. Forested or natural area.

a	

Water quality - see DEQ website

7. Consult the most recent State of Oregon DEQ 305(b) Report to determine whether any streams in the study area are
   a. Streams or portions of streams within the study area are listed as water quality limited.
   b. No streams or portions of streams within the study area are listed as water quality limited.

a	Thomas Creek Water Quality Limited for Temperature year around

8. Consult the most recent Oregon Statewide Assessment of Nonpoint Sources of Water Pollution to determine the water
   a. All upstream reaches are listed as no problem (or no data available).
   b. One or more upstream reaches are listed in moderate water quality condition.
   c. One or more upstream reaches are listed in severe water quality condition.

b	Thomas Creek Moderate with data

Wetland Structure and Landscape

15 What percentage of area within 500 feet of the wetland edge is dedicated to these land uses?

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next two questions		

15 Modified for WH8: What is the dominant existing land use within 500 feet of the wetland's edge?
   a. Exclusive Forest Use or Open Space — b
   b. Agriculture
   c. Developed uses

15 Modified for WQ5: What is the dominant existing land use within 500 feet of the wetland's edge?
   c. Exclusive Forest Use or Open Space — b
   b. Agriculture
   a. Developed uses

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

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next question		

16 Modified for HC6: What is the dominant existing land use within 500 feet of the wetland on the downstream or down-
   a. Developed uses — b
   b. Agriculture
   c. Exclusive Forest Use or Open Space

17 What is the (entire) wetland acreage?

a	a. >5 acres	b. bet. 0.5 & 5 acres	c. < 0.5 acres

18 How is wetland connected to a stream, lake, or pond ? (see Figure, p. 35)

a	a. connected by surface water (culv., ditch, int./per. stream)	b. not connected to water body within 1 mile	c. not connected, no water bodies within 1 mile

19 Is all or part of the wetland located within the 100-year floodplain or within an enclosed basin?

a	a. yes	b. no

Wetland Habitat

21 What is percentage wetland area by Cowardin class (10% or more)?

	a. bet. 70% & 100%	b. bet. 50% & <70%	c. bet. 20% & <50%	d. bet. 10% & <20%
Open water (OW >6.6ft)				
Emergent (EM)				
Scrub-shrub (SS)				
Forested (FO)				

21 Modified for WH1: How many Cowardin wetland classes are present?	a
21 Modified for WQ3: What is the degree of wetland vegetation cover (H>60%/M/L<60%)?	a

23 What is the dominant wetland vegetation cover?

b	a. woody (FO & SS)	b. emergent and ponding, or open water only (EM w/ water or OW)	c. emergent vegetation only or wet meadow (EM)

24 How interspersed are the Cowardin classes (and upland inclusions)? (see Figure p. 37)

b	a. high	b. moderate	c. low

26 For urban areas, what percentage of the wetland edge is bordered by a vegetative buffer at least 25 feet wide?

a	a. >40%	b. bet. 10% & 40%	c. <10%

27 How is the wetland connected to other wetlands?

a	a. connected within 3 miles by surface water	b. not connected; wetlands present within 3 miles	c. not connected, no other wetlands within 3 miles

28 Estimate area of unvegetated, open water within the wetland.

b	a. >1 acres	b. bet. 0.5 and 1 acre	c. <0.5 acre

Fisheries Habitat

29 Are fish present in a stream, lake or pond connected to the wetland?

a	a. salmon, trout or sensitive species are present at some time during the year	b. other fish species are present at some time during the year	c. no species are present at any time during the year

Streams connected to the wetland

30 What is the physical character of the stream channel?

c	a. natural channel, or modified portions are returning to a natural channel	b.only portions of stream modified	c. extensively modified or confined in a non-vegetated channel or pipe

31 What percentage of the stream is shaded by riparian vegetation?

b	a. >75%	b. bet. 50% & 75%	c. <25%

32 What percentage of the stream contains instream structures such as large woody debris, floating/submerged vegetation, large rocks or boulders?

c	a. >25%	b. bet. 10% & 25%	c. <10%

Lakes or ponds (entire lake or pond and wetland complex)

33 Does the lake or pond contain areas of deep and shallow water?

	a. yes	b. cannot be determined	c. no

34 What percentage of the shoreline is shaded at the water's edge by forested or scrub-shrub vegetation?

	a. 60% or more	b. bet. 20% & <60%	c. <20%

35 What percentage of the wetland complex contains cover objects such as submerged logs, floating or submerged vegetation, large rocks or boulders?

	a. >25%	b. bet. 10% & 25%	c. <10%

Wetland Hydrology

36 What is the wetland's primary source of water? (emphasis on primary)

a	a. surface flow, including streams and ditches	b. precipitation or sheet flow	c. groundwater, including springs or seeps

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

a	a. yes (describe)	b. unable to determine or not applicable	c. no

38 Is the water flow out of the wetland restricted (beaver dam, concrete structure, undersized culvert)?

b	a. yes, restricted or no outlet	b. minor restrictions slow down the water (i.e., undersized culvert)	c. no, outlet has unrestricted flow

(bold questions =field; office review important for 15, 16, 26)

Oregon Freshwater Wetland Assessment Method (OFWAM) Questions
LCOG LWI Wetland(s) SC-2
(Questions 1-5 are watershed questions; see Section 2.2 in LWI Report)
WETLAND CHARACTERIZATION QUESTIONS
Land uses within the watershed
6. What is the dominant land use in the watershed upstream from the assessment area? (Modified for HC7)
a. Urban or urbanizing (mix of urban, agriculture and forest uses).
b. Agriculture (farming, ranching or grazing).
c. Forested or natural area.

a	

Water quality - see DEQ website
7. Consult the most recent State of Oregon DEQ 305(b) Report to determine whether any streams in the study area are listed
a. Streams or portions of streams within the study area are listed as water quality limited.
b. No streams or portions of streams within the study area are listed as water quality limited.

a	Thomas Creek Water Quality Limited for Temperature year around

8. Consult the most recent Oregon Statewide Assessment of Nonpoint Sources of Water Pollution to determine the water
a. All upstream reaches are listed as no problem (or no data available).
b. One or more upstream reaches are listed in moderate water quality condition.
c. One or more upstream reaches are listed in severe water quality condition.

b	Thomas Creek Moderate with data

Wetland Structure and Landscape
15 What percentage of area within 500 feet of the wetland edge is dedicated to these land uses?

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next two questions		

15 Modified for WH8: What is the dominant existing land use within 500 feet of the wetland's edge?
a. Exclusive Forest Use or Open Space — b
b. Agriculture
c. Developed uses
15 Modified for WQ5: What is the dominant existing land use within 500 feet of the wetland's edge?
c. Exclusive Forest Use or Open Space — b
b. Agriculture
a. Developed uses
16 What is the dominant existing land use within 500 feet of the wetland on the downstream or down-slope edge of the wetland?

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next question		

16 Modified for HC6: What is the dominant existing land use within 500 feet of the wetland on the downstream or down-slope edge of the wetland?
a. Developed uses — b
b. Agriculture
c. Exclusive Forest Use or Open Space
17 What is the (entire) wetland acreage?

a	a. >5 acres	b. bet. 0.5 & 5 acres	c. < 0.5 acres

18 How is wetland connected to a stream, lake, or pond ? (see Figure, p. 35)

a	a. connected by surface water (culv., ditch, int./per. stream)	b. not connected to water body within 1 mile	c. not connected, no water bodies within 1 mile

19 Is all or part of the wetland located within the 100-year floodplain or within an enclosed basin?

a	a. yes	b. no

Wetland Habitat

21 What is percentage wetland area by Cowardin class (10% or more)?

	a. bet. 70% & 100%	b. bet. 50% & <70%	c. bet. 20% & <50%	d. bet. 10% & <20%
Open water (OW >6.6ft)				
Emergent (EM)				
Scrub-shrub (SS)				
Forested (FO)				

21 Modified for WH1: How many Cowardin wetland classes are present?	a
21 Modified for WQ3: What is the degree of wetland vegetation cover (H>60%/M/L<60%)?	a

23 What is the dominant wetland vegetation cover?

a	a. woody (FO & SS)	b. emergent and ponding, or open water only (EM w/ water or OW)	c. emergent vegetation only or wet meadow (EM)

24 How interspersed are the Cowardin classes (and upland inclusions)? (see Figure p. 37)

b	a. high	b. moderate	c. low

26 For urban areas, what percentage of the wetland edge is bordered by a vegetative buffer at least 25 feet wide?

a	a. >40%	b. bet. 10% & 40%	c. <10%

27 How is the wetland connected to other wetlands?

a	a. connected within 3 miles by surface water	b. not connected; wetlands present within 3 miles	c. not connected, no other wetlands within 3 miles

28 Estimate area of unvegetated, open water within the wetland.

NA	a. >1 acres	b. bet. 0.5 and 1 acre	c. <0.5 acre

Fisheries Habitat

29 Are fish present in a stream, lake or pond connected to the wetland?

a	a. salmon, trout or sensitive species are present at some time during the year	b. other fish species are present at some time during the year	c. no species are present at any time during the year

Streams connected to the wetland

30 What is the physical character of the stream channel?

b	a. natural channel, or modified portions are returning to a natural channel	b.only portions of stream modified	c. extensively modified or confined in a non-vegetated channel or pipe

31 What percentage of the stream is shaded by riparian vegetation?

b	a. >75%	b. bet. 50% & 75%	c. <25%

32 What percentage of the stream contains instream structures such as large woody debris, floating/submerged vegetation, large rocks or boulders?

b	a. >25%	b. bet. 10% & 25%	c. <10%

Lakes or ponds (entire lake or pond and wetland complex)

33 Does the lake or pond contain areas of deep and shallow water?

na	a. yes	b. cannot be determined	c. no

34 What percentage of the shoreline is shaded at the water's edge by forested or scrub-shrub vegetation?

na	a. 60% or more	b. bet. 20% & <60%	c. <20%

35 What percentage of the wetland complex contains cover objects such as submerged logs, floating or submerged vegetation, large rocks or boulders?

na	a. >25%	b. bet. 10% & 25%	c. <10%

Wetland Hydrology

36 What is the wetland's primary source of water? (emphasis on primary)

a	a. surface flow, including streams and ditches	b. precipitation or sheet flow	c. groundwater, including springs or seeps

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

a	a. yes (describe)	b. unable to determine or not applicable	c. no

38 Is the water flow out of the wetland restricted (beaver dam, concrete structure, undersized culvert)?

b	a. yes, restricted or no outlet	b. minor restrictions slow down the water (i.e., undersized culvert)	c. no, outlet has unrestricted flow

(bold questions =field; office review important for 15, 16, 26)

Oregon Freshwater Wetland Assessment Function Questions
Answer Sheet

5/17/2010 - cmw

WETLAND	SC-1	
Wildlife Habitat		
1	a	
2	b	
3	b	
4	b	
5	a	Thomas Creek
6	a	
7	b	TC T° WQL/moderate NPSP
8	b	
9b	a	
provides diverse		

Fish Habitat		
Streams and Rivers (and ditches)		
1	b	50%
2	c	channelized
3	c	
4	b	
5	b	
6	a	
Lakes and Ponds		
1		
2		
3		
4		
5		
6		
impacted or degraded		

Water Quality (pollutant removal)		
1	a	
2	a	
3	a	
4	a	if combined with SC-2
5	b	
6	b	or a
intact		

Hydrologic Control (flood control & water supply)		
1	a	
2	a	
3	a	(combined with SC-2)
4	b	
5	b	
6	b	
7	a	
intact		

WETLAND	SC-2	
Wildlife Habitat		
1	a	
2	a	
3	b	
4	NA	
5	a	Thomas Creek
6	a	
7	b	TC T° WQL/moderate NPSP
8	b	
9b	a	
provides diverse		

Fish Habitat		
Streams and Rivers (and ditches)		
1	b	50%
2	b	
3	b	
4	b	
5	b	
6	a	
Lakes and Ponds		
1		
2		
3		
4		
5		
6		
impacted or degraded		

Water Quality (pollutant removal)		
1	a	
2	a	
3	a	
4	a	if combined with SC-2
5	b	
6	b	or a
intact		

Hydrologic Control (flood control & water supply)		
1	a	
2	a	
3	a	(combined with SC-2)
4	b	
5	a	
6	b	
7	a	
intact		

Oregon Freshwater Wetland Assessment
Function and Condition Summary Sheet

Wetland identification: SC-1 and SC-2

Function	Evaluation Descriptor	Rationale
Wildlife Habitat	provides diverse	Three wetland vegetation classes present, interspersed, large size.
Fish Habitat	impacted or degraded	Ditches are channelized, several small ponds present.
Water Quality	intact	Surface in-flow.
Hydrologic Control	intact	Within 100-year floodplain.
Narrative description of overall wetland functions and conditions		
SC-1 and SC-2 can be considered one unit. Channelized ditches connect to Thomas Creek and fish have been reported. Surface water inflow from several unnamed streams. Several ponded areas present, with interspersed habitat types. Thomas Creek WQ limited for T°; listed moderate (with data) for NonPoint Source Pollution; and Essential Salmonid Habitat for Steelhead (Upper Willamette River ESU, winter run) and Chinook salmon (Upper Willamette River ESU, spring run).		

Oregon Freshwater Wetland Assessment Method (OFWAM) Questions
LCOG LWI Wetland(s) SC-3

(Questions 1-5 are watershed questions; see Section 2.2 in LWI Report)

WETLAND CHARACTERIZATION QUESTIONS

Land uses within the watershed

6. What is the dominant land use in the watershed upstream from the assessment area? (Modified for HC7)
   a. Urban or urbanizing (mix of urban, agriculture and forest uses).
   b. Agriculture (farming, ranching or grazing).
   c. Forested or natural area.

b	

Water quality - see DEQ website

7. Consult the most recent State of Oregon DEQ 305(b) Report to determine whether any streams in the study area are
   a. Streams or portions of streams within the study area are listed as water quality limited.
   b. No streams or portions of streams within the study area are listed as water quality limited.

b	No data for Peters Ditch

8. Consult the most recent Oregon Statewide Assessment of Nonpoint Sources of Water Pollution to determine the water
   a. All upstream reaches are listed as no problem (or no data available).
   b. One or more upstream reaches are listed in moderate water quality condition.
   c. One or more upstream reaches are listed in severe water quality condition.

a	No data for Peters Ditch

Wetland Structure and Landscape

15 What percentage of area within 500 feet of the wetland edge is dedicated to these land uses?

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next two questions		

15 Modified for WH8: What is the dominant existing land use within 500 feet of the wetland's edge?
   a. Exclusive Forest Use or Open Space — b
   b. Agriculture
   c. Developed uses

15 Modified for WQ5: What is the dominant existing land use within 500 feet of the wetland's edge?
   c. Exclusive Forest Use or Open Space — b
   b. Agriculture
   a. Developed uses

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

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next question		

16 Modified for HC6: What is the dominant existing land use within 500 feet of the wetland on the downstream or down-
   a. Developed uses — b
   b. Agriculture
   c. Exclusive Forest Use or Open Space

17 What is the (entire) wetland acreage?

b	a. >5 acres	b. bet. 0.5 & 5 acres	c. < 0.5 acres

18 How is wetland connected to a stream, lake, or pond ? (see Figure, p. 35)

a	a. connected by surface water (culv., ditch, int./per. stream)	b. not connected to water body within 1 mile	c. not connected, no water bodies within 1 mile

19 Is all or part of the wetland located within the 100-year floodplain or within an enclosed basin?

a	a. yes	b. no

Wetland Habitat

21 What is percentage wetland area by Cowardin class (10% or more)?

	a. bet. 70% & 100%	b. bet. 50% & <70%	c. bet. 20% & <50%	d. bet. 10% & <20%
Open water (OW >6.6ft)				
Emergent (EM)				
Scrub-shrub (SS)				
Forested (FO)				

21 Modified for WH1: How many Cowardin wetland classes are present?	a
21 Modified for WQ3: What is the degree of wetland vegetation cover (H>60%/M/L<60%)?	a

23 What is the dominant wetland vegetation cover?

b	a. woody (FO & SS)	b. emergent and ponding, or open water only (EM w/ water or OW)	c. emergent vegetation only or wet meadow (EM)

24 How interspersed are the Cowardin classes (and upland inclusions)? (see Figure p. 37)

b	a. high	b. moderate	c. low

26 For urban areas, what percentage of the wetland edge is bordered by a vegetative buffer at least 25 feet wide?

a	a. >40%	b. bet. 10% & 40%	c. <10%

27 How is the wetland connected to other wetlands?

a	a. connected within 3 miles by surface water	b. not connected; wetlands present within 3 miles	c. not connected, no other wetlands within 3 miles

28 Estimate area of unvegetated, open water within the wetland.

NA or c	a. >1 acres	b. bet. 0.5 and 1 acre	c. <0.5 acre

Fisheries Habitat

29 Are fish present in a stream, lake or pond connected to the wetland?

na	a. salmon, trout or sensitive species are present at some time during the year	b. other fish species are present at some time during the year	c. no species are present at any time during the year

Streams connected to the wetland

30 What is the physical character of the stream channel?

na	a. natural channel, or modified portions are returning to a natural channel	b.only portions of stream modified	c. extensively modified or confined in a non-vegetated channel or pipe

31 What percentage of the stream is shaded by riparian vegetation?

na	a. >75%	b. bet. 50% & 75%	c. <25%

32 What percentage of the stream contains instream structures such as large woody debris, floating/submerged vegetation, large rocks or boulders?

na	a. >25%	b. bet. 10% & 25%	c. <10%

Lakes or ponds (entire lake or pond and wetland complex)

33 Does the lake or pond contain areas of deep and shallow water?

na	a. yes	b. cannot be determined	c. no

34 What percentage of the shoreline is shaded at the water's edge by forested or scrub-shrub vegetation?

na	a. 60% or more	b. bet. 20% & <60%	c. <20%

35 What percentage of the wetland complex contains cover objects such as submerged logs, floating or submerged vegetation, large rocks or boulders?

na	a. >25%	b. bet. 10% & 25%	c. <10%

Wetland Hydrology

36 What is the wetland's primary source of water? (emphasis on primary)

c	a. surface flow, including streams and ditches	b. precipitation or sheet flow	c. groundwater, including springs or seeps

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

a	a. yes (describe)	b. unable to determine or not applicable	c. no

38 Is the water flow out of the wetland restricted (beaver dam, concrete structure, undersized culvert)?

b	a. yes, restricted or no outlet	b. minor restrictions slow down the water (i.e., undersized culvert)	c. no, outlet has unrestricted flow

(bold questions =field; office review important for 15, 16, 26)

Oregon Freshwater Wetland Assessment Method (OFWAM) Questions
LCOG LWI Wetland(s) SC-4
(Questions 1-5 are watershed questions; see Section 2.2 in LWI Report)
WETLAND CHARACTERIZATION QUESTIONS
Land uses within the watershed
6. What is the dominant land use in the watershed upstream from the assessment area? (Modified for HC7)
a. Urban or urbanizing (mix of urban, agriculture and forest uses).
b. Agriculture (farming, ranching or grazing).
c. Forested or natural area.

b	

Water quality - see DEQ website
7. Consult the most recent State of Oregon DEQ 305(b) Report to determine whether any streams in the study area are listed
a. Streams or portions of streams within the study area are listed as water quality limited.
b. No streams or portions of streams within the study area are listed as water quality limited.

a	Thomas Creek Water Quality Limited for Temperature year around

8. Consult the most recent Oregon Statewide Assessment of Nonpoint Sources of Water Pollution to determine the water
a. All upstream reaches are listed as no problem (or no data available).
b. One or more upstream reaches are listed in moderate water quality condition.
c. One or more upstream reaches are listed in severe water quality condition.

b	Thomas Creek Moderate with data

Wetland Structure and Landscape
15 What percentage of area within 500 feet of the wetland edge is dedicated to these land uses?

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next two questions		

15 Modified for WH8: What is the dominant existing land use within 500 feet of the wetland's edge?
a. Exclusive Forest Use or Open Space — b
b. Agriculture
c. Developed uses
15 Modified for WQ5: What is the dominant existing land use within 500 feet of the wetland's edge?
c. Exclusive Forest Use or Open Space — b
b. Agriculture
a. Developed uses
16 What is the dominant existing land use within 500 feet of the wetland on the downstream or down-slope edge of the wetland?

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next question		

16 Modified for HC6: What is the dominant existing land use within 500 feet of the wetland on the downstream or down-slope edge of the wetland?
a. Developed uses — a
b. Agriculture
c. Exclusive Forest Use or Open Space
17 What is the (entire) wetland acreage?

b	a. >5 acres	b. bet. 0.5 & 5 acres	c. < 0.5 acres

18 How is wetland connected to a stream, lake, or pond ? (see Figure, p. 35)

a	a. connected by surface water (culv., ditch, int./per. stream)	b. not connected to water body within 1 mile	c. not connected, no water bodies within 1 mile

19 Is all or part of the wetland located within the 100-year floodplain or within an enclosed basin?

a	a. yes	b. no

Wetland Habitat

21 What is percentage wetland area by Cowardin class (10% or more)?

	a. bet. 70% & 100%	b. bet. 50% & <70%	c. bet. 20% & <50%	d. bet. 10% & <20%
Open water (OW >6.6ft)				
Emergent (EM)				
Scrub-shrub (SS)				
Forested (FO)				

21 Modified for WH1: How many Cowardin wetland classes are present?	b
21 Modified for WQ3: What is the degree of wetland vegetation cover (H>60%/M/L<60%)?	a

23 What is the dominant wetland vegetation cover?

a	a. woody (FO & SS)	b. emergent and ponding, or open water only (EM w/ water or OW)	c. emergent vegetation only or wet meadow (EM)

24 How interspersed are the Cowardin classes (and upland inclusions)? (see Figure p. 37)

b	a. high	b. moderate	c. low

26 For urban areas, what percentage of the wetland edge is bordered by a vegetative buffer at least 25 feet wide?

a	a. >40%	b. bet. 10% & 40%	c. <10%

27 How is the wetland connected to other wetlands?

a	a. connected within 3 miles by surface water	b. not connected; wetlands present within 3 miles	c. not connected, no other wetlands within 3 miles

28 Estimate area of unvegetated, open water within the wetland.

NA or c	a. >1 acres	b. bet. 0.5 and 1 acre	c. <0.5 acre

Fisheries Habitat

29 Are fish present in a stream, lake or pond connected to the wetland?

a	a. salmon, trout or sensitive species are present at some time during the year	b. other fish species are present at some time during the year	c. no species are present at any time during the year

Streams connected to the wetland

30 What is the physical character of the stream channel?

a	a. natural channel, or modified portions are returning to a natural channel	b.only portions of stream modified	c. extensively modified or confined in a non-vegetated channel or pipe

31 What percentage of the stream is shaded by riparian vegetation?

a	a. >75%	b. bet. 50% & 75%	c. <25%

32 What percentage of the stream contains instream structures such as large woody debris, floating/submerged vegetation, large rocks or boulders?

c	a. >25%	b. bet. 10% & 25%	c. <10%

Lakes or ponds (entire lake or pond and wetland complex)

33 Does the lake or pond contain areas of deep and shallow water?

na	a. yes	b. cannot be determined	c. no

34 What percentage of the shoreline is shaded at the water's edge by forested or scrub-shrub vegetation?

na	a. 60% or more	b. bet. 20% & <60%	c. <20%

35 What percentage of the wetland complex contains cover objects such as submerged logs, floating or submerged vegetation, large rocks or boulders?

na	a. >25%	b. bet. 10% & 25%	c. <10%

Wetland Hydrology

36 What is the wetland's primary source of water? (emphasis on primary)

a	a. surface flow, including streams and ditches	b. precipitation or sheet flow	c. groundwater, including springs or seeps

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

a	a. yes (describe)	b. unable to determine or not applicable	c. no

38 Is the water flow out of the wetland restricted (beaver dam, concrete structure, undersized culvert)?

b	a. yes, restricted or no outlet	b. minor restrictions slow down the water (i.e., undersized culvert)	c. no, outlet has unrestricted flow

(bold questions =field; office review important for 15, 16, 26)

Oregon Freshwater Wetland Assessment Function Questions
Answer Sheet

5/17/2010 - cmw

WETLAND	SC-3	
Wildlife Habitat		
1	a	includes PSS
2	b	
3	b	
4	NA or c	
5	a	Peters Ditch
6	a	
7	b	(no data for Peters Ditch)
8	b	some development
9b	a	
provides diverse		

WETLAND	SC-4	
Wildlife Habitat		
1	b	
2	a	
3	b	
4	NA or c	
5	a	Thomas Creek
6	a	
7	b	TC T° WQL/moderate NPSP
8	b	
9b	a	
provides diverse		

Fish Habitat		
Streams and Rivers (and ditches)		
1		
2		
3		
4		
5		
6		
Lakes and Ponds		
1		
2		
3		
4		
5		
6		
not applicable		

Fish Habitat		
Streams and Rivers (and ditches)		
1	a	
2	a	
3	c	
4	b	
5	b	
6	a	
Lakes and Ponds		
1		
2		
3		
4		
5		
6		
intact		

Water Quality (pollutant removal)		
1	c	
2	a	
3	a	
4	b	
5	b	
6	b	
impacted or degraded		

Water Quality (pollutant removal)		
1	a	
2	a	
3	a	
4	b	
5	b	
6	b	
intact		

Hydrologic Control (flood control & water supply)		
1	a	
2	a	
3	b	
4	b	
5	b	
6	b	
7	b	
impacted or degraded		

Hydrologic Control (flood control & water supply)		
1	a	
2	a	
3	b	
4	b	
5	a	
6	a	
7	b	
intact		

Oregon Freshwater Wetland Assessment
Function and Condition Summary Sheet

Wetland identification: SC-3

Function	Evaluation Descriptor	Rationale
Wildlife Habitat	provides diverse	Diverse herbaceous vegetation.
Fish Habitat	not applicable	
Water Quality	impacted or degraded	
Hydrologic Control	impacted or degraded	Within 100-year floodplain.
Narrative description of overall wetland functions and conditions		
Potential Wetland of Special Interest for Protection due to Northern Pacific pond turtle sighted in vicinity. No water quality data for Peters Ditch. Includes PSS, connected to Peters Ditch (no WQ data). Diverse vegetation. Potential for pond turtle in vicinity.		

Wetland identification: SC-4

Function	Evaluation Descriptor	Rationale
Wildlife Habitat	provides diverse	Forested cover.
Fish Habitat	intact	Stream channel present.
Water Quality	intact	Surface inflow.
Hydrologic Control	intact	Within 100-year floodplain.
Narrative description of overall wetland functions and conditions		
Potential Wetland of Special Interest for Protection due to Chinook salmon and Steelhead in Thomas Creek. Thomas Creek is water-quality limited for Temperature and moderate for nonpoint source pollution. Connected to Thomas Creek with inflowing stream. Forested.		

Oregon Freshwater Wetland Assessment Method (OFWAM) Questions

LCOG LWI Wetland(s) SC-5

(Questions 1-5 are watershed questions; see Section 2.2 in LWI Report)

WETLAND CHARACTERIZATION QUESTIONS

Land uses within the watershed

6. What is the dominant land use in the watershed upstream from the assessment area? (Modified for HC7)
   a. Urban or urbanizing (mix of urban, agriculture and forest uses).
   b. Agriculture (farming, ranching or grazing).
   c. Forested or natural area.

b	

Water quality - see DEQ website

7. Consult the most recent State of Oregon DEQ 305(b) Report to determine whether any streams in the study area are
   a. Streams or portions of streams within the study area are listed as water quality limited.
   b. No streams or portions of streams within the study area are listed as water quality limited.

b	No data for Peters Ditch

8. Consult the most recent Oregon Statewide Assessment of Nonpoint Sources of Water Pollution to determine the water
   a. All upstream reaches are listed as no problem (or no data available).
   b. One or more upstream reaches are listed in moderate water quality condition.
   c. One or more upstream reaches are listed in severe water quality condition.

a	No data for Peters Ditch

Wetland Structure and Landscape

15 What percentage of area within 500 feet of the wetland edge is dedicated to these land uses?

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next two questions		

15 Modified for WH8: What is the dominant existing land use within 500 feet of the wetland's edge?

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

15 Modified for WQ5: What is the dominant existing land use within 500 feet of the wetland's edge?

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

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

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next question		

16 Modified for HC6: What is the dominant existing land use within 500 feet of the wetland on the downstream or down-

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

17 What is the (entire) wetland acreage?

a	a. >5 acres	b. bet. 0.5 & 5 acres	c. < 0.5 acres

18 How is wetland connected to a stream, lake, or pond ? (see Figure, p. 35)

a	a. connected by surface water (culv., ditch, int./per. stream)	b. not connected to water body within 1 mile	c. not connected, no water bodies within 1 mile

19 Is all or part of the wetland located within the 100-year floodplain or within an enclosed basin?

a	a. yes	b. no

Wetland Habitat

21 What is percentage wetland area by Cowardin class (10% or more)?

	a. bet. 70% & 100%	b. bet. 50% & <70%	c. bet. 20% & <50%	d. bet. 10% & <20%
Open water (OW >6.6ft)				
Emergent (EM)				
Scrub-shrub (SS)				
Forested (FO)				

21 Modified for WH1: How many Cowardin wetland classes are present?	a
21 Modified for WQ3: What is the degree of wetland vegetation cover (H>60%/M/L<60%)?	a

23 What is the dominant wetland vegetation cover?

c	a. woody (FO & SS)	b. emergent and ponding, or open water only (EM w/ water or OW)	c. emergent vegetation only or wet meadow (EM)

24 How interspersed are the Cowardin classes (and upland inclusions)? (see Figure p. 37)

b	a. high	b. moderate	c. low

26 For urban areas, what percentage of the wetland edge is bordered by a vegetative buffer at least 25 feet wide?

a	a. >40%	b. bet. 10% & 40%	c. <10%

27 How is the wetland connected to other wetlands?

a	a. connected within 3 miles by surface water	b. not connected; wetlands present within 3 miles	c. not connected, no other wetlands within 3 miles

28 Estimate area of unvegetated, open water within the wetland.

NA or c	a. >1 acres	b. bet. 0.5 and 1 acre	c. <0.5 acre

Fisheries Habitat

29 Are fish present in a stream, lake or pond connected to the wetland?

	a. salmon, trout or sensitive species are present at some time during the year	b. other fish species are present at some time during the year	c. no species are present at any time during the year

Streams connected to the wetland

30 What is the physical character of the stream channel?

	a. natural channel, or modified portions are returning to a natural channel	b.only portions of stream modified	c. extensively modified or confined in a non-vegetated channel or pipe

31 What percentage of the stream is shaded by riparian vegetation?

	a. >75%	b. bet. 50% & 75%	c. <25%

32 What percentage of the stream contains instream structures such as large woody debris, floating/submerged vegetation, large rocks or boulders?

	a. >25%	b. bet. 10% & 25%	c. <10%

Lakes or ponds (entire lake or pond and wetland complex)

33 Does the lake or pond contain areas of deep and shallow water?

	a. yes	b. cannot be determined	c. no

34 What percentage of the shoreline is shaded at the water's edge by forested or scrub-shrub vegetation?

	a. 60% or more	b. bet. 20% & <60%	c. <20%

35 What percentage of the wetland complex contains cover objects such as submerged logs, floating or submerged vegetation, large rocks or boulders?

	a. >25%	b. bet. 10% & 25%	c. <10%

Wetland Hydrology

36 What is the wetland's primary source of water? (emphasis on primary)

c	a. surface flow, including streams and ditches	b. precipitation or sheet flow	c. groundwater, including springs or seeps

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

c	a. yes (describe)	b. unable to determine or not applicable	c. no

38 Is the water flow out of the wetland restricted (beaver dam, concrete structure, undersized culvert)?

a	a. yes, restricted or no outlet	b. minor restrictions slow down the water (i.e., undersized culvert)	c. no, outlet has unrestricted flow

(bold questions =field; office review important for 15, 16, 26)

Oregon Freshwater Wetland Assessment Method (OFWAM) Questions
LCOG LWI Wetland(s) SC-6
(Questions 1-5 are watershed questions; see Section 2.2 in LWI Report)
WETLAND CHARACTERIZATION QUESTIONS
Land uses within the watershed
6. What is the dominant land use in the watershed upstream from the assessment area? (Modified for HC7)
a. Urban or urbanizing (mix of urban, agriculture and forest uses).
b. Agriculture (farming, ranching or grazing).
c. Forested or natural area.

b	

Water quality - see DEQ website
7. Consult the most recent State of Oregon DEQ 305(b) Report to determine whether any streams in the study area are listed
a. Streams or portions of streams within the study area are listed as water quality limited.
b. No streams or portions of streams within the study area are listed as water quality limited.

b	No data for Peters Ditch

8. Consult the most recent Oregon Statewide Assessment of Nonpoint Sources of Water Pollution to determine the water
a. All upstream reaches are listed as no problem (or no data available).
b. One or more upstream reaches are listed in moderate water quality condition.
c. One or more upstream reaches are listed in severe water quality condition.

a	No data for Peters Ditch

Wetland Structure and Landscape
15 What percentage of area within 500 feet of the wetland edge is dedicated to these land uses?

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next two questions		

15 Modified for WH8: What is the dominant existing land use within 500 feet of the wetland's edge?
a. Exclusive Forest Use or Open Space — b
b. Agriculture
c. Developed uses

15 Modified for WQ5: What is the dominant existing land use within 500 feet of the wetland's edge?
c. Exclusive Forest Use or Open Space — b
b. Agriculture
a. Developed uses

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

	a. <20%	b. bet. 20% & 50%	c. >50%
1. Open Space 2. Agriculture 3. Exclusive Forest Use 4. Developed uses 5. Other	see next question		

16 Modified for HC6: What is the dominant existing land use within 500 feet of the wetland on the downstream or down-slope edge of the wetland?
a. Developed uses — b
b. Agriculture
c. Exclusive Forest Use or Open Space

17 What is the (entire) wetland acreage?

a	a. >5 acres	b. bet. 0.5 & 5 acres	c. < 0.5 acres

18 How is wetland connected to a stream, lake, or pond ? (see Figure, p. 35)

a	a. connected by surface water (culv., ditch, int./per. stream)	b. not connected to water body within 1 mile	c. not connected, no water bodies within 1 mile

19 Is all or part of the wetland located within the 100-year floodplain or within an enclosed basin?

a	a. yes	b. no

Wetland Habitat

21 What is percentage wetland area by Cowardin class (10% or more)?

	a. bet. 70% & 100%	b. bet. 50% & <70%	c. bet. 20% & <50%	d. bet. 10% & <20%
Open water (OW >6.6ft)				
Emergent (EM)				
Scrub-shrub (SS)				
Forested (FO)				

21 Modified for WH1: How many Cowardin wetland classes are present?	a
21 Modified for WQ3: What is the degree of wetland vegetation cover (H>60%/M/L<60%)?	a

23 What is the dominant wetland vegetation cover?

	a. woody (FO & SS)	b. emergent and ponding, or open water only (EM w/ water or OW)	c. emergent vegetation only or wet meadow (EM)
c			

24 How interspersed are the Cowardin classes (and upland inclusions)? (see Figure p. 37)

	a. high	b. moderate	c. low
b			

26 For urban areas, what percentage of the wetland edge is bordered by a vegetative buffer at least 25 feet wide?

	a. >40%	b. bet. 10% & 40%	c. <10%
a			

27 How is the wetland connected to other wetlands?

	a. connected within 3 miles by surface water	b. not connected; wetlands present within 3 miles	c. not connected, no other wetlands within 3 miles
a			

28 Estimate area of unvegetated, open water within the wetland.

	a. >1 acres	b. bet. 0.5 and 1 acre	c. <0.5 acre
NA or c			

Fisheries Habitat

29 Are fish present in a stream, lake or pond connected to the wetland?

	a. salmon, trout or sensitive species are present at some time during the year	b. other fish species are present at some time during the year	c. no species are present at any time during the year

Streams connected to the wetland

30 What is the physical character of the stream channel?

	a. natural channel, or modified portions are returning to a natural channel	b.only portions of stream modified	c. extensively modified or confined in a non-vegetated channel or pipe

31 What percentage of the stream is shaded by riparian vegetation?

	a. >75%	b. bet. 50% & 75%	c. <25%

32 What percentage of the stream contains instream structures such as large woody debris, floating/submerged vegetation, large rocks or boulders?

	a. >25%	b. bet. 10% & 25%	c. <10%

Lakes or ponds (entire lake or pond and wetland complex)

33 Does the lake or pond contain areas of deep and shallow water?

	a. yes	b. cannot be determined	c. no

34 What percentage of the shoreline is shaded at the water's edge by forested or scrub-shrub vegetation?

	a. 60% or more	b. bet. 20% & <60%	c. <20%

35 What percentage of the wetland complex contains cover objects such as submerged logs, floating or submerged vegetation, large rocks or boulders?

	a. >25%	b. bet. 10% & 25%	c. <10%

Wetland Hydrology

36 What is the wetland's primary source of water? (emphasis on primary)

c	a. surface flow, including streams and ditches	b. precipitation or sheet flow	c. groundwater, including springs or seeps

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

c	a. yes (describe)	b. unable to determine or not applicable	c. no

38 Is the water flow out of the wetland restricted (beaver dam, concrete structure, undersized culvert)?

a or b	a. yes, restricted or no outlet	b. minor restrictions slow down the water (i.e., undersized culvert)	c. no, outlet has unrestricted flow

(bold questions =field; office review important for 15, 16, 26)

Oregon Freshwater Wetland Assessment Function Questions
Answer Sheet

5/17/2010 - cmw

WETLAND	SC-5	
Wildlife Habitat		
1	a	
2	c	
3	b	
4	NA or c	
5	a	
6	a	
7	b	(no data for Peters Ditch)
8	b	
9b	a	
provides diverse		

WETLAND	SC-6	
Wildlife Habitat		
1	a	
2	c	
3	b	
4	NA or c	
5	a	
6	a	
7	b	(no data for Peters Ditch)
8	b	
9b	a	
provides diverse		

Fish Habitat		
Streams and Rivers (and ditches)		
1		
2		
3		
4		
5		
6		
Lakes and Ponds		
1		
2		
3		
4		
5		
6		
not applicable		

Fish Habitat		
Streams and Rivers (and ditches)		
1		
2		
3		
4		
5		
6		
Lakes and Ponds		
1		
2		
3		
4		
5		
6		
not applicable		

Water Quality (pollutant removal)		
1	c	
2	c	
3	a	
4	a	
5	b	
6	b	
impacted or degraded		

Water Quality (pollutant removal)		
1	c	
2	c	
3	a	
4	a	
5	b	
6	b	
impacted or degraded		

Hydrologic Control (flood control & water supply)		
1	a	
2	c	
3	a	
4	a	
5	c	
6	b	
7	b	
impacted or degraded		

Hydrologic Control (flood control & water supply)		
1	a	
2	c	
3	a	
4	a or b	
5	c	
6	b	
7	b	
impacted or degraded		

Oregon Freshwater Wetland Assessment
Function and Condition Summary Sheet

Wetland identification: SC-5 and SC-6

Function	Evaluation Descriptor	Rationale
Wildlife Habitat	provides diverse	Most disturbed wetlands, mowed with ditching. Provides meadow / pasture habitat for insects and small birds.
Fish Habitat	not applicable	
Water Quality	impacted or degraded	
Hydrologic Control	impacted or degraded	

Narrative description of overall wetland functions and conditions

Wetlands SC-5 and SC-6 may connect outside study area. SC-5 and SC-6 can be considered one unit; both extend outside study area to larger more diverse wetland. All wetlands in study area are located within FEMA-mapped 100 year flood plain.

APPENDIX I

OFWAM Assessment Results and Locally Significant Wetland Determination

City of Scio Local Wetland Inventory Results

OFWAM Results and Locally Significant Wetland Determination

Wetland Code	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	Notes / Other Locally Significant Features	Locally Significant Wetland?
SC-1	H	M	H	H	SC-1 and SC-2 can be considered one unit. Channelized ditches connect to Thomas Creek and fish have been reported. Surface water inflow from several unnamed streams. Several ponded areas present, with interspersed habitat types. Thomas Creek WQ limited for T°; listed moderate (with data) for NonPoint Source Pollution; and Essential Salmonid Habitat for Steelhead (Upper Willamette River ESU, winter run) and Chinook salmon (Upper Willamette River ESU, spring run).	Yes
SC-2	H	M	H	H		Yes
SC-3	H	NA	M	M	Includes PSS, connected to Peters Ditch (no WQ data). Diverse vegetation. Potential for pond turtle in vicinity.	Yes
SC-4	H	H	H	H	Connected to Thomas Creek with inflowing stream. Forested.	Yes
SC-5	H	NA	M	M	SC-5 and SC-6 can be considered one unit; both extend outside study area to larger more diverse wetland. All wetlands in study area are located within FEMA-mapped 100 year flood plain.	Yes
SC-6	H	NA	M	M		Yes

H (High):	provides diverse wildlife habitat	intact	intact	intact
M (Medium):	provides habitat for some wildlife species	impacted or degraded	impacted or degraded	impacted or degraded
L (Low):	lost or not present	lost or not present	lost or not present	lost or not present
NA:	Not Applicable			

APPENDIX J

Staff Qualifications

C. Mirth Walker, PWS, CWD, Senior Wetland Scientist, B.A. Biology and Psychology

Responsibilities: Mirth provided project management and quality assurance/quality review. She assisted with the field work, data entry and analysis, digitizing, and report preparation. Mirth conducted the OFWAM assessment for this project.

Mirth is certified by the Society of Wetland Scientists as a Professional Wetland Scientist (PWS #415, 1995) and provisionally certified by the Seattle District Corps of Engineers as a Certified Wetland Delineator (CWD, 1993).

Mirth Walker has been conducting wetland determinations and delineations since 1990. She joined SWCA in 1994 and is well-respected among Oregon's wetland professionals at consulting firms and agencies alike. At SWCA, she is responsible for project management and staff mentoring; conducting wetland determinations and delineations; assessing habitat, vegetation communities, and wetland functions; wetland and natural resource permit coordination at the local, state, and federal level; designing wetland mitigation plans including restoration, enhancement, and creation plans; conducting local wetland and riparian corridor inventories; and providing quality control. Mirth is an expert aerial photograph interpreter, and she has mapped wetland, riparian, and upland habitats on aerial photograph base maps and provided ground-truthing for numerous Local Wetland Inventory, Riparian Corridor Inventory, and Upland Natural Resource Inventory and Assessment projects in Oregon. Mirth routinely provides QA/QC to SWCA's wetland and natural resource projects, and SWCA's deliverables benefit greatly from her skilled eye, attention to detail, and depth of knowledge. Mirth is committed to providing high-quality service in an efficient manner, and she is very responsive to client needs.

Mirth has conducted and managed many wetland assessments and inventories at SWCA, including Ashland, Hillsboro, La Grande, Lakeside, Stayton, West King City, and Wilsonville. She also conducted wetland inventory work for Gresham, Tigard, and Tualatin, and has over 19 years experience in wetland field work. Mirth has been trained in wetland delineation (1987 Manual and Regional Supplements), HGM, and she assisted with the field verification of the OFWAM. Ms. Walker has provided review and comments to DSL rule revisions, including the LWI methods. She brings a high level of proficiency to this project and routinely manages large and complex projects with multiple team players. Her strengths include all things wetland, as well as her communication and writing skills.

Stacey Reed, Wetland Scientist, B.A. Environmental Science

Responsibilities: Stacey ran the initial public meetings, led the field crew for this project, and ensured efficiency of data collection and mapping. Stacey coordinated field access with the public, conducted field work, digitized wetland boundaries and stream banks, and entered wetland data.

Stacey Reed joined SWCA in 2005. Since 2003, she has evaluated natural ecosystem attributes in Pacific Northwest habitats. She has completed studies of biological and ecological natural functions, the influence of human development impacts, and assessment and design of restoration and mitigation solutions. Stacey's responsibilities include conducting wetland determinations and delineations and wetland functional assessments, and preparing wetland permit applications and mitigation plans. Her experience also includes performing environmental and habitat assessments in a range of Northwest ecosystems, including freshwater wetlands, streams and rivers, marine shorelines, estuarine habitats, and lowland and montane forests.

Stacey has worked on many wetland projects, specializing in soils, and recently attended the Oregon Streamflow Duration Assessment Method training from the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers Portland District. She also attended a two-day ORWAP training from the DSL and participated in the ORWAP repeatability study. In addition to her outstanding wetland identification and delineation skills and wetland assessment experience, her strengths include her excellent interpersonal skills, her enthusiastic attitude, and her willingness to do what needs to be done as efficiently as possible. She is well-organized and excels at prioritizing level of effort among multiple tasks.

Taya Cummins, Botanist / Wetlands Scientist, M.S. Biology, B.S. Forestry and Natural Resources Management

Responsibilities: Taya assisted with LWI field work and wetland data entry.

Taya Cummins joined SWCA in 2006. With more than 10 years of experience, Taya is competent in managing natural resources, including habitat restoration, native plant identification using taxonomic keys, vegetation community mapping and surveying, and the delineation of wetlands; she is trained by the Corps of Engineers in wetland delineation. She manages projects and conducts a variety of biological surveys including rare plant surveys and monitoring vegetation for mitigation projects. Prior to joining SWCA, Taya led a field crew involved in implementing a Burned Area Emergency Rehabilitation contract for the U.S. National Park Service. During this project, she mapped extensive weed populations, managed large-scale weed eradication, and conducted habitat restoration. This survey included approximately 45 million acres and over 50 National Vegetation Classification System vegetation types. Taya has authored and co-authored a variety of technical reports submitted to agencies including federal, state, and local governments. Taya's botany background combined with her recent project experience with large wetland and vegetation mapping projects made her a valuable asset to this project.

Jesse Wilson, Wetland Scientist, B.S. Biology

Responsibilities: Jesse assisted with LWI field work and wetland data entry.

Jesse Wilson joined SWCA in 2008. Jesse specializes in conducting wetland delineations and habitat assessments and preparing wetland permit applications and mitigation and restoration plans for residential, commercial/retail and public works projects. Jesse has conducted numerous wetland delineations using the wetland evaluation procedures outlined in the 1987 Army Corps of Engineers Wetland Delineation Manual and the recently adopted Regional Supplements, and has been trained in ORWAP. He is also experienced in conducting functional assessments of delineated wetlands, habitat assessments and rare, threatened and endangered species assessments. Jesse has proven experience designing and permitting wetland and habitat mitigation plans for a variety of clients and project types. In addition, Jesse has worked with many clients to develop restoration plans to resolve wetland and habitat violations, mitigate for unauthorized impacts and satisfy local, state, and federal regulations. Jesse has lead field efforts and managed data entry for several recent delineation projects ranging up to 124,000 acres.

Rafael Gutierrez, GIS Manager, B.S. Physical Geography

Responsibilities: Rafael managed the consultant's GIS portion of this project, participated in the LiDAR component of this project, and coordinated with LCOG GIS staff.

Rafael Gutierrez joined SWCA in 2001 and is SWCA's GIS manager, serving natural and cultural resource projects. Rafael's responsibilities include supervision of GIS technicians and specialists, GIS project workload, workflow planning and design, spatial database development and maintenance, maintaining interoperabilty between many file formats, GIS analysis and interpretation, and cartographic production. Rafael's natural resources background includes landcover mapping, habitat modeling, geoprocessing, restoration projects, wetland delineations, stream assessments and aquatic applications. Rafael also provides GPS support for the cultural and natural resource staff using ArcPad 8.0 and Application Builder to create custom applications. Rafael designs and manages projects with modeling components using current tools and techniques within the ArcGIS Geoprocessing framework. He also has a strong background in cartography, database design, and web development. He has managed the GIS portions of many large wetland inventory projects (thousands of acres) throughout Oregon and Washington.

Melissa Katz-Moye, GIS Specialist, M.S., Geological Sciences, B.S., Geology

Responsibilities: Melissa developed the geodatabase and prepared field maps for the project and coordinated with LCOG GIS staff.

Melissa Katz-Moye designs and implements sensitivity analysis models and geodatabases for natural and cultural resources projects. Other SWCA projects include, exploration of interpolation techniques for substrate mapping, site suitability planning for conceptual development and wetland mitigation, cultural resource planning and mapping, and database design and development. Melissa has worked on a variety of projects as a SWCA contractor with the U.S. Fish and Wildlife Service (USFWS). She has conducted several projects for USFWS Refuge Planning, including managing a vegetation mapping project, habitat modeling for snowy plover, ortho-rectification of current and historical imagery, and preparation of digital ortho quarter quadrangle images for every refuge in the USFWS Pacific Region (including Washington, Oregon, California, Idaho, Nevada, Hawaii, and the Remote Pacific Islands). Other USFWS projects include the design and implementation of the GIS and Spatial Data Services Branch Intranet site; a web-based project tracking log and a web-based data tracking log, both built using ColdFusion and a SQL server database; and several interactive and animated Flash applications for the visualization and organization of various data. In the past, Melissa acted as project manager for a vegetation mapping project at Humboldt Bay National Wildlife Refuge in Arcata, California. Tasks included flight planning and coordination of private, state, and federal organizations to ortho-rectification, color-balancing, and mosaicking of several sets of aerial photographs. The project also involved extensive field work, data analysis, and classification. Melissa has a strong background in both GIS and cartography, and has won several awards for both static and digital and interactive maps.

Denise Kalakay, Senior Water Resources Planner, Water Resources Team Manager, LCOG; Master, Urban and Regional Planning; Master minor, Water Resources

Responsibilities: Denise is the Project Manager for the Multi City/County Water Resource Assessment Project managing the wetland and riparian area inventories and assessment process through to the policy implementation phase. Along with Contract an d Project Management, Denise coordinated LWI report revisions.

Denise Kalakay is a Senior Water Resources Planner and Water Resources Team Manager at Lane Council of Governments where she has worked since 1995. Her academic and professional background offers an array of skills related to the analytical, economic, social, scientific, and

political aspects of natural resource assessment and planning. Denise developed a blend of technical and planning skills while earning her Masters degree in Urban and Regional Planning at the University of Oregon with a Masters Minor in Water Resources from Oregon State University. Denise is a project manager in developing ground and surface water assessment and protection programs in several cities and counties in Oregon. The cornerstones of these programs are to first provide a technical assessment and analysis of resource sites and then to balance diverse land use interests to achieve a level of environmental protection that fits the needs of individual jurisdictions. Denise specializes in regional natural resource planning as the project manager for the Southern Willamette Groundwater Management Area and a regional planning effort to address total maximum daily load (TMDL) allocations in nine jurisdictions within Lane County in the Willamette River Basin.

Jacob Callister, Assistant Planner, LCOG; Master, Community and Regional Planning, B.S. Natural Resource Management

Responsibilities: Jacob prepared base maps, coordinated landowner contact and response, and prepared final LWI maps.

As a member of LCOG's Natural Resource planning group, Jacob has participated in and led a number of natural resource projects. These projects have addressed a range of resources including groundwater, wetlands, riparian systems, and open space. Jacob also has significant familiarity with land use principles and the relationship between natural resources and land use. Jacob has seven years of applied GIS experience and currently teaches a GIS course at the University of Oregon. Jacob has a Bachelors Degree in Natural Resource Management from Utah State University (2004) and has a Master's Degree in Community and Regional Planning from the University of Oregon (2007).

APPENDIX K

Local Wetland Inventory Maps