Oregon
Theodore R. Kulongoski, Governor

Department of Land Conservation and Development
635 Capitol Street, Suite 150
Salem, OR 97301-2540
(503) 373-0050
Fax (503) 378-5518
www.lcd.state.or.us

NOTICE OF ADOPTED AMENDMENT

February 23, 2007

TO: Subscribers to Notice of Adopted Plan
or Land Use Regulation Amendments

FROM: Mara Ulloa, Plan Amendment Program Specialist

SUBJECT: City of West Linn Plan Amendment
DLCD File Number 004-06

The Department of Land Conservation and Development (DLCD) received the attached notice of adoption. Due to the size of amended material submitted, a complete copy has not been attached. A copy of the adopted plan amendment is available for review at the DLCD office in Salem and the local government office.

Appeal Procedures*

DLCD ACKNOWLEDGMENT or DEADLINE TO APPEAL: March 9, 2007

This amendment was submitted to DLCD for review 45 days prior to adoption. Pursuant to ORS 197.830 (2)(b) only persons who participated in the local government proceedings leading to adoption of the amendment are eligible to appeal this decision to the Land Use Board of Appeals (LUBA).

If you wish to appeal, you must file a notice of intent to appeal with the Land Use Board of Appeals (LUBA) no later than 21 days from the date the decision was mailed to you by the local government. If you have questions, check with the local government to determine the appeal deadline. Copies of the notice of intent to appeal must be served upon the local government and others who received written notice of the final decision from the local government. The notice of intent to appeal must be served and filed in the form and manner prescribed by LUBA, (OAR Chapter 661, Division 10). Please call LUBA at 503-373-1265, if you have questions about appeal procedures.

***NOTE:** **THE APPEAL DEADLINE IS BASED UPON THE DATE THE DECISION WAS MAILED BY LOCAL GOVERNMENT. A DECISION MAY HAVE BEEN MAILED TO YOU ON A DIFFERENT DATE THAN IT WAS MAILED TO DLCD. AS A RESULT YOUR APPEAL DEADLINE MAY BE EARLIER THAN THE ABOVE DATE SPECIFIED.**

Cc: Gloria Gardiner, DLCD Urban Planning Specialist
Amanda Punton, DLCD Natural Resource Specialist
Gordon Howard, City of West Linn

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FORM 2

DLCD
Notice of Adoption

THIS FORM **MUST BE MAILED** TO DLCD
WITHIN 5 WORKING DAYS AFTER THE FINAL DECISION
PER ORS 197.610, OAR CHAPTER 660 - DIVISION 18

☐ In person ☐ electronic ☐ mailed

DATE STAMP
DEPT OF
FEB 20 2007
LAND CONSERVATION AND DEVELOPMENT

Jurisdiction: **West Linn**
Local file number: **MIS 05-43**
Date of Adoption: **2/12/2007**
Date Mailed: **2/16/2007**
Was a Notice of Proposed Amendment (Form 1) mailed to DLCD? **Yes** Date: 9/1/2006

☐ Comprehensive Plan Text Amendment
☐ Comprehensive Plan Map Amendment
☒ Land Use Regulation Amendment
☐ Zoning Map Amendment
☒ New Land Use Regulation
☐ Other:

Summarize the adopted amendment. Do not use technical terms. Do not write "See Attached".

Adoption of wetlands and riparian corridor inventories for the City of West Linn. Comprehensive amendments to the West Linn Community Development Code provisions for protection of natural drainageways, riparian corridors, and wetlands. Full compliance with Metro Functional Plan Title 3, and partial compliance with Metro Functional Plan Title 13.

Does the Adoption differ from proposal? Yes, Please explain below:

The final version of code amendments adopted by the City Council has minor diffferences from the draft sent to DLCD in September 2006. The amendments allow more thorough compliance with Metro's Title 3 and Title 13.

Plan Map Changed from: **n/a** to:
Zone Map Changed from: **addition of overlay districts** to:
Location: **Citywide** Acres Involved:
Specify Density: Previous: **n/a** New:
Applicable statewide planning goals:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Was an Exception Adopted? ☐ YES ☒ NO
Did DLCD receive a Notice of Proposed Amendment...
45-days prior to first evidentiary hearing? ☒ **Yes** ☐ **No**

DLCD # 004-06 (15532)

If no, do the statewide planning goals apply? ☐ Yes ☐ No

If no, did Emergency Circumstances require immediate adoption? ☐ Yes ☐ No

DLCD file No. _____

Please list all affected State or Federal Agencies, Local Governments or Special Districts:

File No. 004-06
CLACKAMAS COUNTY, METRO, ODOT, DSL, ODF&W, U.S. ARMY CORPS OF ENGINEERS

Local Contact: **Gordon Howard** Phone: **(503) 656-4211** Extension:

Address: **22500 Salamo Road** Fax Number: **503-656-4106**

City: **West Linn** Zip: **97068-** E-mail Address: **ghoward@ci.west-linn.or.us**

ADOPTION SUBMITTAL REQUIREMENTS

This form **must be mailed** to DLCD **within 5 working days after the final decision**
per ORS 197.610, OAR Chapter 660 - Division 18.

1. Send this Form and **TWO Complete Copies** (documents and maps) of the Adopted Amendment to:

ATTENTION: PLAN AMENDMENT SPECIALIST
DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT
635 CAPITOL STREET NE, SUITE 150
SALEM, OREGON 97301-2540

2. Electronic Submittals: At least **one** hard copy must be sent by mail or in person, but you may also submit an electronic copy, by either email or FTP. You may connect to this address to FTP proposals and adoptions: **webserver.lcd.state.or.us**. To obtain our Username and password for FTP, call Mara Ulloa at 503-373-0050 extension 238, or by emailing **mara.ulloa@state.or.us**.

3. Please Note: Adopted materials must be sent to DLCD not later than **FIVE (5) working days** following the date of the final decision on the amendment.

4. Submittal of this Notice of Adoption must include the text of the amendment plus adopted findings and supplementary information.

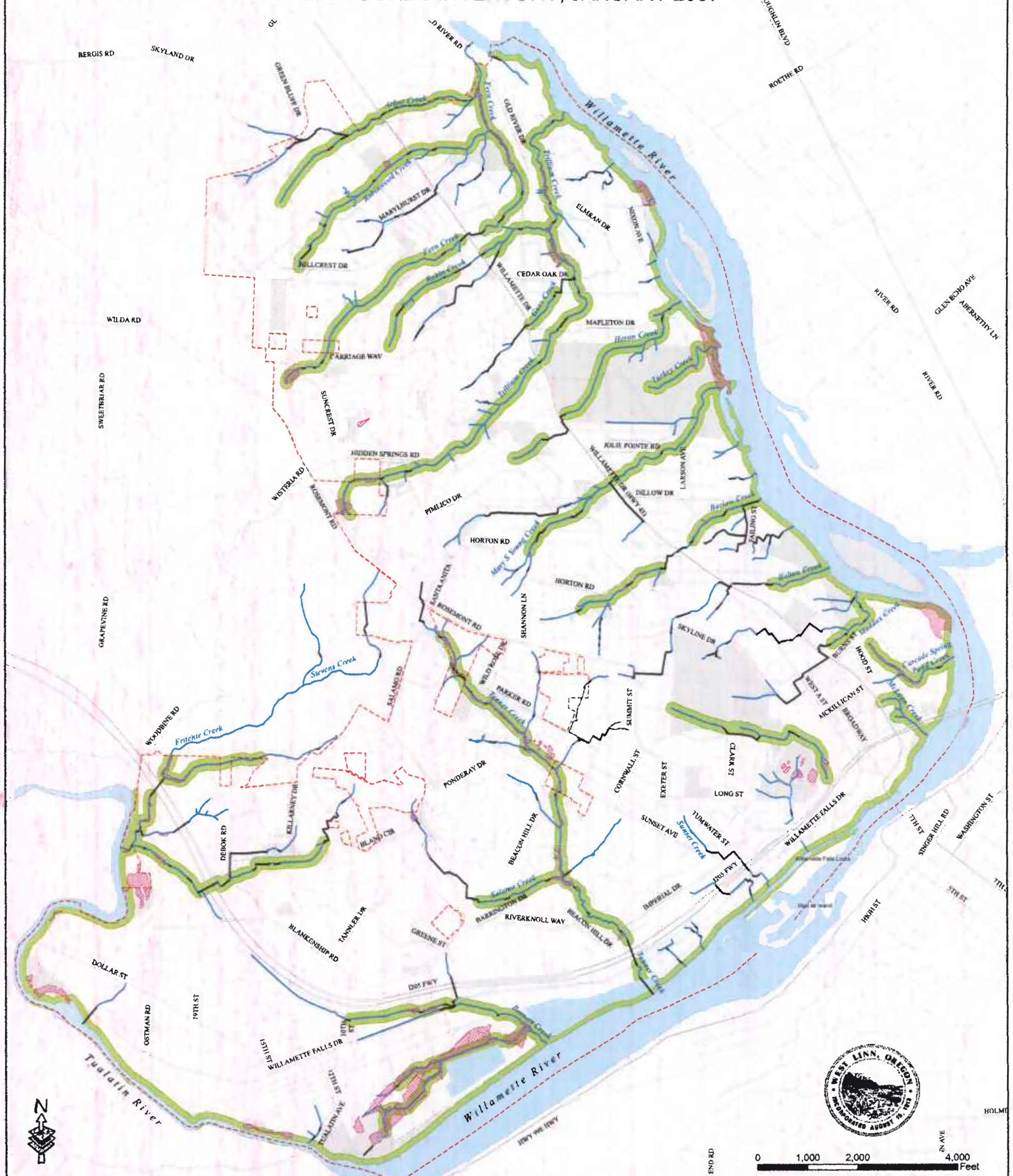
5. The deadline to appeal will not be extended if you submit this notice of adoption within five working days of the final decision. Appeals to LUBA may be filed within **TWENTY-ONE (21) days** of the date, the Notice of Adoption is sent to DLCD.

6. In addition to sending the Notice of Adoption to DLCD, you must notify persons who participated in the local hearing and requested notice of the final decision.

7. **Need More Copies?** You can now access these forms online at **http://www.lcd.state.or.us/**. Please print on **8-1/2x11 green paper only**. You may also call the DLCD Office at (503) 373-0050; or Fax

Significant Riparian Corridors

WEST LINN GOAL 5 INVENTORY, JANUARY 2007



Legend

- Significant Riparian Corridors
- Streams
- Piped Segments
- Other Open Ditches
- Rivers
- DSL Approved Wetlands, 2005
- Parks, Open Space, & Natural Areas*
- West Linn City Limits

** Includes some areas of other misc. city property ("City" type classification) See Parks, Open Space, & Natural Areas Map*

GOAL5_2006 \ signparian.mxd \ K.AHA \ 1-2-07 (1st draft)
This map was created from Riparian.mxd and published map dated July 2006

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Property information Taxlot Base Source: Clackamas County GIS

WETLANDS/GOAL 5 DISCLAIMER (DSL STANDARD):
Information shown on this map is for planning purposes only and wetland information is subject to change. There may be unmapped wetlands subject to regulation and all wetland boundary mapping is approximate. In all cases, actual field conditions determine wetland boundaries. You are advised to contact the Oregon Division of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

ORDINANCE NO. 1545
WEST LINN, OREGON

AN ORDINANCE ADOPTING A LOCAL WETLANDS INVENTORY, A RIPARIAN CORRIDOR INVENTORY, AND AMENDMENTS TO THE WEST LINN COMMUNITY DEVELOPMENT CODE, CHAPTERS 2, 30, 32, AND 99

WHEREAS, West Linn has important and significant natural resources in the form of wetlands, natural drainageways, and riparian corridors, traversing through the varied terrain of the city; and,

WHEREAS, In 2006 West Linn adopted a Surface Water Management Plan to better protect water quality and control storm runoff within the city, including providing appropriately-sized natural corridors with open water channels for natural stream and storm water flows; and,

WHEREAS, the Metro Functional Plan, adopted in 1998, requires, under Title 3 of the Plan, that West Linn to adopt natural area setbacks from drainageways and wetlands within the city in excess of current city standards; and,

WHEREAS, the proposed amendments to Chapter 32 of the West Linn Community Development Code will provide a regulatory system for drainageway protection that complies with Metro's standards and also implements the West Linn Surface Water Management Plan; and,

WHEREAS, in 2001 West Linn embarked on a program to update the city's protection of natural and environmental resources, including riparian corridors and wetlands, under the guidelines set forth by Oregon Statewide Planning Goal 5; and

WHEREAS, in 2003 the City commissioned and completed comprehensive inventories of both wetlands and riparian areas within West Linn, both being prepared by professional experts and in compliance with Oregon guidelines for preparation of Goal 5 inventories; and

WHEREAS, in 2005 the Oregon Division of State Lands approved the City's Wetland Inventory, and the City notified all affected property owners of the inventory's findings; and,

WHEREAS, in 2006 Metro adopted its "Nature in Neighborhoods" program, designed to protect significant natural resources within the Portland Metropolitan Area, and included this program as Title 13 of the Functional Plan, which includes requirements for implementation by local jurisdictions that must occur by the end of 2008; and

WHEREAS, adoption of the City's Riparian Corridor inventory and implementation of its protection measures through a setback requirement will comply with the riparian corridor protection portion of Metro's Title 13 requirements; and

WHEREAS, the Planning Commission held three meetings to discuss this subject matter on January 11, 18, and 25, 2007, and recommended adoption of the local wetland inventory, riparian corridor inventory, and amendments to the West Linn Community Development Code attached;

NOW, THEREFORE, THE CITY OF WEST LINN ORDAINS AS FOLLOWS:

Section 1. The wetland inventory shown in Attachment "A" to this ordinance is hereby adopted..

Section 2. The riparian inventory shown as Attachment "B" to this ordinance is hereby adopted.

Section 3. The amendments to the West Linn Community Development Code, Chapters 2, 30, 32, and 99, shown as Attachment "C" to this ordinance, are hereby adopted.

PASSED AND APPROVED THIS 12TH DAY OF FEBRUARY, 2007.

Norman B. King
NORMAN B. KING, MAYOR

ATTEST:

Nancy K. Davis
Witness

Approved as to Form:

City Attorney

ATTACHMENT "A"
WETLANDS
INVENTORY

Wetlands

The Local Wetland Inventory (LWI) was conducted in two phases to allow a substantial portion of the field inventory to occur during the preferred spring season. (Drought conditions during 2001 and a recommendation from the Oregon Division of State Lands (DSL) prompted the City Council to delay the fieldwork.) The first phase of the inventory was the planning phase in which methods were defined, field base maps prepared, and significance criteria determined. Public notice of the project was published in the local paper and project information and preliminary inventory maps were placed on the City web site. This phase occurred between June 2001 and March 2002. In March, the field inventory and public involvement process of the Inventory Phase began. This phase included the on-site field inventory, functional assessments, and significance determination. This phase concluded in June 2002.

West Linn's Local Wetland Inventory differs from other standard inventories in an important way: the West Linn City Council set a minimum wetland size threshold of 5,000 square feet (instead of one-half acre) in recognition of the local importance of the many smaller wetlands and the functions they provide in the urban environment. Nearly one-half (20 of 44) of wetlands identified in this inventory are less than one-half acre in size.

A LWI provides maps and information about wetlands throughout a local community and provides a planning tool for balancing the protection of wetland functions with other community needs. In 1990, DSL adopted guidelines and rules for conducting LWIs within urban growth boundaries. The LWI rules were updated in February 2001.

Once approved by DSL, the LWI replaces the National Wetlands Inventory (NWI) and is incorporated into the Statewide Wetlands Inventory. A LWI fulfills the location and quantity information required for Goal 5 inventories, but does not provide quality information. A wetland quality assessment was conducted concurrently with the LWI using the OFWAM method developed by DSL. Data collected for the LWI will assist local landowners and planning agencies in making decisions about future development. Mapped LWI wetland boundaries are generally accurate to within 25 feet. A wetland boundary delineation may be needed to determine whether regulations apply to a particular development proposal.

Inventory Methods

Local Wetland Inventory Methods

Two levels of investigation were conducted for the inventory of wetlands: a review of existing information and a field inventory.

Review of Existing Information

A review of existing literature, maps, and other materials was conducted to identify wetlands or site characteristics indicative of wetlands within the West Linn planning area. The document review included the following sources of information:

- B/W stereo photographs (David Smith, 1996)
- Color aerial stereo photographs (Spencer Gross, 1999)
- Digital color ortho-photographs (2001; scale of field maps: 1 inch = 200 feet)
- Division of State Lands wetland determination files
- Federal Emergency Management Act (FEMA) floodplain maps, and 1996 Flood Line, FEMA, Metro RLIS
- Historic aerial photographs (City of West Linn, 6/25/70, DFK-2LL-180 and -181)
- Local knowledge of sites (e.g., residents, West Linn High School environmental program, West Linn Parks Department, Camassia Preserve Manager);
- Local wetland inventory data including "Wetland Inventory of the City of West Linn, Oregon" (Sharp and Wilson, 1988), City of West Linn permit files with wetland delineations, West Linn Parks Department wetland delineations, Wetland Visual Sites (West Linn GIS 2001)
- National Wetland Inventory maps (1982)
- Oregon Natural Heritage Program data
- Oregon Department of Forestry and Oregon Department of Fish and Wildlife stream classification maps and maps of fish-bearing streams
- Other agency data and communications (e.g., Clackamas County, Metro, Oregon Department of Fish and Wildlife, Oregon Department of Forestry, Oregon Division of State Lands, U.S. Fish and Wildlife Service)
- U.S. Geological Survey (USGS) 7.5 minute topographic maps
- U.S. Natural Resources Conservation Service (NRCS 1976) Clackamas County soil survey (with soil sample locations) and County list of hydric soils and soils with hydric inclusions
- West Linn Stormwater Drainage Master Plan (Woodward-Clyde Consultants, 1995) and West Linn Storm System data (West Linn GIS 2001)
- West Linn Topography (4-foot contours, West Linn GIS 2001)

This information was used as the basis for preparing a GIS base map showing potential wetland sites. Aerial photo interpretation of was tested by interpreting several wetland types and ground-truthing the interpretations. The 1996 and 1999 stereo-pair photographs were interpreted using a Topcon stereoscope and the resulting potential wetland sites were mapped.

In cases where property access was denied, off-site determination methods were employed using the above information and maps. In many cases, investigators were able to view the potential wetland areas from nearby public rights-of-way, parks and open space lands. Areas exhibiting wetland indicators such as wetland hydrology or dominant hydrophytic vegetation were noted.

Off-site determinations were based on off-site viewing, interpretation based on photo signatures of adjacent wetlands, review of topography and soils data, and other information noted above.

Field Inventory

The inventory field work was performed between March and June, 2002. The methods followed the Oregon Division of State Lands' (DSL) LWI procedures as outlined in OAR 141-86-180 through 240, as amended July 1, 2001. The wetland size threshold of 141-086-0210(10) was reduced by the West Linn City Council so that all wetlands 5,000 square feet (0.115 acre) and larger were identified and mapped.

Where property access was permitted, wetland determinations were made using the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). The manual requires independent evidence of three parameters for an area to be declared as wetland: hydric soils, hydrophytic vegetation, and wetland hydrology. Location of sample points and mapping conventions followed state LWI standards and were not intended to define the limits of regulatory jurisdiction.

Wetlands with DSL-approved determinations were field-verified to determine whether wetlands were still present and of the same size and configuration as when delineated. Wetland boundaries were verified through visual on-site observation of vegetation and hydrology. In cases where boundaries could not be reliably verified through visual observation, sample plots were established. Where revisions to recorded boundaries were warranted, the wetland mapping was adjusted to reflect the approximate current boundary and the adjustment was noted on the wetland summary sheets.

For other wetlands where access was granted, the consultant team generally established between two and six sample plots at locations that best characterized the wetland. Consultants recorded information regarding each of the three-wetland parameters (i.e., soils, vegetation, and hydrology) to distinguish wetlands from non-wetlands. The LWI map shows the location of wetlands and the individual sample sites. General characteristics of each wetland were documented, including approximate wetland size, Cowardin and HGM classifications, soil type, hydrologic source, dominant plant species, field dates, field investigators, a summary of the wetland context, and other relevant data. Wetland characteristics were recorded on individual summary sheets contained in Appendix A. Appendix B contains completed Wetland Determination Forms for wetlands sampled using the on-site method.

Wetland Function and Condition Assessment

- Wetland quality was assessed using the Oregon Freshwater Wetland Assessment Methodology (OFWAM). The OFWAM evaluates the extent to which a wetland performs certain functions based on specific characteristics. It assesses wildlife habitat, fish habitat, water quality, hydrologic control, education, recreation, sensitivity to impact,

enhancement potential, and aesthetic quality. The result of the assessment is an "evaluation descriptor" indicating whether a wetland function is intact, degraded, or not present. Factors such as size of wetland, structural and biological diversity, presence of rare or endangered species, land-use, and access are used in the rating system.

An OFWAM field form was used to characterize wetlands and address specific functions that required field observation. Data collected in the field included the presence and extent of Cowardin classes, vegetative cover, wetland hydrology (source, storage, discharge), character of adjacent water bodies, degree of public access, aesthetic qualities, and other field data essential to the OFWAM assessment. The field evaluations were generally conducted from viewing areas near wetland sample sites where on-site access was permitted, or from neighboring public rights-of-way or other public land when access was not granted. Viewing locations were documented in the Wetland Characterization sheets (Appendix A) and the Wetland Assessment sheets (Appendix B).

The OFWAM assessments were completed in the office using field data, aerial photographs, maps, and information gathered from public agencies (e.g., water quality, sensitive species, and related resource data). Several public agencies were contacted, including:

- Oregon Department of Environmental Quality (DEQ);
- Oregon Department of Fish and Wildlife (ODFW);
- Oregon Department of Forestry (DOF);
- The Oregon Natural Heritage Program (ORNHP);
- U.S. Fish and Wildlife Service (USFWS).

The OFWAM includes an initial set of questions to assess whether any wetlands within the study area should be considered Wetlands of Special Interest for Protection (WSIP). The questions address whether a wetland is in a management plan, is protected by regulatory rules and statutes, or is uncommon in Oregon. An affirmative answer to any one of the ten questions will place the wetland into the WSIP category and management decisions should be made to protect the site.

This report includes the following information:

- Wetland Characterization results
- Answer sheets for all wetland assessment questions
- Function and condition summary sheet
- Assessment results represented in table format

Following completion of the LWI and the OFWAM functional assessment, all wetlands were evaluated against the Locally Significant Wetland (LSW) Criteria of OAR 141-086-0350. In addition to the mandatory criteria, the City chose to apply the two optional criteria (i.e., do wetlands contain a locally unique native plant community or do they provide educational uses and are publicly owned).

Mapping Procedures

Field maps were prepared using Year 2001 digital color ortho-photographs at a scale of 1 inch = 200 feet. All data was geo-referenced and registered with the City parcel data in GIS. Information shown on the field maps included property boundaries, rights-of-way with street names, designated open space areas and public lands, map number (and corresponding City Atlas number), hydrologic basin boundaries, topography, hydric soils, streams and City storm system data (detention basins, ponds, ditches, etc), existing wetland data (including digitized DSL and City wetland determinations, NWI wetlands, Wetland Visual Sites (City point data), and 1988 Wetland Study (digitized point data)), and photo-interpreted potential wetland sites.

Wetlands and sample plots were mapped on the field maps. A combination of reference points was used to establish the location and perimeter of each wetland polygon and the location of sample plots. These references included property lines (e.g., survey corner markers), topography (4-foot contours, or less where available), building lines, streets, utilities, trees and other mapped physical features that could be used to determine location and distances on the ground.

Wetland boundaries and sample plots were digitized and registered with the base map in GIS. Inventory maps meeting the requirements of OAR 141-086-0210 and the Digital Map Standards of OAR 141-086-0225 were provided to the City and DSL.

Inventory Results

Forty-four wetlands were identified as part of the Local Wetland Inventory. Wetlands varied in size between 5,000 square feet and 15.5 acres, with a total combined acreage of 72.8 acres. Wetlands were distributed within 10 subwatersheds: Bernert Creek, Camassia, Cascade Springs Pond Creek, Fern Creek, Fritchie Creek, Tanner Creek, Trillium Creek, Turkey Creek, and the remaining portions of the Tualatin and Willamette River basins. Several additional subwatersheds were identified in the study area but did not contain wetlands. Table 3 summarizes the distribution and relative size of wetlands by subwatershed.

Table 3. Wetland Size by Subwatershed

Hydrologic Basin	Basin Area (acres)	Wetland (acres)	Percent wetland in basin
Barlow Creek	201	0.00	0
Bernert Creek	412	0.65	0.2%
Bolton Creek	117	0.00	0.0%
Camassia	219	2.55	1.2%
Cascade Springs Pond Creek	52	1.09	2.1%
Fern Creek	555	4.14	0.7%
Fritchie Creek	393	2.34	0.6%
Heron Creek	123	0.00	0
Maddax Creek	106	0.00	0

Hydrologic Basin	Basin Area (acres)	Wetland (acres)	Percent wetland in basin
Mary S Young Creek	269	0.00	0
McLean Creek	38	0.00	0
Sunset Creek	77	0.00	0
Tanner Creek	659	5.90	0.9%
Trillium Creek	543	5.50	1.0%
Tualatin River	309	7.30	2.4%
Turkey Creek	20	0.16	0.8%
Willamette River	1165	43.23	3.5%
Study Area Total	**5258**	**72.8**	**0.14%**

With the exception of a few wetlands in the Camassia and Tanner Creek basins, most wetlands were associated with rivers and streams. As a result, the hydrogeomorphic classification of wetlands was predominantly Riverine Flow-Through, as shown in Table 4.

Table 4. Wetland Hydrogeomorphic Classifications

Hydrogeomorphic Class / subclass	Area (acres)	Number of Wetland Units
Riverine Flow-Through (RFT)	65.51	32
Headwater Slope (SH)	4.59	5
Depressional Outflow (DOF)	1.04	2
Depressional Closed, Permanently Flooded (DCP)	0.89	1
Depressional Closed, Nonpermanently Flooded (DNCP)	0.79	3
Flats	0.04	1
Total	**72.8**	44

Table 5 summarizes the distribution of wetlands by Cowardin classification within the study area. Since some wetlands had multiple classifications, total acres of each class is shown without the number of wetland units affected.

Table 5. Wetland Cowardin Classifications

Cowardin Class	Area (acres)
Forested Wetlands (PFO)	37.48
Scrub-Shrub Wetlands (PSS)	9.61
Emergent Wetlands (PEM)	25.39
Open Water (POW)	0.36
Total	**72.8**

Table 6 provides a detailed summary of the distribution and size of wetlands within each sub-watershed and the approximate acreages of each wetland type (Cowardin class).

Table 6. Wetland Size and Class by Subwatershed

Sub-Watershed	Wetland code	Area (acres)	Cowardin Class			
			PEM	PSS	PFO	POW
Bernert Creek (BE)	BE-01	0.34	0.20		0.14	
	BE-02	0.32	0.15		0.16	
		0.66	**0.35**	**0.00**	**0.30**	**0.00**
Camassia (CA)	CA-01	0.71		0.54		0.18
	CA-02	0.89		0.89		
	CA-03P	0.35	0.35			
	CA-04	0.04*		0.04		
	CA-05	0.14		0.14		
	CA-06	0.42	0.42			
		2.55	**0.77**	**1.61**	**0.00**	**0.18**
Cascade Springs Pond Creek (CS)	CS-01	1.09	1.09			
		1.09	**1.09**	**0.00**	**0.00**	**0.00**
Fern Creek (FE) (incl. Robinwood-RO-tributary)	FE-01	1.52	1.52			
	FE-02	2.33	.26	2.07		
	RO-01	0.29	.05		0.24	
		3.17	**1.83**	**2.07**	**0.24**	**0.00**
Fritchie Creek (FR)	FR-01	1.42	1.42			
	FR-02	0.16	0.13		0.03	
	FR-03	0.35			0.35	
	FR-04	0.41	0.41			
		2.34	**1.96**	**0.00**	**0.38**	**0.00**
Tanner Creek (TA)	TA-01	0.37	0.37			
	TA-02	0.59		0.49	0.10	
	TA-03	0.48		0.48		
	TA-04	0.25		0.25		
	TA-05	1.34	0.53		0.69	0.15
	TA-06	0.18	0.18			
	TA-07	0.69			0.69	
	TA-08	0.39			0.39	
	TA-09	1.58		0.28	1.27	0.03
		5.87	**1.08**	**1.50**	**3.14**	**0.18**
Trillium Creek (TR) (incl. Hidden Springs-HI-tributary)	TR-01	1.59	0.16		1.43	
	TR-02	0.61		0.54	0.07	
	TR-03	2.06	0.30	0.20	1.56	
	TR-04	0.93		0.93		
	HI-01	0.33		0.33		
		5.52	**0.46**	**2.00**	**3.06**	**0.00**
Tualatin River (TU)	TU-01	1.14	1.14			
	TU-02	0.30	0.30			
	TU-03	1.89			1.89	
	TU-04	0.13	0.13			
	TU-05	3.83	3.39		0.44	

Sub-Watershed	Wetland code	Area (acres)	Cowardin Class			
			PEM	PSS	PFO	POW
		7.28	4.96	0.00	2.33	0.00
Turkey Creek (TY)	TY-01	0.16	0.16			
		0.16	0.16	0.00	0.00	0.00
Willamette River (WI)	WI-01	8.09	6.44		1.65	
	WI-01a	0.84	0.84			
	WI-02	15.55	6.55		9.00	
	WI-03	2.43		2.43**		
	WI-04	7.13	3.64		3.49	
	WI-05	0.21	0.21			
	WI-06	2.70	0.90		1.80	
	WI-07	6.28	6.28			
		43.23	24.86	2.43	15.94	0.00
TOTAL		72.84	37.48	9.61	25.39	0.36

* Wetland was below the minimum size threshold but was included due to its local significance and protected status.
** This area includes the wetland portion (60%) of the wetland mosaic area.

OFWAM Assessment Results

Wetland quality was assessed for each wetland unit using the Oregon Freshwater Wetland Assessment Methodology (OFWAM). The OFWAM assesses wetland functions (wildlife habitat, fish habitat, water quality, hydrologic control), values (education and recreation), and conditions (sensitivity to impact, enhancement potential, and aesthetic quality). The assessment result is a determination of whether a function, value or condition is high (intact), moderate (impacted/degraded), or low (not present/appropriate).

Table 7 provides the results of the OFWAM assessments for each wetland unit in the study area. Certain categories were not applicable to particular wetlands. For example, if a wetland was not connected to a stream or other water body, fish habitat functions were not assessed. Also, if wildlife habitat functions were determined to be "diverse," then enhancement potential was considered inapplicable as provided in the OFWAM methodology.

Table 7. OFWAM Wetland Assessment Results

Wetland code	Area (acres)	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	Sensitivity to Impact	Enhancement Potential	Education	Recreation	Aesthetic Quality
BE-01	0.337	some	impacted degraded	intact	impacted degraded	potentially sensitive	high opportunities	not appropriate	potential	moderately pleasing
BE-02	0.316	some	impacted degraded	intact	impacted degraded	potentially sensitive	high opportunities	not appropriate	potential	moderately pleasing
CA-01	0.714	diverse	N/A	impacted degraded	impacted degraded	potentially sensitive	N/A	educational	recreational	moderately pleasing
CA-02	0.887	some	N/A	not present	intact	potentially sensitive	moderate	educational	recreational	moderately pleasing
CA-03P	0.346	some	N/A	impacted degraded	impacted degraded	potentially sensitive	little	educational	recreational	pleasing
CA-04	0.041	some	N/A	not present	intact	potentially sensitive	moderate	educational	recreational	pleasing
CA-05	0.141	some	N/A	not present	intact	potentially sensitive	moderate	potential	recreational	pleasing
CA-06	0.421	some	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	high opportunities	potential	not appropriate	pleasing
CS-01	1.09	some	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	high opportunities	not appropriate	potential	moderately pleasing
FE-01	1.518	some	impacted degraded	not present	lost	potentially sensitive	moderate	not appropriate	not appropriate	moderately pleasing
FE-02	2.332	diverse	intact	impacted degraded	impacted degraded	potentially sensitive	N/A	potential	potential	moderately pleasing
FR-01	1.424	some	intact	impacted degraded	impacted degraded	potentially sensitive	high opportunities	not appropriate	not appropriate	not pleasing
FR-02	0.162	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	not appropriate	not appropriate	pleasing
FR-03	0.349	some	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	high opportunities	not appropriate	not appropriate	moderately pleasing
FR-04	0.409	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	not appropriate	not appropriate	not pleasing

Wetland code	Area (acres)	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	Sensitivity to Impact	Enhancement Potential	Education	Recreation	Aesthetic Quality
HI-01	0.326	some	N/A	not present	impacted degraded	potentially sensitive	moderate	educational	recreational	moderately pleasing
RO-01	0.291	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	educational	potential	moderately pleasing
TA-01	0.369	some	impacted degraded	impacted degraded	intact	potentially sensitive	moderate	potential	potential	moderately pleasing
TA-02	0.588	some	intact	impacted degraded	intact	potentially sensitive	high opportunities	not appropriate	potential	pleasing
TA-03	0.479	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	educational	recreational	moderately pleasing
TA-04	0.253	some	intact	impacted degraded	impacted degraded	potentially sensitive	high opportunities	not appropriate	potential	moderately pleasing
TA-05	1.338	diverse	impacted degraded	impacted degraded	intact	potentially sensitive	N/A	not appropriate	potential	not pleasing
TA-06	0.177	some	N/A	not present	lost	potentially sensitive	moderate	not appropriate	not appropriate	not pleasing
TA-07	0.693	some	N/A	impacted degraded	lost	potentially sensitive	high opportunities	not appropriate	not appropriate	not pleasing
TA-08	0.386	some	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	high opportunities	not appropriate	potential	moderately pleasing
TA-09	1.584	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	not appropriate	potential	moderately pleasing
TR-01	1.586	diverse	intact	impacted degraded	impacted degraded	potentially sensitive	N/A	potential	not appropriate	moderately pleasing
TR-02	0.594	diverse	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	N/A	potential	not appropriate	moderately pleasing
TR-03	2.062	some	intact	impacted degraded	intact	potentially sensitive	high opportunities	not appropriate	not appropriate	moderately pleasing
TR-04	0.931	some	intact	impacted degraded	intact	potentially sensitive	high opportunities	not appropriate	not appropriate	not pleasing
TU-01	1.143	some	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	high opportunities	educational	recreational	moderately pleasing

Wetland code	Area (acres)	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	Sensitivity to Impact	Enhancement Potential	Education	Recreation	Aesthetic Quality
TU-02	0.302	some	N/A	impacted degraded	impacted degraded	potentially sensitive	moderate	educational	recreational	moderately pleasing
TU-03	1.889	some	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	high opportunities	potential	recreational	not pleasing
TU-04	0.132	some	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	moderate	educational	potential	moderately pleasing
TU-05	3.815	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	potential	recreational	moderately pleasing
TY-01	0.163	some	impacted degraded	impacted degraded	impacted degraded	not sensitive	moderate	educational	recreational	moderately pleasing
WI-01	8.091	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	educational	recreational	moderately pleasing
WI-01a	0.842	some	N/A	impacted degraded	impacted degraded	potentially sensitive	high opportunities	not appropriate	potential	moderately pleasing
WI-02	15.547	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	potential	potential	not pleasing
WI-03	2.845	diverse	intact	impacted degraded	intact	potentially sensitive	N/A	potential	recreational	not pleasing
WI-04	7.13	some	impacted degraded	impacted degraded	intact	potentially sensitive	high opportunities	educational	recreational	moderately pleasing
WI-05	0.21	some	impacted degraded	impacted degraded	impacted degraded	potentially sensitive	moderate	educational	recreational	moderately pleasing
WI-06	2.704	some	impacted degraded	impacted degraded	intact	sensitive	high opportunities	not appropriate	recreational	moderately pleasing
WI-07	6.28	some	impacted degraded	intact	intact	sensitive	high opportunities	not appropriate	recreational	pleasing

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Table 8 summarizes the relative distribution of assessments for each function and condition, with the percentage of total wetlands ranking high in each category.

Table 8. Wetland Assessment Results for the Study Area

Function / Condition	High	Moderate	Low	N/A	% Wetlands Assessed High
Wildlife habitat	6	38	0		14%
Fish habitat	8	26	0	10	18%
Water quality	3	35	6		7%
Hydrologic control	20	21	3		45%
Sensitivity to impact	2	41	1		5%
Enhancement potential	26	11	1	6	59%
Education	14	10	20		32%
Recreation	18	14	12		41%
Aesthetic quality	7	28	9		16%

Each wetland was assessed to determine whether it should be considered a Wetland of Special Interest for Protection (WSIP). The questions in the WSIP category cover the presence of federal or state listed species and habitats, existing local, state or federal protections, and existing management plans. The following wetlands were found to be WSIP wetlands: TU-01 (red-legged frog breeding site) and CA-01 through CA-05 (part of Nature Conservancy's Camassia Preserve).

During field investigations, no vacant, former wetlands of five acres or larger in size were identified. Therefore, no potential wetland mitigation or restoration sites were noted in the LWI.

Significant Wetlands Determination

In Oregon, local government planning responsibilities include the determination, designation, and protection of significant wetlands. Wetlands are considered significant if the OFWAM evaluation determines that they:

1. provide diverse wildlife habitat, intact fish habitat, intact water quality function, or intact hydrologic control function;
2. are located within 1/4-mile of a "water quality limited stream" and have "intact" or "impacted or degraded" water quality function;
3. contain rare plant communities or federal or state-listed species; or
4. have a surface water connection to a stream that is habitat for indigenous anadromous salmonids and have "intact" or "impacted or degraded" fish habitat function.

As noted above, the City of West Linn chose to apply the two optional significance criteria:

1. wetlands that represent a locally unique native plant community; or
2. wetlands that are publicly owned and have educational uses.

A total of 38 wetlands met the criteria and were determined to be significant. These wetlands generally had 1) high wildlife or fish habitat, water quality, or hydrologic control function, 2) a surface water connection to a salmonid stream, or 3) were located within 1/4-mile of a water quality limited stream. Approximately one-half (20) of the significant wetlands were less than one-half acre in size. The six wetlands not meeting the criteria were:

- FE-01
- HI-01
- TA-06
- TA-07
- TA-08
- TU-04 (stormwater swale created from upland, excluded)

Appendix A

Wetland Characterization

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Bernert 1 | Code: BE-01 | Field dates: 4/22/02

Plot #s: DP-1, DP-2 | Size: 0.34 acres | Method: ☒ on-site ☐ off-site

Cowardin Class: PEM, PFO | HGM Class: RFT | Investigators: TB, LW

Basin: Willamette River | Sub-basin: Bernert Creek

Location

Location/address: Willamette Falls Dr. at 7th St.

Legal description: Lots 1900, 2000; T2S, R1E, Section 35 (Atlas #5432)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland BE-01 is near the upper end of Bernert Creek between I-205 and Willamette Falls Drive. There is a small group of business offices adjacent to the wetland on the west, and residential housing to the south. The I-205 corridor is at the top of a steep bank to the north, and residential and forested open space dominates the areas to the east. BE-01 is the upstream one of two small wetlands at this location. Both BE-01 and BE-02 are on the stream and are connected by a culvert. The stream is small, and bisects a bottomland wetland of reed canarygrass and Oregon ash trees. There is sufficient subsurface discharge near the foot of the I-205 embankment to extend the boundary of BE-01 upslope in some areas. Data samples were taken in this sloping area. Wetland hydrology is primarily provided by stream flow, with additional water coming from the seeps upslope. The stream flows east through BE-02, under Willamette Falls Drive, and eventually into the Willamette River. The wetland boundary is at a sharp topographic break along the south side of the stream. On the north side where seeps extend the wetland upslope, the boundary lies where dense sedge and slender rush decrease to a trace, and tall fescue becomes dominant. The surrounding landscape is quite disturbed and dominated by introduced, somewhat weedy species. Uplands are dominated by Himalayan blackberry and tall fescue.

Soils: Cove Silty Clay Loam

Hydrologic Source: stream flow, seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash			reed canarygrass
			Kentucky bluegrass

Wetland Functions: intact water quality; high enhancement potential; not appropriate for education; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact water quality

Potential Restoration Opportunities: Restore native emergent and woody plants, enhance buffer along parking lot and road with dense native shrub plantings.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Bernert 2 | Code: BE-02 | Field dates: 4/22/02

Plot #s: (see det98-0002) | Size: 0.32 acres | Method: ☐ on-site ☒ off-site

Cowardin Class: PEM, PFO | HGM Class: RFT | Investigators: TB, LW

Basin: Willamette River | Sub-basin: Bernert Creek

LOCATION

Location/address: Willamette Falls Dr. at 7th St. (east of BE-01)

Legal description: Lots 3400, 3500; T2S, R1E, Section 35 (Atlas #5432)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland BE-02 is near the upper end of Bernert Creek between I-205 and Willamette Falls Drive. The I-205 corridor is at the top of a steep bank to the north, and residential and forested open space dominates the areas to the southeast. BE-02 is the downstream one of two small wetlands at this location. Both BE-01 and BE-02 are on the stream and are connected by a culvert The wetland is dominated by reed canarygrass and soft rush to the west, and Oregon ash to the east. Wetland hydrology is primarily provided by the stream. The stream flows east through BE-02, under Willamette Falls Drive, and eventually into the Willamette River. The wetland boundary is at a sharp topographic break along the north and south sides of the wetland. Uplands are dominated by Himalayan blackberry.

Soils: Cove Silty Clay Loam

Hydrologic Source: stream flow, seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	Oregon ash		reed canarygrass
			soft rush

Wetland Functions: intact water quality; high enhancement potential; not appropriate for education; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact water quality

Potential Restoration Opportunities: Restore native emergent and woody plants, enhance buffer along parking lot and road with dense native shrub plantings.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Camassia (big pond) Code: CA-01 Field dates: 4/4/02

Plot #s: DP1, DP2 Size: 0.71 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PSS, POW HGM Class: DOF Investigators: TB, LW, AK

Basin: Willamette River Sub-basin: Camassia

Location

Location/address: Camassia Natural Area off Walnut St. (north of Sunset Ave.)

Legal description: Lots 1000, 3400, 3500; T2S, R2E, Section 30 (Atlas #5235, 5335); Lot 1000; T2S, R2E, Section 31 (Atlas #5235, 5335)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Camassia Natural Area is a protected open space on the cliffs above and north of I-205 and Willamette Falls. It is bounded by I-205 on the southeast, residential housing on the southwest and West Linn High School property on the north and east. Wetland CA-01 is near the center of Camassia Natural Area. This wetland contains the largest pond on the site, and has water year round. Wetland hydrology is primarily provided by groundwater. There is some outflow which eventually empties into the Willamette River. The wetland is bordered by gentle to sleep rocky slopes on all sides except the south where the terrain is generally flat. The wetland boundary occurs at the point where Oregon ash, spiraea and/or willow are replaced by Douglas fir, Oregon white oak , snowberry and/or sword fern as dominants. Uplands at the sample point are dominated by Oregon white oak, Douglas fir, vine maple, trailing blackberry, snowberry, and sword fern.

Soils: Witzel Very Stony Silt Loam, 3-40% slopes

Hydrologic Source: groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	Oregon ash		creeping buttercup
	clustered rose		

Wetland Functions: diverse habitat; has educational and recreational uses; other functions moderate

Significant? ☒ Yes ☐ No Remarks: diverse habitat

Potential Restoration Opportunities: Sensitive site with diverse habitat; removal of exotic species along perimeter by TNC is ongoing.

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West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Camassia 2 | Code: CA-02 | Field dates: 4/4/02

Plot #s: *see note below | Size: 0.89 acres | Method: ☒ on-site ☐ off-site

Cowardin Class: PSS | HGM Class: DCP | Investigators: LW, AK

Basin: Willamette River | Sub-basin: Camassia

Location

Location/address: Camassia Natural Area off Walnut St. (north of Sunset Ave.)

Legal description: Lot 1000; T2S, R2E, Section 30; Lot 1000; T2S, R2E, Section 31 (Atlas #5235, 5335)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Camassia Natural Area is a protected open space on the cliffs above and north of I-205 and Willamette Falls. It is bounded by I-205 on the southeast, residential housing on the southwest and West Linn High School property on the north and east. Wetland CA-02 is the wetland nearest I-205 toward the east edge of Camassia Natural Area. This wetland is a large permanent pond that is filled with stands of willow and Douglas spiraea. Wetland hydrology is primarily provided by groundwater. The wetland depression has gentle to moderately steep slopes on all sides. The wetland boundary occurs at the point where spiraea and willow are replaced by Douglas fir, Oregon white oak , snowberry and/or sword fern as dominants. Uplands near the observation point are dominated by Oregon white oak, Douglas fir, tall Oregon-grape, salal, and licorice fern.

*No sampling was conducted due to site sensitivity and protected stature. Observation occurred at the wetland edge.

Soils: Witzel Very Stony Silt Loam, 3-40% slopes

Hydrologic Source: groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
red alder	Sitka willow		creeping buttercup
	Douglas spiraea		

Wetland Functions: intact hydrologic control; has educational uses

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control; has educational and recreational uses; water quality function not present; other functions moderate; within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Sensitive site; removal of nearby exotic species by TNC is ongoing.

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West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

GENERAL INFORMATION

Wetland: Camassia meadows Code: CA-03P Field dates: 4/4/02

Plot #s: *see note below Size: 0.35 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PEM HGM Class: DCNP Investigators: TB, LW, AK

Basin: Willamette River Sub-basin: Camassia

LOCATION

Location/address: Camassia Natural Area off Walnut St. (north of Sunset Ave.)

Legal description: Lot 1000; T2S, R2E, Section 30 (Atlas #5235)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Camassia Natural Area is a protected open space on the cliffs above and north of I-205 and Willamette Falls. It is bounded by I-205 on the southeast, residential housing on the southwest and West Linn High School property on the north and east. Potential Wetland CA-03P encompasses three open meadows situated on basalt plateaus: sites with shallow or no soil on rocky ground, and dominated by camas lilies and grasses. CA-03P are small depressions on a large, flat rock, with saturation for only a few weeks in the early spring. The two dominant plants are camas and a dense mat of mosses. Wetland hydrology is primarily provided by precipitation. The wetland boundary occurs at the point where camas is replaced by Oregon white oak, madrone, poison-oak, and/or upland grasses. Adjacent uplands are dominated by Oregon white oak, licorice fern, and a variety of upland grasses. The vegetation composition and rocky substrate may make this type of wetland non-jurisdictional, but it is a key wetland community in open meadows of the Camassia Natural Area.

*No sampling was conducted due to site sensitivity and protected stature. Observation occurred at the wetland edge.

Soils: Witzel Very Stony Silt Loam, 3-40% slopes

Hydrologic Source: precipitation

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
			common camas
			mosses

Wetland Functions: has educational and recreational uses and is aesthetically pleasing; little enhancement potential; other functions moderate

Significant? ☒ Yes ☐ No Remarks: rare plants (Delphinium leucophaeum)

Potential Restoration Opportunities: Sensitive site; removal of nearby exotic species by TNC is ongoing. Velvet grass is invading some meadow area.

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West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Camassia Aspen Wetland	Code: CA-04	Field dates: 4/4/02
Plot #s: *see note below	Size: 0.04** acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PSS	HGM Class: Flats	Investigators: TB, LW, AK
Basin: Willamette River		Sub-basin: Camassia

Location

Location/address: Camassia Natural Area off Walnut St. (north of Sunset Ave.)

Legal description: Lot 1000; T2S, R2E, Section 30 (Atlas #5235)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Camassia Natural Area is a protected open space on the cliffs above and north of I-205 and Willamette Falls. It is bounded by I-205 on the southeast, residential housing on the southwest and West Linn High School property on the north and east. Wetland CA-04 is a small wetland pond dominated by quaking aspen and Douglas spiraea located northwest of CA-01. The presence of quaking aspen makes this wetland locally rare. Wetland hydrology is primarily provided by groundwater. The wetland is located in a small depression on a gentle east-facing slope. The wetland boundary occurs at the point where quaking aspen and spiraea are replaced by Douglas fir, Oregon white oak , snowberry, salal and/or sword fern as dominants. Uplands near the observation point are dominated by Oregon white oak, Douglas fir, salal, trailing blackberry, and licorice fern.

*No sampling was conducted due to site sensitivity and protected stature.
**This wetland is below size threshold but was included because of its local significance and protected stature.

Soils: Witzel Very Stony Silt Loam, 3-40% slopes

Hydrologic Source: groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
quaking aspen	Douglas spiraea		licorice fern
			mosses

Wetland Functions: intact hydrologic control; has educational and recreational uses and is aesthetically pleasing

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control

Potential Restoration Opportunities: N/A

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Camassia 5	Code: CA-05	Field dates: 4/4/02
Plot #s: *see note below	Size: 1.14 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PSS	HGM Class: DCNP	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Camassia	

Location

Location/address: Camassia Natural Area off Walnut St. (north of Sunset Ave.)

Legal description: Lot 1000; T2S, R2E, Section 30 (Atlas # 5235)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Camassia Natural Area is a protected open space on the cliffs above and north of I-205 and Willamette Falls. It is bounded by I-205 on the southeast, residential housing on the southwest and West Linn High School property on the north and east. Wetland CA-05 is a small scrub-shrub wetland dominated by Sitka willow and located 50 feet southwest of CA-04. Wetland hydrology is primarily provided by groundwater. The wetland is located in a small depression on a gentle east-facing slope. The wetland boundary occurs at the point where willow is replaced by Douglas fir, snowberry, salal and/or sword fern as dominants. Uplands near the observation point are dominated by Douglas fir, salal and sword fern.

*No sampling was conducted due to site sensitivity and protected stature.

Soils: Witzel Very Stony Silt Loam, 3-40% slopes

Hydrologic Source: groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	Sitka willow		

Wetland Functions: intact hydrologic control; has recreational uses and is aesthetically pleasing; water quality function not present; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control

Potential Restoration Opportunities: N/A

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

General Information

Wetland: West Linn High School	Code: CA-06	Field dates: 4/11/02
Plot #s: DP-1, DP-2	Size: 0.42 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PEM	HGM Class: RFT	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Camassia	

Location

Location/address: West Linn High School, near West A and Buse St.

Legal description: Lot 4500; T2S, R2E, Section 30 (Atlas # 5235)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Westland CA-06 is located on West Linn High School property along its border with Camassia Natural Area. It is bounded by I-205 on the south, West A Street on the east, Camassia on the west, and the West Linn High School parking lot on the north. Wetland CA-06 is an emergent wetland dominated by reed canarygrass, with other common species including creeping buttercup, velvet grass, and colonial bentgrass. Occasional woody species include Oregon ash and Sitka willow. Wetland hydrology is primarily provided by surface water (a small, springfed stream). The wetland is on a relatively flat terrace between two elevated basalt outcrops (east and west). The wetland boundary occurs at the point where reed canarygrass is replaced by Oregon white oak and poison oak as dominants. Uplands near the observation point are dominated by Oregon white oak, Pacific madrone, poison oak and licorice fern. See also det99-0250.

Soils: Witzel Very Stony Silt Loam, 3-40% slopes

Hydrologic Source: surface water

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
			reed canarygrass

Wetland Functions: high enhancement potential, aesthetically pleasing; not appropriate for recreation; other functions received moderate ratings

Significant? ☒ Yes ☐ No Remarks: within ¼ mile of a WQ limited river

Potential Restoration Opportunities: Manage invasive exotic species; revegetate with native plants.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

GENERAL INFORMATION

Wetland: Cascade Springs | Code: CS-01 | Field dates: 4/22/02

Plot #s: DP-1 to DP-4 | Size: 1.09 acres | Method: ☒ on-site ☐ off-site

Cowardin Class: PEM | HGM Class: RFT | Investigators: TB, LW, AK

Basin: Willamette River | Sub-basin: Cascade Spring Pond Creek

LOCATION

Location/address: north of Holly St., south of Cascade St.

Legal description: Lots 200, 300, 400, 500, 900, 2100, 2103, 2105, 2106, 3800, 3900, 5003, 5004, 5005, 5400, 5600; T2S, R2E, Section 30 (Atlas #5235, 5236)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland CS-01 is associated with Cascade Spring Pond Creek, and is on a narrow floodplain at the bottom of a steep-sided canyon, surrounded by residential uses, with commercial at the west end of the site. The stream has a meandering and braided channel extending from side-slope to side-slope. The wetland is dominated by reed canarygrass near the sample site, but upstream there are also patches of skunk cabbage and other native emergents. Wetland hydrology is provided primarily by stream flow plus smaller amounts of sheet flow from the surrounding side-slopes. The wetland boundary is at a sharp topographic break at the foot of the canyon embankments. The forested canyon walls are relatively undisturbed, except for a few cleared residential back yards. Uplands are dominated by big-leaf maple and Himalayan blackberry (which, in addition to steep slopes, does provide a buffer).

Soils: Xerochrepts and Haploxerolls, very steep

Hydrologic Source: stream flow, sheetflow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
red alder		climbing nightshade	reed canarygrass
			stinging nettle

Wetland Functions: high enhancement potential; not appropriate for education; other functions moderate

Significant? ☒ Yes ☐ No Remarks: within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Manage invasive species, particularly reed canarygrass and Himalayan blackberry. Plant a variety of native emergents and shrubs (along perimeter) to diversify habitat.

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West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Carriage Way Open Space	Code: FE-01	Field dates: 4/18/02
Plot #s: N/A	Size: 1.52 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PEM	HGM Class: SH	Investigators: TB, LW
Basin: Willamette River	Sub-basin: Fern Creek	

LOCATION

Location/address: Carriage Way at Suncrest Drive

Legal description: Lot 4900; T2S, R1E, Section 23 (Atlas # 5031)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland FE-01 is located at the headwaters of Fern Creek in the Carriage Way Open Space, which was set aside as part of the adjacent residential development. Groundwater seeps provide the primary source of wetland hydrology, and a small springfed stream meanders east through the wetland. The wetland is dominated by a variety of emergent species, including soft rush, slough sedge, bulrush, and several grasses. The obligate wetland species occur in topographic depressions in the gently northeast sloping wetland. A few Douglas spiraea, red-osier dogwood and Oregon ash occur along the wetland perimeter. The wetland was delineated during the development process (Proj 7935141); a small (approx. 300 sq. ft.) area at the southwest corner appears to be filled and the LWI mapping was adjusted accordingly.

Soils: Cascade Silt Loam, 8-15% slopes

Hydrologic Source: groundwater (seeps)

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
			soft rush
			slough sedge
			small fruited bulrush
			meadow foxtail
			velvet grass

Wetland Functions: Water quality and hydrologic control functions are not present; educational and recreational functions are not appropriate; other functions are moderate.

Significant? ☐ Yes ☒ No Remarks: criteria not met

Potential Restoration Opportunities: Plant native woody plants along perimeter to enhance buffer values.

ORD 1545
A25

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

GENERAL INFORMATION

Wetland: Lower Fern Creek	Code: FE-02	Field dates: 4/18/02, 6/6/02, 9/16/02
Plot #s: N/A	Size: 2.33 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PEM, PSS	HGM Class: RFT	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Fern Creek	

LOCATION

Location/address: West of Old River Dr., from Fairview Way to Arbor Dr., incl. future park site

Legal description: Lots 400, 1900, 3500, 3800; T2S, R1E, Sections 13 (Atlas # 4832, 4833)
Lots 400, 1700, 1800, 1900; T2S, R1E, Section 14 (Atlas # 4832, 4833)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland FE-02 is located along a 30- to 80-foot wide, generally flat ravine bottom between Fairview Way and Old River Road. Much of the wetland is within the boundaries of a future City community park and is bordered by residential uses on the south and east. The wetland has both scrub-shrub and emergent components, with salmonberry as dominant species in the former and lady fern and skunk cabbage in the latter. The wetland is fed by Fern Creek, a perennial stream. The wetland boundary is marked by a topographic break (located at the toe of the ravine side slope or the toe of elevated terraces on the ravine bottom) and the transition to upland species dominated by Douglas fir, big-leaf maple and vine maple. Part of the wetland was previously delineated (Det 96-0496); the LWI mapping was adjusted to show the wetland extending south onto private lots and north to where the ravine narrows.

Soils: Woodburn Silt Loam, 8-15% slopes

Hydrologic Source: surface water

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	salmonberry		lady fern
			skunk cabbage

Wetland Functions: diverse wildlife habitat, intact fish habitat, other functions moderate

Significant? ☒ Yes ☐ No Remarks: diverse wildlife habitat, intact fish habitat, other functions moderate

Potential Restoration Opportunities: English ivy management is needed.

ORD 1545
A 26

West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: North Fork Fritchie Creek	Code: FR-01	Field dates: 3/20/02
Plot #s: DP-1, DP-2	Size: 1.42 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PEM	HGM Class: RFT	Investigators: LW, TB, AK
Basin: Tualatin River		Sub-basin: Fritchie Creek

LOCATION

Location/address: north of I-205, east of Woodbine Road

Legal description: Lots 600, 700; T2S, R1E, Section 34 (Atlas #5230, 5330)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland FR-01 is associated with the Fritchie Creek floodplain at the bottom of a steep-sided canyon. The stream is incised but meandering. A beaver dam spans the stream about 100 ft. upstream from the sample site. Wetland hydrology is provided by the stream and by precipitation and sheetflow from the beaver dam and surrounding side-slopes. The stream flows into a culvert under I-205 about 200 ft. downstream from sample site. The forested canyon walls and stream channel are relatively undisturbed. The wetland boundary is at a sharp topographic break at the foot of the canyon embankments. Uplands are dominated by big-leaf maple, Himalayan blackberry, and red elderberry.

Soils: Xerochrepts and Haploxerolls, very steep

Hydrologic Source: surface flow, sheetflow, precipitation

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Western red cedar	Himalayan blackberry		reed canarygrass

Wetland Functions: intact fish habitat; high enhancement potential; low education, recreation and aesthetic values; other functions moderate

Significant? ☒ Yes ☐ No Remarks: within 1/4 mile of WQ limited stream; connected to ODFW fish-bearing stream

Potential Restoration Opportunities: Manage invasive species; add native emergents and shrubs for greater species diversity.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

GENERAL INFORMATION

Wetland: Fritchie Creek tributary	Code: FR-02	Field dates: 3/21/02
Plot #s: DP-1, DP-2	Size: 0.16 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PEM	HGM Class: RFT	Investigators: LW, TB
Basin: Tualatin River		Sub-basin: Fritchie Creek

LOCATION

Street address/location: north of Johnson Rd., 200 feet southwest of I-205

Legal description: Lots 500, 502; T2S, R1E, Section 34 (Atlas #5330)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis for boundary): Wetland is associated with Fritchie Creek floodplain at bottom of steep-sided canyon. Stream is incised but meandering in a 40- to 75-ft-wide bottomland. The stream becomes more incised downstream. There is a high berm with a water control gate (open) downstream from the sample site. Wetland hydrology is provided by surface flow and groundwater (a seep was noted near the toe of the I-205 embankment). Upstream, the creek flows out of a culvert under I-205 about 200 ft. east of sample site. Forested canyon slopes and stream channel are in a relatively natural condition. The wetland boundary is at a sharp topographic break at the foot of the canyon slopes. Upland banks are dominated by big-leaf maple, Himalayan blackberry, osoberry, sword fern, and Pacific waterleaf. In addition, some of the bottomland areas have been dewatered, and are dominated by Himalayan blackberry, waterleaf and English ivy.

Soils: Xerochrepts and Haploxerolls, very steep

Hydrologic Source: streamflow, groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Pacific willow		Himalayan blackberry	reed canarygrass
			stinging nettle

Wetland Functions: intact hydrologic control; high enhancement potential, aesthetically pleasing; not appropriate for education or recreation uses; other functions moderate

Significant? ☒ Yes ☐ No Remarks: direct connection to ODFW salmonid stream; within ¼ mile of WQ limited stream

Potential Restoration Opportunities: Manage invasive species (reed canarygrass, blackberry and ivy). Add native shrubs to diversity habitat.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: South Fork Fritchie Creek	Code: FR-03	Field dates: 3/21/02
Plot #s: DP-1, DP-2	Size: 0.35 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PFO	HGM Class: RFT	Investigators: LW, TB
Basin: Tualatin River		Sub-basin: Fritchie Creek

LOCATION

Street address/location: west side of Johnson Rd., north of Meadowview Ct.

Legal description: Lots 1300, 1700, 1900, 2000, 2100; T2S, R1E, Section 34 (Atlas #5330)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis for boundary): Wetland is associated with the stream channel which flows between Johnson Road and a steep embankment. There is residential development at the top of the bank. The wetland extends across much of the narrow bottomland, ending at the topographic break at the foot of the west embankment and at the foot of the short slope below Johnson Road. Wetland vegetation is dominated by western red cedar and red alder, with skunk cabbage common on the ground layer. Common upland trees next to the wetland include big-leaf maple and red alder. Other dominants are Himalayan blackberry, waterleaf, creeping buttercup, piggy-back and sword fern.

Soils: Xerochrepts and Haploxerolls, very steep

Hydrologic Source: streamflow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Western red cedar	salmonberry	Himalayan blackberry	skunk cabbage
red alder			piggy-back plant
big-leaf maple			

Wetland Functions: high enhancement potential; low education and recreation values; other functions moderate

Significant? ☒ Yes ☐ No Remarks: connected to salmonid stream; within ¼ mile of WQ limited stream

Potential Restoration Opportunities: Add dense native shrubs along Johnson Rd. to improve buffer.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Lower North Fork Fritchie	Code: FR-04	Field dates: 4/3/02
Plot #s: DP-1, DP-2	Size: 0.41 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PEM	HGM Class: RFT	Investigators: TB, LW
Basin: Tualatin River		Sub-basin: Fritchie Creek

LOCATION

Location/address: east side of Johnson Rd., across from Tualatin River

Legal description: Lots 800, 1000, 1100; T2S, R1E, Section 34 (Atlas #5330)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland FR-04 is at the lower end of the North Fork of Fritchie Creek, just east of Johnson Road. Most of the surrounding area is residential, although it is near the edge of the UGB and more open rural residential areas. The Tualatin River 100-year floodplain extends up Fritchie to this wetland, and the owners noted that the area flooded in 1996-1997. Fritchie Creek flows along the north edge of the floodplain at the toe of a moderately sloped forested embankment that extends up to I-205. The stream is incised deeply at the north end of the reach, but less downcut toward the south end. Wetland hydrology is provided by stream overflow and a seasonal high water table with groundwater discharges from hillslope seeps. The emergent wetland follows the path of the stream and widens to the west where seepage is evident and to east where it meets the floodplain. Sampling was conducted at the west end of the wetland. The stream flows into a culvert under Johnson Road and continues south to the Tualatin River. The forested north slope is relatively undisturbed. The bottomland area is being managed by the home owner, and includes blackberry removal, mowing, and gardening. The wetland boundary to the north is at an irregular topographic break on the slope face; groundwater is discharged at the foot of these breaks. The wetland boundary on flatter ground is defined by a slight topographic rise and a change in vegetation. Uplands are dominated by big-leaf maple, red alder, Himalayan blackberry, osoberry, and sword fern.

Soils: Cloquato Silt Loam

Hydrologic Source: surface flow; groundwater seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
		Himalayan blackberry	skunk cabbage giant horsetail

Wetland Functions: intact hydrologic control; high enhancement potential; low education, recreation and aesthetic values; other functions moderate

Significant? ☒ Yes ☐ No Remarks: connected to salmonid stream; 1/4 mile from WQ limited stream

Potential Restoration Opportunities: Continue management of invasive species. Consider moving home out of floodplain.

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A 30

West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Hidden Springs	Code: HI-01	Field dates: 4/2/02
Plot #s: DP-1, DP-2	Size: 0.33 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PSS	HGM Class: DOF	Investigators: TB, LW
Basin: Willamette River		Sub-basin: Hidden Springs Creek

LOCATION

Location/address: south of Derby St. in Sunburst Park

Legal description: Lot 13500; T2S, R1E, Section 23 (Atlas #5031)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland HI-01 is in a shrub thicket at Sunburst Park. The park is open space surrounded by residential housing. HI-01 is the headwaters of Hidden Springs Creek, a piped tributary to Trillium Creek. Wetland hydrology is provided by subsurface discharge from a series of seeps along the bottom of a broad, flat swale. The wetland outflow enters a pipe, which eventually discharges to Trillium Creek. There is no topographic break but the wetland boundary is defined by the point where Pacific ninebark and willow drop out, and upland species dominate. Uplands at the site are dominated by Oregon white oak, Himalayan blackberry, and osoberry.

Soils: Hardscrabble Silt Loam, 7-20% slopes

Hydrologic Source: groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Pacific willow	Pacific ninebark		hairy willow-herb

Wetland Functions: has educational and recreational values; water quality function is not present; other functions moderate

Significant? ☐ Yes ☒ No Remarks: criteria not met

Potential Restoration Opportunities: Revegetate eroded soils; guide users on designated trails outside and around wetland.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

General Information

Wetland: Robinwood Creek wetlands Code: RO-01 Field dates: 4/23/02

Plot #s: DP-1, DP-2 Size: 0.29 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PEM, PFO HGM Class: RFT Investigators: TB, LW

Basin: Willamette River Sub-basin: Robinwood Creek

Location

Location/address: Upper Midhill Dr. north of Robinwood Way

Legal description: Lots 3800, 3900, 5000; T2S, R1E, Section 14 (Atlas # 4832)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland RO-01 is situated on a northeast facing slope along Robinwood Creek in a future City park at Upper Midhill Drive. The park site is mostly forested and the wetland includes both forested and emergent components; Oregon ash and black cottonwood are dominants in the forest areas, and slough sedge and common camas in the emergent areas. Single family housing borders the park on all sides. Wetland hydrology is provided by streamflow and groundwater discharges from hillside seeps. The wetland boundary is defined by a change from slough sedge and camas to English ivy, sword fern, oceanspray and hazelnut as dominants. Upland areas are dominated by Oregon white oak and Himalayan blackberry.

Soils: Cascade Silt Loam, 8-15% slopes

Hydrologic Source: surface flow, seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash			common camas
black cottonwood			slough sedge

Wetland Functions: intact hydrologic control, high enhancement potential has educational uses; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control, high enhancement potential has educational uses; other functions moderate

Potential Restoration Opportunities: Major Himalayan blackberry infestation in adjacent forest has been recently cleared; will require continued management.

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A32

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

General Information

Wetland: Tanner 1 (regional facility) Code: TA-01 Field dates: 4/2/02

Plot #s: DP-1, DP-2 Size: 0.37 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PEM HGM Class: RFT Investigators: TB, LW

Basin: Willamette River Sub-basin: Tanner Creek

Location

Location/address: Salamo Rd. at Bland Circle

Legal description: Lots 1103, 1402, 3500, 3700; T2S, R1E, Section 35 (Atlas #5332)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland TA-01 is near the upper end of Salamo Creek, a small tributary to Tanner Creek. TA-01 is an on-line pond that has been redesigned as a retention basin for newly developing areas nearby. The pond is surrounded by gravel and sand fill material on all sides except the inflow channel on the north end. There is very little wetland vegetation except for reed canarygrass along the inflowing stream. There is some vegetation on the surrounding banks, mostly upland pioneer species. Wetland hydrology is provided by the stream. The stream flows into the pond from the north, and empties into a culvert under Bland Circle. The wetland boundary is near the wetted edge of the gravel/sand banks. Uplands are dominated by tall fescue and cultivated clovers.

Soils: Delena Silt Loam, 3-12% slopes

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
red alder	willow		reed canarygrass
			cattail
			small loosestrife

Wetland Functions: intact hydrologic control; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control

Potential Restoration Opportunities: If consistent with regional stormwater facility management objectives, plant native shrubs along wetland perimeter to add buffer and wildlife cover.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Tanner 2 | Code: TA-02 | Field dates: 4/2/02

Plot #s: (no access) | Size: 0.59 acres | Method: ☐ on-site ☒ off-site

Cowardin Class: PSS, PFO | HGM Class: RFT | Investigators: TB, LW

Basin: Willamette River | Sub-basin: Tanner Creek

LOCATION

Location/address: between Old Parker Rd. and Rosemont Rd.

Legal description: Lots 300, 1100; T2S, R1E, Section 26 (Atlas #5232)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland TA-02 is at the headwaters of Tanner Creek. It runs parallel to Old Parker Road south of Rosemont Drive, across from an area of new development. The stream flows down a moderately sloped draw with Old Parker Road above the west bank, and a hillside pasture above the east bank. Wetland hydrology is provided primarily by subsurface discharge, with some surface flow inputs from the west. There is sufficient flow to fill a pond near the upstream end of the stream channel. The pond may be impounded by a beaver dam but this could not be confirmed. The stream flows into a culvert under Palmer Road, then across an open space tract (future park). The wetland boundary is limited to a narrow strip of wetland plants along the edge of the stream channel and pond. Uplands are dominated by Himalayan blackberry with some Douglas fir and Oregon white oak near the headwaters.

Soils: Delena Silt Loam, 3-12% slopes

Hydrologic Source: groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
red alder	Pacific willow		reed canarygrass
black cottonwood	Sitka willow		soft rush

Wetland Functions: intact fish habitat and hydrologic control; aesthetically pleasing; high enhancement potential; not appropriate for education; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact fish habitat; intact hydrologic control

Potential Restoration Opportunities: Manage invasive exotic species.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Tanner 3 | Code: TA-03 | Field dates: 4/18/02

Plot #s: N/A | Size: 0.48 acres | Method: ☐ on-site ☒ off-site

Cowardin Class: PSS | HGM Class: RFT | Investigators: TB, LW

Basin: Willamette River | Sub-basin: Tanner Creek

Location

Location/address: south of Parker Road, west of Wild Rose Drive

Legal description: Lots 500, 7800; T2S, R1E, Section 26 (Atlas # 5232)

Wetland Description

Description (incl. topo. position, land use, basis): Wetland TA-03 follows upper Tanner Creek from the Parker Road crossing and TA-02 (upstream) to Wild Rose Drive. The wetland is set aside in open space as part of the surrounding residential development (in progress--see Det 99-0558). Wetland hydrology is provided by Tanner Creek. The wetland boundary is defined by a distinct topographic break at the base of valley side slopes and by a change in vegetation from reed canarygrass, willow and alder to Douglas fir, Himalayan blackberry and upland grasses.

Soils: Delena Silt Loam, 3-12% slopes

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	red alder		reed canarygrass
	willow sp.		

Wetland Functions: intact hydrologic control, high enhancement potential has educational and recreational uses; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control

Potential Restoration Opportunities: Manage invasive species, particularly reed canarygrass; replace blackberry with riparian buffer of native trees and shrubs.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Tanner 4 (Imperial Dr.)	Code: TA-04	Field dates: 4/23/02
Plot #s: N/A	Size: 0.25 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PSS	HGM Class: RFT	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Tanner Creek	

Location

Location/address: between Imperial Drive and I-205, across from Manchester Court

Legal description: Lots 119, 120, 158; T2S, R1E, Section 36 (Atlas # 5333, 5433)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland TA-04 is an ash, willow and dogwood dominated scrub-shrub wetland bordered by housing and located south of Imperial Drive. Tanner Creek flows through the eastern edge of the wetland. Wetland hydrology is provided by stream overflow and by groundwater discharge from hillside seeps. The wetland is set on a gentle southeast slope and backs up to berm along the I-205 right-of-way. The toe of this berm defines the south wetland boundary, Tanner Creek is the east boundary, and a change from ash, willow and dogwood to dense blackberry marks the northwest boundary. Some development has occurred since delineation was completed (see Det 94-0354); in particular, fill and grading have altered and potentially eliminated wetland hydrology and the small wetland area previously mapped to the east of Tanner and Imperial Drive and new homes have reduced the size of the current wetland.

Soils: Borges Silty Clay Loam, 0-8% slopes

Hydrologic Source: surface flow, groundwater seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	Oregon ash		reed canarygrass
	Pacific willow		
	red-osier dogwood		

Wetland Functions: intact fish habitat, high enhancement potential; not appropriate for education; other functions moderate

Significant? ☒ Yes ☐ No Remarks: within 1/4 mile of WQ limited river

Potential Restoration Opportunities: Restore downcut streambed; manage reed canarygrass and Himalayan blackberry.

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West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Tanner 5	Code: TA-05	Field dates: 5/16/02
Plot #s: N/A	Size: 1.34 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PFO, PEM, POW	HGM Class: RFT	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Tanner Creek	

LOCATION

Location/address: south of Parker Road, north of Beacon Hill Drive

Legal description: Lots 1800, 4200, 5600, 8000; T2S, R1E, Section 25 (Atlas # 5232, 5233, 5333)
Lots 7900, 8000; T2S, R1E, Section 26 (Atlas # 5232, 5233, 5333)
Lot 4200; T2S, R1E, Section 36 (Atlas # 5232, 5233, 5333)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland TA-05 is a long, mostly linear wetland along the Tanner Creek channel with a mix of palustrine forested and emergent components and three stream-associated ponds. Land to the south of this wetland is the site of new housing developments, with roads, homes and stormwater facilities under construction in Spring 2002. Wetland hydrology is provided by surface flow and to a lesser extent by hillside seeps and sheet flow. The wetland boundary is defined by topographic break at the toe of the valley side slopes where they meet the Tanner Creek channel migration zone; at the ponds, the boundary follows a sharp topographic break (top of bank) and/or a vegetation change from reed canarygrass, nettle and ash to tall fescue, Douglas fir and Oregon white oak as dominants. The boundary defined in Det 98-0092 appears accurate, and is extended east of Beacon Hill in the Local Wetland Inventory mapping.

Soils: Borges Silty Clay Loam, 0-8% and Delena Silt Loam, 3-12%

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash			reed canarygrass
			stinging nettle

Wetland Functions: diverse wildlife habitat, intact hydrologic function; low education and aesthetic functions; other functions moderate

Significant? ☒ Yes ☐ No Remarks: diverse wildlife habitat, intact hydrologic function; low education and aesthetic functions; other functions moderate

Potential Restoration Opportunities: Control impacts from new development, including erosion and sedimentation, stormwater discharge, fill and vegetation removal. Avoid wetland crossings and plant a dense and wide buffer of native vegetation along the wetland edge in the vicinity of new development. Manage invasive species.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Tanner 6 (wet meadow)	Code: TA-06	Field dates: 5/16/02
Plot #s: N/A	Size: 0.18 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PEM	HGM Class: SH	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Tanner Creek	

LOCATION

Location/address: south of Parker Road, west of Beacon Hill Lane extension

Legal description: Lot 1800; T2S, R1E, Section 25 (Atlas # 5233)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): TA-06 is a group of four wet meadows on a south facing slope, south of Parker Road. The surrounding land use is primarily open space, with new housing development occuring south of Tanner Creek. The wet meadows appear to be groundwater-fed, headwater slope wetlands dominated by common camas, western buttercup and wetland grasses; viewing from a distance suggested that the Det 98-0092 delineation is reasonably accurate, with a boundary at least partly defined by vegetation change.

Soils: Borges Silty Clay Loam, 0-8% slopes

Hydrologic Source: groundwater seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
			common camas
			western buttercup

Wetland Functions: all functions low or moderate

Significant? ☐ Yes ☒ No Remarks: criteria not met

Potential Restoration Opportunities: none noted

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

General Information

Wetland: Tanner 7 (ash forest)	Code: TA-07	Field dates: 5/16/02
Plot #s: N/A	Size: 0.69 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PFO	HGM Class: SH	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Tanner Creek	

Location

Location/address: south of Parker Road, west of Beacon Hill Lane extension

Legal description: Lot 1800; T2S, R1E, Section 25 (Atlas # 5233)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland TA-07 is a group of ash dominated wetlands adjacent to TA-06 that could not be accessed or viewed, except for identification of canopy layer. No development related disturbance was observed and the recent delineation (Det 98-0092) was assumed to be accurate. The wetlands are on a gentle south-facing slope, surrounded by open space. Wetland hydrology is assumed to be provided by groundwater seepage, similar to the adjacent TA-06.

Soils: Borges Silty Clay Loam, 0-8% slopes

Hydrologic Source: groundwater seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	(no view of shrub and ground layer plants)		

Wetland Functions: high enhancement potential; all other functions low or moderate

Significant? ☐ Yes ☒ No Remarks: criteria not met

Potential Restoration Opportunities: none noted

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West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Tanner 8	Code: TA-08	Field dates: 5/16/02
Plot #s: N/A	Size: 0.39 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PFO	HGM Class: RFT	Investigators: TB
Basin: Willamette River	Sub-basin: Tanner Creek	

LOCATION

Location/address: north of Fairhaven Drive, east of North Hampton Court

Legal description: Lots 4300, 4400, 7700; T2S, R1E, Section 36 (Atlas # 5333)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland TA-08 is ash dominated wetland along Tanner Creek, which widens in areas of braided channels and local seeps. Residential home and road construction are occuring on all sides of the wetland. Wetland hydrology is provided both by stream flow and by local groundwater seeps. The wetland boundary is defined by a topographic break at the base of the ravine slopes, and by a change in vegetation from ash and salmonberry to Oregon white oak, Douglas fir and snowberry. Delineation Det 97-0543 appears reasonably accurate.

Soils: Borges Silty Clay Loam, 0-8% slopes

Hydrologic Source: surface flow, seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	salmonberry		stinging nettle
			soft rush
			water parsley

Wetland Functions: high enhancement potential, low educational value; other functions moderate

Significant? ☐ Yes ☒ No Remarks: criteria not met

Potential Restoration Opportunities: Manage and treat stormwater and impacts from new development on both sides of wetland.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Tanner 9	Code: TA-09	Field dates: 5/2/02
Plot #s: DP-1, DP-2	Size: 1.58 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PSS, PFO	HGM Class: RFT	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Tanner Creek	

LOCATION

Location/address: south of Fairhaven Drive to vicinity of Tanner Creek Lane

Legal description: Lots 500, 3100, 3200, 3600, 3700, 3800, 6600, 7000, 7800; T2S, R1E, Section 36 (Atlas # 5333)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland TA-09 follows Tanner Creek down a gentle gradient south from Fairhaven Drive for approximately 1,000 feet to the area of Tanner Creek Lane. It is bordered by roads and recent residential development. It contains a mix of palustrine forested and scrub-shrub components with ash, willow and cottonwood dominant in the former and red-osier dogwood in the latter. The wetland also includes two small ponds, one on each side of Tanner Creek Lane, connected by three 4-foot diameter culverts (creating a continuous open water connection). The wetland widens in several locations: where hillside seeps occur (upstream), where the stream channel is braided, at the Salamo Creek confluence, and at the ponds. Wetland boundaries in the southern part of the wetland are defined by distinct topographic breaks at the base of ravine slopes and/or fill embankments; to the north, south of Fairhaven, Tanner Creek defines the eastern boundary and the western (upslope) boundary is at the point where Oregon ash and soft rush transition to cottonwood with a mixed understory of upland dominated species, including Himalayan blackberry. Boundaries of Det 97-0551 were slightly adjusted to reflect new roadfill and grading.

Soils: Borges Silty Clay Loam, 0-8% slopes

Hydrologic Source: surface flow, groundwater (seeps)

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	red-osier dogwood		reed canarygrass
Pacific willow			soft rush
black cottonwood			creeping buttercup

Wetland Functions: intact hydrologic control, high enhancement potential, low educational value; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control

Potential Restoration Opportunities: Manage and pretreat stormwater inputs; control reed canarygrass

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A41

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Trillium 1 (ash forest)	Code: TR-01	Field dates: 4/23/02
Plot #s: N/A	Size: 1.59 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PFO, PEM	HGM Class: SH	Investigators: TB, LW
Basin: Willamette River	Sub-basin: Trillium Creek	

Location

Location/address: east of Rosemont Rd., near Bay Meadows Dr.

Legal description: Lot 12500; T2S, R1E, Section 23 (Atlas # 5031, 5131)
Lots 5500, 12500, 12600; T2S, R1E, Section 26 (Atlas # 5031, 5131)

Wetland Characteristics

Description (incl. topo. position, land use, basis):
Wetland TR-01 is located at the headwaters of Trillium Creek adjacent to Rosemont Road. It is bordered by School District open space to the north and east, and residential development to the south and west. The wetland is situated at the ridgetop with a very gentle slope to the north in the direction of the emerging stream channel. Wetland hydrology is provided by groundwater seepage near Rosemont Road along the southern School District property boundary. The wetland boundary is defined by a slight topographic rise and a transition from Oregon ash, red-osier dogwood and common camas to Oregon white oak, dewberry and Himalayan blackberry as dominants. The Local Wetland Inventory mapping extends delineation RM 1093 west of the School District property.

Soils: Cascade Silt Loam, 8-15% slopes and Cornelius Silt Loam, 8-15% slopes

Hydrologic Source: groundwater, seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	red-osier dogwood		common camas

Wetland Functions: diverse wildlife habitat, intact fish habitat; recreation not appropriate; other functions moderate

Significant? ☒ Yes ☐ No Remarks: diverse wildlife habitat, intact fish habitat

Potential Restoration Opportunities: None noted (diverse habitat).

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Trillium 2 (ash forest)	Code: TR-02	Field dates: 4/23/02
Plot #s: N/A	Size: 0.59 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PSS, PFO	HGM Class: SH	Investigators: TB, LW
Basin: Willamette River	Sub-basin: Trillium Creek	

Location

Location/address: south of Hidden Springs Rd. east of Rosemont Rd.

Legal description: Lots 11000, 11100, 12301, 12500; T2S, R1E, Section 23 (Atlas # 5031, 5032)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland TR-02 is approximately 300 feet downstream of TR-01. It is similar in character (see TR-01 description), but with significant encroachment by Himalayan blackberry. The wetland follows the low point in the valley along Trillium Creek. Oregon ash is a dominant species and the wetland is bordered by Douglas fir to the south and European hawthorn to the north. Site access was limited due to blackberry, but Delineation RM 1093 was assumed to be accurate.

Soils: Hardscrabble Silt Loam, 2-7% slopes

Hydrologic Source: surface flow, seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	Oregon ash	Himalayan blackberry	

Wetland Functions: diverse wildlife habitat

Significant? ☒ Yes ☐ No Remarks: diverse wildlife; recreation not appropriate; other functions moderate

Potential Restoration Opportunities: Diverse habitat; however, major blackberry eradication is warranted.

ORD 1545
A43

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Trillium 3 | Code: TR-03 | Field dates: 4/23/02

Plot #s: DP-1, DP-2 | Size: 2.06 acres | Method: ☒ on-site ☐ off-site

Cowardin Class: PFO, PEM, PSS | HGM Class: RFT | Investigators: TB, LW

Basin: Willamette River | Sub-basin: Trillium Creek

Location

Location/address: north of Cedaroak Dr., west of Trillium Dr.

Legal description: Lots 7700, 8000, 8100; T2S, R1E, Section 13 (Atlas #4833, 4933)
Lots 200, 203, 300, 400, 900, 1000, 1101, 1102, 1200, 1300, 1301, 7900, 8100; T2S, R1E, Section 24 (Atlas #4833, 4933)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland TR-03 is associated with Trillium Creek where it flows north of Cedaroak Drive and parallel to Trillium Drive and Ridgewood Way. This is an area surrounded by residential development. In most parts of this reach, the banks above the floodplain are steep and high. The exception is part of the northeast bank, which is lower and has housing built near the stream. Wetland hydrology is provided by stream flow, and water is entering from several side channels as well as the main stream. The wetland occupies much of the floodplain of the creek. The wetland boundary is defined by skunk cabbage and/or lady fern on the wetland side, and big-leaf maple, English ivy, and waterleaf on the upland side. Red alder and Himalayan blackberry are common in both upland and wetland communities. Other common upland plants are trailing blackberry and western virgin's-bower.

Soils: Woodburn Silt Loam, 8-15% slopes

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
red alder	red-osier dogwood salmonberry	Himal. blackberry	lady fern skunk cabbage

Wetland Functions: intact fish habitat and hydrologic control; high enhancement potential; not appropriate for education or recreation; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact fish habitat and hydrologic control; connected to salmonid stream

Potential Restoration Opportunities: Manage invasive exotics; wetland conversion has occurred at the north end of wetland -- some restoration of wetland functions is possible in this area.

ORD 1545
A44

West Linn Goal 5 Inventory

Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Trillium 4	Code: TR-04	Field dates: 4/18/02
Plot #s: DP-1, DP-2	Size: 0.93 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PSS	HGM Class: RFT	Investigators: TB, AK
Basin: Willamette River	Sub-basin: Trillium Creek	

LOCATION

Location/address: north of Elmran Dr., between Trillium Dr. and Calaroga Dr.

Legal description: Lots 1800, 2100, 2400, 2500, 2501, 2502, 3000, 3200, 4500; T2S, R1E, Section 13 (Atlas # 4833)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland TR-04 is located on a wide floodplain terrace bordering Lower Trillium Creek. Above the wetland rise steep ravine slopes, with residences located near the edge of the ravine. The wetland extends north (downstream) from Elmran Drive, approximately 800 feet before the ravine banks narrow to the width of the channel. Wetland hydrology is provided by stream overflow and by groundwater seepage at the base of the ravine banks. The wetland boundary is defined by a sharp topographic break at the base of these slopes, where dominant wetland species, including red-osier dogwood and lady fern, are replaced by big-leaf maple, Douglas fir, osoberry and sword fern on the slopes.

Soils: Woodburn Silt Loam, 8-15% slopes

Hydrologic Source: surface flow, seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	red-osier dogwood red alder		lady fern

Wetland Functions: intact fish habitat and hydrologic control; high enhancement potential, low education, recreation and aesthetic values; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact fish habitat and hydrologic control

Potential Restoration Opportunities: Manage encroaching invasive species, including English ivy and Himalayan blackberry.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

GENERAL INFORMATION

Wetland: Swift Shore Open Space — Code: TU-01 — Field dates: 3/20/02

Plot #s: DP-1, DP-2 — Size: 1.14 acres — Method: ☒ on-site ☐ off-site

Cowardin Class: PEM — HGM Class: RFT — Investigators: TB, LW, AK

Basin: Tualatin River — Sub-basin: Tualatin River

LOCATION

Location/address: south of Kimberly Drive, north of Tualatin River, west of Weiss Bridge

Legal description: Lots 2836, 4001; T3S, R1E, Section 02 (Atlas #5531)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland TU-01 is associated with the Tualatin River. It is located south of Kimberly Drive, on a low terrace adjacent to and north of the river. The wetland is partly within Swift Shores Open Space, and single family housing occupies the land upslope from the terrace. The wetland is an approximately 1,000 ft. long and generally narrow swale with a small pond at each end. The west pond was designed as a stormwater detention facility named the Swift Shores Detention Pond. Local high school students are planting and maintaining the streambanks and terrace and are monitoring aquatic life in the pond. The east pond is also excavated, and both have one or more small overflow channels connecting to the Tualatin River. Wetland hydrology is provided by stormwater discharge (precipitation) and to a lesser extent stream flow; the two ponds may also intercept a high water table. Reed canarygrass dominates most of the wetland, and wetland shrub species grow on the pond edges. The adjacent uplands support varying combinations of Douglas fir, grand fir, Oregon white oak, and big-leaf maple. Other common upland species are trailing blackberry and orchard grass.

Soils: Cloquato Silt Loam

Hydrologic Source: precipitation, surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
red alder	red-osier dogwood	Himalayan blackberry	reed canarygrass
Oregon ash	Sitka willow		soft rush
	Douglas spiraea		

Wetland Functions: high enhancement, educational and recreational values; other functions moderate

Significant? ☒ Yes ☐ No Remarks: Habitat for state-listed sensitive species (red-legged frog breeding site); connected to salmonid stream; within 1/4 mile from WQ stream

Potential Restoration Opportunities: Support high school monitoring and enhancement efforts; manage reed canarygrass and other invasives.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

GENERAL INFORMATION

Wetland: Tualatin Wet Meadow Code: TU-02 Field dates: 3/20/02

Plot #s: (See wd00-0514) Size: 0.3 acres Method: ☐ on-site ☒ off-site

Cowardin Class: PEM HGM Class: DCNP Investigators: TB, LW, AK

Basin: Tualatin River Sub-basin: Tualatin River

LOCATION

Location/address: south of Willamette Falls Drive at Borland Bridge

Legal description: Lots 300, 400; T2S, R1E, Section 34 (Atlas #5429)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland TU-02 is on a broad terrace between Willamette Falls Drive and the Tualatin River on the west edge of town and south of the Borland Bridge. The land was farmed, but is now a city park. The terrace is an upland field dominated by tall fescue, with a cluster of three small wetland depressions on the south side of the field. Wetland hydrology is provided by precipitation and sheetflow. The wetland boundary is at the shift in vegetation from reed canarygrass dominance to tall fescue dominance. A recent boundary delineation (WD 00-0514) and survey was confirmed by visual on-site observation of vegetation and hydrology.

Soils: Newberg Fine Sandy Loam

Hydrologic Source: precipitation, sheetflow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
			reed canarygrass

Wetland Functions: has educational and recreational uses; other functions moderate

Significant? ☒ Yes ☐ No Remarks: within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Integrate native emergent species while managing reed canarygrass.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Tualatin | Code: TU-03 | Field dates: 3/20/02

Plot #s: (see wd00-0514) | Size: 1.89 acres | Method: ☐ on-site ☒ off-site

Cowardin Class: PFO | HGM Class: RFT | Investigators: TB, LW, AK

Basin: Tualatin River | Sub-basin: Tualatin River

Location

Location/address: south of Willamette Falls Drive near Borland Bridge

Legal description: Lots 400, 500; T2S, R1E, Section 34 (Atlas #5429)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland TU-03 is an old oxbow slough between Willamette Falls Drive and the Tualatin River on the west edge of town and south of the Borland Bridge. The slough is now part of a City Park. Wetland hydrology is provided by overflow from the Tualatin River. The wetland boundary is defined by an abrupt topographic break and by a shift in vegetation from reed canarygrass to Himalayan blackberry as a dominant species. A recent boundary delineation (WD 00-0514) and survey was confirmed by visual on-site observation of vegetation and hydrology.

Soils: Newberg Fine Sandy Loam

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	willow		reed canarygrass
	red-osier dogwood		

Wetland Functions: high enhancement potential; has recreational uses; low aesthetic value; other functions moderate

Significant? ☒ Yes ☐ No Remarks: connected to salmonid stream; within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Manage reed canarygrass and blackberry to allow native flora to survive.

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A48

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Brandon Swale | Code: TU-04 | Field dates: 3/20/02

Plot #s: DP-1, DP-2 | Size: 0.13 acres | Method: ☒ on-site ☐ off-site

Cowardin Class: PEM | HGM Class: RFT | Investigators: LW, AK, TB

Basin: Tualatin River | Sub-basin: Tualatin River

Location

Location/address: west of Brandon Place, along the Tualatin River

Legal description: Lot 3700; T2S, R1E, Section 34 (Atlas #5429)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland TU-04 is located north of Willamette Falls Drive near the Borland Bridge at the west edge of town. The wetland is along the bottom of a 400-foot constructed swale between the Tualatin River and an adjacent housing development. It was constructed to receive runoff from the housing area and to divert floodwaters during storm events. Wetland hydrology is provided by precipitation and collected stormwater runoff. The swale empties into the Tualatin River about 150 feet downstream from the sample site. The wetland boundary is confined to the bottom of the swale. Upland vegetation is a mixture of turf grasses dominated by tall fescue and bluegrasses that are regularly mowed.

Soils: McBee Variant Loam

Hydrologic Source: precipitation and surface flow (stormwater)

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
red alder			reed canarygrass

Wetland Functions: has educational uses; other functions moderate

Significant? ☐ Yes ☒ No Remarks: Is artificially created from upland (meets exclusion criterion); state jurisdiction has not been determined.

Potential Restoration Opportunities: Native shrub plantings along and above the swale banks may enhance wetland functions.

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Tualatin Open Space Code: TU-05 Field dates: 3/21/02

Plot #s: DP-1, DP-2 Size: 3.82 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PEM, PFO HGM Class: RFT Investigators: TB, LW, AK

Basin: Tualatin River Sub-basin: Tualatin River

Location

Location/address: west of Michael Court and south of Johnson Road along western city limits

Legal description: Lots 1200, 1300, 1501, 8400; T2S, R1E, Section 34 (Atlas #5330, 5430)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland TU-05 is located west of Michael Drive, on the Tualatin River floodplain at the bottom of a high, steep embankment. The south part of the wetland is in the Tualatin River Open Space, and the north part is in private ownership. The broad wetland swale is probably the remnant of an old river channel. Historic and current land uses and manipulation have resulted in a wetland complex with varying water depths and plant communities. Wetland hydrology is provided primarily by subsurface discharge from the adjacent embankments and interception of the high water table. The Tualatin River furnishes additional waters from winter overflow during flood events. Water from TU-05 empties into the Tualatin River through an outflow channel to the west. The wetland boundary on the southeast side is at a sharp topographic break at the foot of the embankment. The west and north boundaries are less sharply defined by topography, but in most places are well marked by the shift from wetland to upland vegetation. Uplands on the west side in the park are dominated by agricultural clover and turf grasses including fescue, bluegrass and bentgrass. The east and south embankments are dominated by big-leaf maple and Himalayan blackberry.

Soils: Wapato Silty Clay Loam

Hydrologic Source: groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	willows		reed canarygrass
	red-osier dogwood		slough sedge
	Douglas spiraea		

Wetland Functions: intact hydrologic control; high enhancement potential; has recreational uses; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control; connected to salmonid stream; within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Manage invasive species; enhance woody vegetative buffer to the

ORD 1545
A50

West Linn Goal 5 Inventory
Wetland Characterization Sheet

WINTER BROOK

GENERAL INFORMATION

Wetland: Turkey Creek	Code: TY-01	Field dates: 4/23/02
Plot #s: DP-1, DP-2	Size: 0.16 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PEM	HGM Class: RFT	Investigators: TB, LW
Basin: Willamette River		Sub-basin: Turkey Creek

LOCATION

Location/address: east end of Mary S. Young Park, along boardwalk trail

Legal description: Lot 600; T2S, R1E, Section 24 (Atlas #4934, 5034)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland TY-01 is associated with Turkey Creek, which flows through Mary S. Young Park. The creek is confined to a relatively narrow channel that widens when it leaves a steep ravine. It is a palustrine emergent wetland, with ponding near the sample site; upstream is a skunk cabbage community. Wetland hydrology is provided by stream flow. The wetland boundary is at a rather sharp topographic break dividing the floodplain from the ravine side slopes. This is the point where red alder and salmonberry are replaced by big-leaf maple and Himalayan blackberry. Other upland dominants are Oregon white oak, red elderberry, English ivy, waterleaf, and sword fern.

Soils: Xerochrepts and Haploxerolls, very steep

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
red alder	salmonberry		piggy-back-plant
			giant horsetail

Wetland Functions: has both educational and recreational values; is not sensitive, other functions moderate

Significant? ☒ Yes ☐ No Remarks: within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Some debris and dumping fill was noted along the boardwalk; remove any fill and debris and train staff to keep any such matter out of the wetland.

ORD 1545
A51

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Willamette Park area Code: WI-01 Field dates: 4/3/02

Plot #s: DP-1, DP-2 Size: 8.09 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PEM, PFO HGM Class: RFT Investigators: LW, TB

Basin: Willamette River Sub-basin: Willamette River

Location

Location/address: Willamette Park to 9th Street

Legal description: Lots 100, 102, 300, 505, 506, 507, 700, 800, 902, 903, 2200; T3S, R1E, Section 02 (Atlas #5532)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland WI-01 is a large wetland located partly in Willamette Park, which is just downstream from the mouth of the Tualatin River. WI-01 is a large and diverse wetland with emergent and forested communities, small shrub thickets, and shallow ponds. The wetland was enhanced to mitigate the construction of a new baseball field. Wetland hydrology is provided by stormwater discharge and interception of the high water table. Water from WI-01 drains to culverts under 9th Street at two locations north and south of a developed island of higher ground. Wetland boundaries to the north are at sharp topographic breaks, but others on more gradual slopes boundaries are determined by the shift from wetland to upland vegetation. Uplands at the sample site were dominated by cultivated clovers and turf grasses including tall fescue, orchard grass, and Colonial bentgrass. Scattered trees and shrubs have been planted, both native and introduced species, along the edges of the wetland.

Soils: Wapato Silty Clay Loam

Hydrologic Source: precipitation, groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	Pacific willow		reed canarygrass
	willow sp.		soft rush
			small-fruit bulrush

Wetland Functions: intact hydrological control; has educational and recreational uses; high enhancement potential; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrological control; within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Manage invasives such as reed canarygrass and blackberry; restore degraded pasture lands.

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A 52

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Willamette 1a | Code: WI-01a | Field dates: 4/3/02

Plot #s: n/a | Size: 0.84 acres | Method: ☐ on-site ☒ off-site

Cowardin Class: PEM | HGM Class: RFT | Investigators: TB, LW

Basin: Willamette River | Sub-basin: Willamette River

Location

Location/address: South end of 11th Street, northwest corner of Willamette Park

Legal description: Lots 2200, 4402, 4601; T3S, R1E, Section 02 (Atlas #5532)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland WI-01a is situatted on the Willamette lowlands at the base of south-sloping hillsides and is bordered on the south and east by Willamette Park and by residential uses to the west. The boundaries of this relatively small emergent wetland are defined by fill associated with park ballfield construction to the south and east, new home construction to the west, and a hillside slope to the north. This wetland was recently planted with native vegetation, primarily wetland shrub species, and is otherwise dominated by reed canarygrass, particularly along the north side. Wetland hydrology is provided by precipitation in the form of sheet flow and potentially by stormwater discharge from pipes. It is also provided by groundwater discharge from seeps at the foot of the hillside. The LWI mapping modifies delineation DET 97-0441 to reflect new fill to the west and to connect to delineation WD 2002-007.

Soils: Wapato Silty Clay Loam

Hydrologic Source: precipitation, groundwater

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Pacific willow			reed canarygrass
black cottonwood			

Wetland Functions: high enhancement potential; not appropriate for educational use, other functions moderate

Significant? ☒ Yes ☐ No Remarks: within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Native plantings have recently been installed, possibly as part of mitigation for new house construction and fill; manage reed canarygrass

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Willamette-9th St. East Code: WI-02 Field dates: 4/4/02

Plot #s: DP-1, DP-2 Size: 15.55 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PEM, PFO HGM Class: RFT Investigators: TB, LW, AK

Basin: Willamette River Sub-basin: Willamette River

Location

Location/address: North of Volpp Street, between 4th and 9th Streets

Legal description: Lots 100, 200; T3S, R1E, Section 01 (Atlas #5432-33, 5532-33)
Lots 100, 200, 800, 1000, 1201, 1302, 2200, 6900, 6902, 7700, 7800, 8100, 8200, 8201, 8202, 8203; T3S, R1E, Section 02
Lot 200; T2S, R1E, Section 35 (Atlas #5432-33, 5532-33)
Lot 200; T2S, R1E, Section 36 (Atlas #5432-33, 5532-33)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland WI-02 is the largest wetland in the city, and is east of 9th Street, north of a grazed pasture, and south of new housing development. The wetland has a mixture of emergent and forested communities and small shrub thickets. Wetland hydrology is provided by stormwater runoff, subsurface discharge and surface flow from Wetland WI-01. Water from WI-02 empties into a culvert under 4th Street, before entering Wetland WI-03. Wetland boundaries are generally at sharp topographic breaks, but others on more gradual slopes (e.g., pastures) are marked by the shift from wetland to upland vegetation. Uplands at the sample site (grazed land) were dominated by pasture grasses including tall fescue, timothy, and Colonial bentgrass. Himalayan blackberry was present on the edges of the field.

Soils: Wapato Silty Clay Loam

Hydrologic Source: precipitation, groundwater, surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	Pacific willow		bluegrass spp.
	willow sp.		buttercup
			small-fruit bulrush

Wetland Functions: intact hydrologic control; high enhancement potential; low aesthetic value; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control; within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Recent flooding may be helping to manage exotic grasses, although reed canarygrass remains common. Cows have some access to the stream channel and this has caused erosion; efforts to reduce or eliminate stream crossings may improve wetland functions.

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A54

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Willamette-4th St. East Code: WI-03 Field dates: 4/5/02

Plot #s: DP-1 to DP-4 Size: 2.85 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PSS HGM Class: RFT Investigators: TB, LW, AK

Basin: Willamette River Sub-basin: Willamette River

Location

Location/address: East of 4th St., west of Blue Heron Paper treatment lagoon

Legal description: Lots 101, 1700; T2S, R1E, Section 36 (Atlas #5433, 5533)
Lots 100, 101, 1700, 1800; T3S, R1E, Section 01 (Atlas #5433, 5533)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland WI-03 is a large wetland east of 4th Street, that is hydrologically linked to Wetlands WI-02 and WI-01. There are paper treatment lagoons to the east and west of it, housing to the north, and the Willamette River to the south. Most of the wetland edge is undeveloped open space owned by the paper companies. The wetland is primarily a shrub-scrub community with a few small emergent openings. Wetland hydrology is provided by stream flow with lesser amounts of subsurface discharge from springs and seeps. Surface flow from the other Willamette lowland wetlands flows through the center of the wetland in a wide channel (averaging 20' wide) which is backed up behind a beaver dam at the east end of the wetland. Water from WI-03 empties into the Willamette River via Bernert Creek. Wetland boundaries are marked by the shift from wetland to upland vegetation. An area south of the open channel contains a mosaic of 60% wetland / 40% uplands, with wetland areas dominated by Oregon ash, Pacific ninebark, Douglas spiraea and slough sedge, interspersed with upland areas containing European hawthorn, snowberry and tall Oregon grape. Uplands at the sample sites were dominated by woody species including red alder, snowberry, clustered rose and Himalayan blackberry.

Soils: Wapato Silty Clay Loam

Hydrologic Source: surface flow, groundwater seeps

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Oregon ash	Douglas spiraea		
red alder	Pacific ninebark		
Pacific willow	red-osier dogwood		
	willow sp.		

Wetland Functions: diverse wildlife habitat, intact fish habitat and hydrologic control; has recreational uses; low aesthetic value; other functions moderate

Significant? ☒ Yes ☐ No Remarks: diverse wildlife habitat, intact fish habitat and hydrologic control; connected to salmonid stream; 1/4 mile from WQ limited stream

Potential Restoration Opportunities: Diverse habitat; limited enhancement opportunities include selective removal of European Hawthorn and other exotics (e.g., blackberry).

ORD 1545
A55

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Willamette Bench-4 Code: WI-04 Field dates: 4/23/02

Plot #s: DP-1, DP-2 Size: 10.71 acres Method: ☒ on-site ☐ off-site

Cowardin Class: PEM, PFO HGM Class: RFT Investigators: TB, LW

Basin: Willamette River Sub-basin: Willamette River

Location

Location/address: West Terrace of Willamette River, south of Cedar Island

Legal description: Lots 100, 200, 300, 400, 500, 600; T2S, R1E, Section 24 (Atlas #4934, 5034)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland WI-04 is located at the east edge of Mary S. Young State Park. It is on a river terrace on the west bank of the Willamette River. The river is to the east, and a moderately sloped bank rises to the west. Wetland hydrology is provided by overflow from the river during high water. The wetland boundary is generally at the foot of the west bank. In some spots upland areas extend out on the terrace. These boundaries are defined by changes from wetland to upland vegetation and/or changes in soil colors. Uplands are dominated by big-leaf maple, red alder, black cottonwood, English ivy, hazel-nut, and waterleaf.

Soils: Newberg Fine Sandy Loam

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Pacific willow	black cottonwood		reed canarygrass

Wetland Functions: intact hydrologic control; has educational and recreational uses; high enhancement potential; other functions moderate

Significant? ☒ Yes ☐ No Remarks: intact hydrologic control; connected to salmonid stream; within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Manage reed canarygrass; add native shrub layer.

ORD 1545
A56

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Cedaroak pond	Code: WI-05	Field dates: 4/23/02, 6/27/02
Plot #s: DP-1, DP-2	Size: 0.21 acres	Method: ☒ on-site ☐ off-site
Cowardin Class: PEM	HGM Class: RFT	Investigators: TB, LW
Basin: Willamette River		Sub-basin: Lower Willamette River

Location

Location/address: Cedaroak Boat Ramp (south of parking lot)

Legal description: T2S, R1E, Section 13 (Atlas #4833-34)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland WI-05 is a shallow pond at the south end of the Cedaroak Boat Ramp site with an outflow channel to the Willamette River across from Cedar Island. The pond is located in the floodplain at the base of the east-facting river terrace above the floodplain. Residential uses are located on the terrace to the west, and open space uses border the wetland on the other sides. Wetland hydrology is provided by surface flow from a small drainageway, high river flows and by precipitation (sheetflow) from adjacent uplands. The wetland boundary is defined by the limits of Himalayan blackberry (rooting) and a topographic break at the pond edge.

Soils: Chehalis Salt Loam, Riverwash

Hydrologic Source: surface flow, precipitation

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
Pacific willow	Himalayan blackberry		reed canarygrass
			stinging nettle

Wetland Functions: has educational and recreational uses; other functions moderate

Significant? ☒ Yes ☐ No Remarks: direct connection to salmonid stream; within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Manage reed canarygrass and Himalayan blackberry.

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A57

West Linn Goal 5 Inventory
Wetland Characterization Sheet

General Information

Wetland: Cedaroak wetland | Code: WI-06 | Field dates: 5/2/02

Plot #s: DP-1, DP-2 | Size: 2.7 acres | Method: ☒ on-site ☐ off-site

Cowardin Class: PEM, PFO | HGM Class: RTT | Investigators: TB, LW

Basin: Willamette River | Sub-basin: Lower Willamette River

Location

Location/address: North of Cedaroak Boat Ramp, along Willamette River

Legal description: Lots 500, 601, 700, 800; T2S, R1E, Section 13 (Atlas #4833-34)

Wetland Characteristics

Description (incl. topo. position, land use, basis): Wetland WI-06 is located adjacent to the Willamette River on a low floodplain terrace. The wetland borders the Cedaroak Boat Ramp parking lot to the south, the river to the north and east, and residential uses to the west. The wetland is composed of both palustrine emergent and forested classes, with reed canarygrass as the emergent dominant and black cottonwood and Pacific willow as forest dominants. Wetland hydrology is provided by surface flow from a small hillside drainageway and from Willamette River high flows. The wetland boundary is defined by the toe of the west hillslope and the south road fill, and by the Willamette River elsewhere.

Soils: Chehalis Silt Loam

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
black cottonwood	Pacific willow		reed canarygrass

Wetland Functions: high enhancement potential; not appropriate for educational use, has recreational use; other functions moderate

Significant? ☒ Yes ☐ No Remarks: direct connection to salmonid stream; within 1/4 mile of WQ limited stream

Potential Restoration Opportunities: Manage reed canarygrass and replace Himalayan blackberry with a native shrub buffer.

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West Linn Goal 5 Inventory
Wetland Characterization Sheet

GENERAL INFORMATION

Wetland: Willamette Bend	Code: WI-07	Field dates: 5/23/02
Plot #s: n/a	Size: 6.28 acres	Method: ☐ on-site ☒ off-site
Cowardin Class: PEM	HGM Class: RFT	Investigators: TB
Basin: Willamette River	Sub-basin: Willamette River	

LOCATION

Location/address: East of River Street, on floodplain upstream of Goat Island

Legal description: Lots 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400; T2S, R2E, Section 30 (Atlas #5136, 5236)

WETLAND CHARACTERISTICS

Description (incl. topo. position, land use, basis): Wetland WI-07 is situated on the Willamette River floodplain terrace at the bend in the river above Goat Island and the Clackamas River Confluence. Aerial photos taken after the 1996 floods show massive scouring across this depositional point bar, from southeast to northwest, which created a lower wetland area adjacent to the river. [Wetland hydrology is provided by overflow from the river during high water.] At the south end of the wetland are two scoured depressions that are permanently flooded. Vegetation at this site is dominated by reed canarygrass, with a mixture of Pacific willow, black cottonwood, Oregon ash, spiraea, red osier dogwood, and stinging nettle occurred near the ponds. The wetland boundary is marked by a change in topography (edge of flood scour) and a change in vegetation to more xeric species (e.g., tansy, Scot's broom). Upland areas are dominated by Douglas fir, western red cedar, cottonwood, Himalayan blackberry and mowed turf grass.

Soils: Riverwash, Newberg Fine, Sandy Loam

Hydrologic Source: surface flow

Dominant Vegetation:

Trees	Shrubs	Vines	Herbs
	Pacific willow (by pond)		reed canarygrass

Wetland Functions: Intact water quality and hydrologic control functions, sensitive to impacts, high enhancement potential, recreational use, pleasing aesthetics

ignificant? ☒ Yes ☐ No Remarks: Intact WQ and HC functions, within 1/4 mile of WQ limited stream, connected to salmonid stream

Potential Restoration Opportunities: Manage invasive exotic species

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A59 .

ATTACHMENT "B"
RIPARIAN CORRIDOR
INVENTORY

Riparian Corridors

The inventory of riparian corridors was conducted concurrently with the wetlands inventory. The first phase of the inventory was the planning phase in which methods, basins and riparian reaches were defined, field base maps prepared, and significance criteria determined. This phase occurred between June 2001 and March 2002. Public notice of the project and opportunities for input was provided through printed media, notices at City Hall and the City Library, and through a series of neighborhood meetings. A public open house was held in April 2002. In March, the field inventory phase began. This phase included the field surveys, functional assessments, and significance determination and concluded in June 2002.

Unlike the preceding wetlands inventory, the DSL has not adopted special rules related to riparian corridors. Riparian inventories follow the standard inventory requirements of the Goal 5 Administrative Rule (OAR 660-023-0030). This rule, as amended in 1996, provides a "safe harbor" process to identify and protect significant riparian corridors. The City determined that the safe harbor process for determining significant streams and riparian corridors would leave many of the city's streams out because many of West Linn's smaller streams are not "fish-bearing" as defined by the Oregon Department of Forestry. Nevertheless, these stream corridors are a highly-valued asset to the West Linn community. Thus, for the purposes of the inventory, the City chose to follow the standard Goal 5 process.

Inventory Methods

Two levels of investigation were conducted for the inventory of riparian corridors: a review of existing information and a field inventory.

Review of Existing Information

A review of existing literature, maps, and other materials was conducted to gather information on riparian corridors along rivers, lakes, ponds, and streams within West Linn. The sources of information identified in the LWI methods section were consulted for the riparian inventory.

This information was the basis for preparing a GIS base map showing potential riparian corridors, including the approximate location of all streams and rivers, 100-year floodplains and 1996 flood boundaries, topography, major streets or landmarks, and study area boundaries. To refine this information, stereo-pair photographs from 1996 and 1999 were interpreted using a Topcon stereoscope. The resulting potential riparian sites were included on the base map.

The study area was divided into hydrologic basins – that is, the drainage areas for individual streams, wetlands, lakes, or ponds. Each hydrologic basin was assigned a code based on the recent City adopted list of stream names. This code was generally the first two letters of the stream name, or the first and last letters where more than one stream had the same first letters.

The riparian areas within each basin were then be divided into segments, or reaches. Reach breaks were determined by a variety of factors including significant changes in stream gradient, surface flow condition (e.g., a long piped section), or land use. A riparian reach code was assigned identifying the hydrologic basin and the reach number.

Field Inventory

The inventory field work was performed between March and June, 2002. The West Linn riparian inventory method was developed building on the basic guidelines found in DSL's Urban Riparian Inventory and Assessment Guide (URIAG). URIAG relies on a combination of best available knowledge, field observations, and best professional judgment. Riparian functions are assessed for water quality, flood management, thermal regulation, and wildlife habitat. The results indicate whether the functional integrity of each reach is high, medium, or low.

For the West Linn inventory, a Riparian Characterization Form was developed that provides detailed information on the physical and biological characteristics of the riparian corridor. In addition to a summary description of the reach and basic information on location and associated wetland and habitat sites, the following data were collected:

- Stream type/order
- Channel type
- Reach length
- Reach gradient
- Side slopes
- Active channel width and depth
- Channel width - valley width ratio:
- Vegetated riparian width
- Stream flow
- Channel shade
- Sub-watershed
- Vegetation (dominant, %native)
- Bank/channel condition:
- Dominant soil type
- Soil erosion potential
- Water quality limited stream/parameter
- Floodplains
- Fish-bearing streams
- Fish barriers
- Road density (crossing per linear feet)
- Large wood features
- Recruitment potential
- Other water resources
- Restoration/Enhancement Opportunities

A Riparian Functional Values Assessment form was developed based on the DSL guidelines to evaluate the riparian area's functions. Water quality protection, flood management, fish habitat, and wildlife habitat functions were evaluated for each reach, as well as its relative uniqueness and ecological integrity (see discussion below). Using these forms, each riparian reach was assessed from public parks and rights-of-way or from private lands where access permission was granted. Multiple observation points were used for each stream reach, including observation along the stream channel where accessible. Riparian characteristics were recorded on individual Riparian Characterization Forms contained in Appendix E.

Functional Assessment and Significance Determination

Five riparian evaluation factors measuring discrete riparian functions were evaluated and ranked based on qualitative and quantitative parameters. The five factors and their associated functions are described below:

- Water quality protection: This factor assesses the potential of the riparian corridor to protect water quality in streams and other water features associated with the corridor. Functional parameters include the density and type of vegetation cover, width of vegetation cover along the water feature, extent of impervious surfaces, steepness of corridor side slopes (in conjunction with vegetation density), and erosion potential of soils (in conjunction with vegetation density). Combined values for this function ranged from 5 to 15. The highest rated sites have dense woody vegetation, wide buffers, and low impervious surfaces. With steeper slopes and erosion-prone soils, the risk of water quality degradation increases and the riparian vegetation functions (e.g., erosion control, slope stabilization) grow more important.

- Flood management: This factor assesses the potential of the riparian corridor to provide water storage and conveyance during flood events. Functional parameters include the capacity of the floodplain (valley to channel width ratio and frequency of flood events), presence of stream-associated wetlands, extent of woody vegetation cover, degree of bank armoring, and location of the site within the basin. Combined values for this factor ranged from 5 to 15. The highest rated sites have large and active floodplains, dense woody vegetation, low bank armoring, and are located in upper part of the basin.

- Fish Habitat: This factor assesses the potential of the riparian corridor to provide functional habitat and migration opportunities for fish. Functional parameters include the degree of channel alteration, degree of channel shade, potential for large woody debris (LWD) recruitment, presence of barriers to fish migration, and presence of fish documented by ODFW. Combined values for this factor ranged from 5 to 15. The highest rated sites have low channel alteration, high degree of shade, high LWD recruitment potential, and are documented fish-bearing streams.

- Wildlife habitat: This factor assesses the potential of the riparian corridor to provide important habitat values for wildlife. Functional parameters include the presence and seasonality of water, degree of habitat diversity, opportunities for sanctuary and refuge, habitat patch size, and habitat connectivity. Combined values for this factor ranged from 5 to 15. The highest rated sites have multiple water types including permanent water sources, high habitat diversity, diverse sanctuary and refuge opportunities, contiguous habitat size of greater than 10 acres, and are well-connected to upland and riparian habitats.

- Rarity / Integrity: This factor assesses the ecological integrity and uniqueness of natural communities within the riparian corridor. Functional parameters include the presence of federal or state-listed species, Oregon Natural Heritage Program (ONHP) priority habitats,

locally rare species or habitats, extent of native vegetation cover, and degree of human-caused disturbance. Combined values for this factor ranged from 5 to 15. The highest rated sites have one or more listed species, priority habitats, or locally rare species or habitats, high native vegetation cover, and low levels of disturbance.

Riparian significance criteria were based on the functional assessment (high, medium or low) and associated scores. A riparian corridor was deemed significant if it received a high ranking for any of the five assessment factors, a combined score of 50 or more, or contained a perennial fish-bearing stream. A riparian corridor was also deemed significant if any federal or state-listed species, priority habitats, or locally rare species or habitats were documented within the reach.

Appendix F contains the Riparian Functional Values Assessment form with the functional assessment and significance determination for each riparian site.

Inventory Results

Seventeen subwatersheds containing 23 riparian corridors with 34 separate reaches were identified during the riparian inventory. All riparian corridors were associated with streams or rivers (i.e., Willamette and Tualatin Rivers). The width of riparian areas was determined by the potential tree height of the dominant tree species, which typically was black cottonwood, Douglas fir, or western red cedar. All of these species have a potential tree height of approximately 120 feet. The actual width of vegetated riparian areas was recorded on the characterization forms and varied between 0 and 120 feet. Table 9 lists West Linn subwatersheds, reaches, and reach boundary, length, and gradient within the study area. The reaches in the table are generally organized from north to south.

Table 9. West Linn Riparian Corridors

Subwatershed	Reach	Riparian Code	Reach boundaries	Reach length (feet)	Reach gradien
Willamette River (1165 acre basin)	Lower Willamette	WI-R-1	N. City limits (Hog Island) to Cedar Island (RM 22.2-23.5)	7450	<2%
	Clackamas Confluence	WI-R-2	Cedar Island to Willamette Falls (RM 23.5-26.7)	16,035	<2%
	Upper Willamette	WI-R-3	Willamette Falls to Tualatin River (RM 26.7-28.5)	9408	<2%
	Willamette Lowlands	WI-R-4	Bernert Creek to Willamette Park	4481	<2%
Fern Creek (555 acre basin)	Lower Fern Creek	FE-R-1	Willamette River to Walling Way	4050	2-4%
	Upper Fern Creek	FE-R-2	Hwy. 43 to Carriage Way Open Space	4863	10%
	Arbor Creek	AR-R-1	Fern Creek to Skye Parkway	5009	9%
	Robinwood Creek	RO-R-1	Fern Creek confluence to Hillcrest	5158	10.5%
Trillium Creek (543 acre basin)	Lower Trillium Creek	TR-R-1	Willamette River to Hwy. 43	6063	7%
	Upper Trillium Creek	TR-R-2	Hwy. 43 to Rosemont Rd.	5500	9%
	Lower Robin Creek	RN-R-1	Trillium Creek to Hwy. 43	1507	13%
	Upper Robin Creek	RN-R-2	Walling Circle to Carriage Way	2035	16%
	Gans Creek	GA-R-1	Kenthorpe to Hwy. 43	808	6%
Heron Creek (123 acre basin)	Lower Heron Creek	HE-R-1	Willamette River to Hwy. 43	3756	6%
	Upper Heron Creek	HE-R-2	Larkspur to Pimlico Dr./Sorrel	960	19%
Turkey Creek (20 acre basin)	Turkey Creek	TY-R-1	Willamette River to MS Young State Park	1847	8%
Mary S Young Creek (269 acre basin)	Lower Mary S. Young Creek	MA-R-1	Willamette River to Hwy. 43	3248	7%
	Upper Mary S. Young Creek	MA-R-2	Hwy. 43 to Miles	3336	15%
Barlow Creek (201 acre basin)	Lower Barlow Creek	BA-R-1	Willamette River to Hwy. 43	1653	11%
	Upper Barlow Creek	BA-R-2	Hwy. 43 to Sahallie Illahee Park	1806	13%
Bolton Creek (117 acre basin)	Bolton Creek	BO-R-1	Willamette River to Woodwinds Ct.	1043	12%
Maddax Creek (106 acre basin)	Maddax Creek	MX-R-1	Willamette River to Hwy. 43	1550	7%
Cascade Sp Pond Creek (52 acre basin)	Cascade Spring Pond Creek	CS-R-1	Willamette River to Cascade St.	2232	10%

Subwatershed	Reach	Riparian Code	Reach boundaries	Reach length (feet)	Reach gradient
McLean Creek (38 acre basin)	McLean Creek	MC-R-1	Willamette River to Hwy. 43	1113	7%
Camassia (219 acre basin)	Camassia	CA-R-1	I-205 to Wilderness Park	3203	9%
Sunset Creek (77 acre basin)	Sunset Creek.	SU-R-1	Sunset to Charman St.	758	7%
Tanner Creek (659 acre basin)	Lower Tanner Creek	TA-R-1	Willamette River to Beacon Hill Ct.	5233	7%
	Upper Tanner Creek	TA-R-2	Beacon Hill Ct. to Rosemont Rd.	4230	4%
	Salamo Creek (tributary)	SA-R-1	Tanner Creek to Weatherhill Rd.	1747	5%
Bernert Creek (412 acre basin)	Bernert Creek	BE-R-1	Willamette River to I-205	6527	2%
Tualatin River (309 acre basin)	Lower Tualatin River	TU-R-1	Willamette River to Borlan bridge.	8483	<2%
	Upper Tualatin River	TU-R-2	Borlan Bridge. to City Limits (Fritchie Creek)	4939	<2%
Fritchie Creek (393 acre basin)	North Fritchie Creek	FR-R-1	Tualatin River to Wisteria Court	3969	4%
	South Fritchie Creek	FR-R-2	North Fritchie Creek to Alpine Dr.	5660	8%

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B1

Assessment Results

Riparian corridor quality was assessed using a Riparian Functional Values Assessment adapted from the URIAG guidelines. Each corridor was evaluated for is water quality, flood management, fish habitat, and wildlife habitat functions, as well as its relative uniqueness and ecological integrity. Combined values for each category ranged from 5 to 15, resulting in ratings of low (5-8), medium (9-11), and high (12-15). The total possible score for each riparian site was 75. Table 10 summarizes the results of the riparian functional assessment.

Table 10. Riparian Functional Assessment Summary

Riparian Reach	Water quality	Flood management	Fish Habitat	Wildlife habitat	Rarity / Integrity	Score	RTE species/ habitats
WI-R-1	L	L	H	M	M	47	Y
WI-R-2	M	M	H	H	M	60	Y
WI-R-3	M	H	M	H	H	57	Y
WI-R-4	M	H	M	H	M	56	Y
FE-R-1	H	M	H	H	H	62	Y
FE-R-2	H	M	L	H	M	58	Y
AR-R-1	H	M	H	M	M	55	N
RO-R-1	H	M	M	H	H	61	Y
TR-R-1	M	M	M	M	M	51	Y
TR-R-2	H	M	H	H	H	64	Y
RN-R-1	H	L	M	L	L	43	N
RN-R-2	H	M	M	M	L	53	N
GA-R-1	M	L	M	L	L	39	N
HE-R-1	H	M	H	H	M	59	N
HE-R-2	H	M	M	H	M	58	N
TY-R-1	H	M	H	H	M	60	N
MA-R-1	H	L	M	H	M	58	Y
MA-R-2	H	M	M	M	L	49	N
BA-R-1	M	L	M	L	M	42	Y
BA-R-2	H	M	L	M	M	50	Y
BO-R-1	H	L	M	H	H	58	Y
MX-R-1	H	M	M	H	M	58	N
CS-R-1	H	M	M	M	L	50	Y
MC-R-1	M	L	M	M	M	47	Y
CA-R-1	H	M	M	H	H	60	Y
SU-R-1	L	L	L	L	L	29	N
TA-R-1	M	M	M	M	M	51	Y
TA-R-2	M	H	M	M	L	51	Y
SA-R-1	H	M	M	L	L	43	N
BE-R-1	M	H	L	L	L	40	N
TU-R-1	H	M	H	H	M	62	Y
TU-R-2	M	M	H	H	H	60	Y
FR-R-1	H	H	M	H	M	62	Y
FR-R-2	H	M	M	M	M	51	Y

Significant Riparian Corridor Determination

Riparian significance criteria were based on the functional assessment (high, medium or low), total combined score, and the presence of federal or state-listed species, priority habitats, or locally rare species or habitats occur within the reach. A riparian corridor was deemed significant if it received a high functional ranking in any category, had a total combined score of 50 or more, or if rare or listed species or habitats were present.

A total of ~~33~~ 32 riparian sites met the criteria and were determined to be significant. Only ~~one~~ two sites, Sunset Creek (SU-R-1), and Gans Creek (GA-R-1), did not meet the criteria. This reach is highly degraded and isolated, and enters a long series of pipes before discharging to the Willamette River. Gans creek is also degraded and isolated.

Appendix F

Riparian Assessments

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – AR-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
14		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		2		12	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin	2	Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	1		6		3	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
12		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-totals	0		6		6	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
10		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
medium		No contiguous patches 5 acres in size	2	Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	0		10		0	
Rarity/Integrity		No federal or state listed species	2	Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
9		No locally rare species or habitats	2	Potential locally rare species or habitats present		Locally rare species or habitats present
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-totals	1		8		0	
Combined Score	55					

ORD 1545
B11

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – BA-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
11		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
medium		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-total	1				6	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
7		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
low		High degree of bank armoring	2	Moderate degree of bank armoring		Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-total	3				0	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
9		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-total	2				3	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:	1	Low habitat diversity		Moderate habitat diversity		High habitat diversity
6	1	Low sanctuary or refuge		Moderate sanctuary or refuge		High sanctuary or refuge
low	1	No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-total	4				0	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
9	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-total	2				3	
Combined Score	12					

145

ORD 1545
B12

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – BA-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
13		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		4		9	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin	2	Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals			6		3	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
8	1	Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
low	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	2					
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
9	1	Low sanctuary or refuge		Moderate sanctuary or refuge		High sanctuary or refuge
medium		No contiguous patches 5 acres in size	2	Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	1		8			
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
10		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Sub-totals	2		2		6	
Combined Score	50					

146

ORD 1545
B13

West Linn Goal 5 Inventory
Riparian Functional Values Assessment - BE-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation	2	Riparian area dominated by herbs or sparse woody vegetation		Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
9		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
medium		Average side slope < 10%, or sparsely vegetated	2	Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		8		0	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring	2	Moderate degree of bank armoring		Low degree of bank armoring
		Located in lower 1/3 of basin	2	Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-total	0		10		0	
Fish Habitat	1	High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%	2	Average channel shade 25 - 50%		Average channel shade > 50%
7	1	Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
low		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	3		4		0	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:	1	Low habitat diversity		Moderate habitat diversity		High habitat diversity
7	1	Low sanctuary or refuge		Moderate sanctuary or refuge		High sanctuary or refuge
low		No contiguous patches 5 acres in size	2	Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	3		4		0	
Rarity/Integrity	1	No federal or state listed species		Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
5	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present
low	1	Low native cover (> 50% invasive/non-native species)		Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Sub-totals	5		0		0	
Combined Score	38					

147

ORD 1545
B14

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – BO-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		0		15	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
8		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
low		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		2		3	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
11		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	2		0		6	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
12		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	0		4		6	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
12		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
high		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Sub-totals	1		2		9	
Combined Score	38					

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ORD 1545
B15

West Linn Goal 5 Inventory

Riparian Functional Values Assessment – CA-R-1

Function		Assessment Factors: Low (1 pt)		Medium (2 pts)		High (3 pts)
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
13		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated	2	Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-total						
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
11		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin		Located in middle 1/3 of basin	3	Located in upper 1/3 of basin
Sub-total						
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
10		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-total						
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
13		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in		Contiguous patches 5-10 acres in	3	Contiguous patches > 10 acres in
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-total						
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:		No ONHP priority habitats		Potential ONHP priority habitats	3	ONHP priority habitats present*
13		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
high		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-total						
Total Score	60					

149

ORD 1545
B16

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – CS-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
13		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		4		9	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10	1	< 30% woody vegetation cover		30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin	2	Located in middle 1/3 of basin .		Located in upper 1/3 of basin
Sub-totals	1		6		3	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
10		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW	2	Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	1		6		3	
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
9		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
medium	1	No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-total	2				3	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
8	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present*
low	1	Low native cover (> 50% invasive/non-native species)		Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-totals	3		4		3	
Combined Score	50					

150

ORD 1545
B17

West Linn Goal 5 Inventory

Riparian Functional Values Assessment – FE-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
13		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		0		12	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals						
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
14		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-totals	0		2		12	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
13		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals						
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
12		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present
high		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Sub-totals	1		2		9	
Combined Score	62					

ORD 1545
B18

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – FE-R-2

Function		Assessment Factors: Low (1 pt)		Medium (2 pts)		High (3 pts)
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		0		15	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
11		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin		Located in middle 1/3 of basin	3	Located in upper 1/3 of basin
Sub-totals	1		4		6	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
8		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
low		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Subtotals	0		2		6	
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
13		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-total	0		4		9	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
11		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-total	1		4		6	
Combined Score	56					

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B19

West Linn Goal 5 Inventory

Riparian Functional Values Assessment – FR-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-total						
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)	3	High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains	3	Multiple and/or large stream-associated wetlands, floodplains
12		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
high		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-total						
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%	2	Average channel shade 25 - 50%		Average channel shade > 50%
11		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-total						
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
14		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-total						
Rarity/Integrity		No federal or state listed species	2	Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
10		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-total						
Total Score	62					

ORD 1545
B20

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – FR-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
				Assessment Factors		
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
13		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Subtotal						
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Subtotal						
Fish Habitat	1	High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
9		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Subtotal						
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
9		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
medium		No contiguous patches 5 acres in size	2	Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats		High connectivity to upland habitats
Subtotal						
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
10		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Subtotal						
Combined Score	51					

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B21

154

West Linn Goal 5 Inventory

Riparian Functional Values Assessment – GA-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
11		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
medium		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		4		6	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
7	1	< 30% woody vegetation cover		30 - 70% woody vegetation		> 70% woody vegetation
low		High degree of bank armoring	2	Moderate degree of bank armoring		Low degree of bank armoring
		Located in lower 1/3 of basin	2	Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		4		0	
Fish Habitat	1	High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
9		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW	2	Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	2		4		3	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:	1	Low habitat diversity		Moderate habitat diversity		High habitat diversity
6	1	Low sanctuary or refuge		Moderate sanctuary or refuge		High sanctuary or refuge
low	1	No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	4		2		0	
Rarity/Integrity	1	No federal or state listed species		Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
5	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present
low	1	Low native cover (> 50% invasive/non-native species)		Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Sub-totals	5		0		0	
Combined Score	38					

ORD 1545
B22

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – HE-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
13		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		0		12	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover		30 - 70% woody vegetation	3	> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		2		6	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
12		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	1		2		6	
Wildlife Habitat		Seasonal surface water	1	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
13		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats	3	High connectivity to upland habitats
Sub-totals	1		1		12	
Rarity/Integrity		No federal or state listed species	2	Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
11		No locally rare species or habitats	2	Potential locally rare species or habitats present		Locally rare species or habitats present
medium		Low native cover (> 50% invasive/non-native species)		Medium native cover (10 - 50% invasive/non-native species)	3	High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Sub-totals	1		4		6	
Combined Score	59					

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ORD 1545
B23

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – HE-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
				Assessment Factors		
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Subtotal						
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
11		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin		Located in middle 1/3 of basin	3	Located in upper 1/3 of basin
Subtotal						
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
10		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Subtotal						
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low quantity and variety of food sources	2	Moderate quantity and variety of food sources		High quantity and variety of food sources
12		Low cover values (structural diversity, variety and seasonality)	2	Moderate cover values (structural diversity, variety and seasonality)		High cover values (structural diversity, variety and seasonality)
high		Habitat size < 5 acres		Habitat size 5 - 10 acres	3	Habitat size > 10 acres
		Low connectivity along corridor, isolated from uplands		Moderate connectivity along corridor and to uplands	3	High connectivity along corridor and to uplands
Subtotal						
Sensitive Species, Ecological Integrity		No federal or state listed species	2	Potential habitat for federal or state listed species		Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
10		No locally rare species or habitats	2	Potential locally rare species or habitats present		Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Subtotal						
Combined Score	58					

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ORD 1545
B24

West Linn Goal 5 Inventory
Riparian Functional Values Assessment - MA-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		0		15	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
8		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
low		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		2		3	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
11		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	2		0		9	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
13		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	0		4		9	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
11		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-totals	1		4		6	
Combined Score	58					

ORD 1545
B25

West Linn Goal 5 Inventory

Riparian Functional Values Assessment – MA-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
13		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Subtotal						
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin		Located in middle 1/3 of basin	3	Located in upper 1/3 of basin
Subtotal						
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
10		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Not listed as fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Subtotal						
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low quantity and variety of food sources	2	Moderate quantity and variety of food sources		High habitat diversity
9		Low cover values (structural diversity, variety and seasonality)	2	Moderate cover values (structural diversity, variety and seasonality)		High sanctuary or refuge
medium		Habitat size < 5 acres	2	Habitat size 5 - 10 acres		Contiguous patches >10 acres in
	1	Low connectivity along corridor, isolated from uplands		Moderate connectivity along corridor and to uplands		High connectivity to upland habitats
Subtotal						
Rarity/Integrity	1	No federal or state listed species		Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
7	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present
low		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Subtotal						
Combined Score	49					

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B26

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – MC-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
10		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
medium		Average side slope < 10%, or sparsely vegetated	2	Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		6		3	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
8		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
low		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		2		3	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
9		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	2		4		3	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:	1	Low habitat diversity		Moderate habitat diversity		High habitat diversity
9		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
medium		No contiguous patches 5 acres in size	2	Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	1		8		0	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
11		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-totals	1		4		6	
Combined Score =	47					

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ORD 1545
B 27

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – MX-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		0		15	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
9		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		4		3	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
11		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	2		0		9	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
13		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats	3	High connectivity to upland habitats
Sub-totals	0		4		9	
Rarity/Integrity		No federal or state listed species	2	Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
10		No locally rare species or habitats	2	Potential locally rare species or habitats present		Locally rare species or habitats present
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Sub-totals	1		6		3	
Combined Score	58					

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B28

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – RN-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
14		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Subtotal						
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains (wetlands)		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
7	1	< 30% woody vegetation cover		30 - 70% woody vegetation		> 70% woody vegetation
low		High degree of bank armoring	2	Moderate degree of bank armoring		Low degree of bank armoring
		Located in lower 1/3 of basin	2	Located in middle 1/3 of basin		Located in upper 1/3 of basin
Subtotal						
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
10		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Subtotal						
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:	1	Low quantity and variety of food sources		Moderate quantity and variety of food sources		High quantity and variety of food sources
6	1	Low cover values (structural diversity, variety and seasonality)		Moderate cover values (structural diversity, variety and seasonality)		High cover values (structural diversity, variety and seasonality)
low	1	Habitat size < 5 acres		Habitat size 5 - 10 acres		Habitat size > 10 acres
	1	Low connectivity along corridor, isolated from uplands		Moderate connectivity along corridor and to uplands		High connectivity along corridor and to uplands
Subtotal						
Rarity/Integrity	1	No federal or state listed species		Potential habitat for federal or state listed species		Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
6	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present*
low		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Subtotal						

Combined Score 43

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B 29

West Linn Goal 5 Inventory

Riparian Functional Values Assessment – RN-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals						
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains (wetlands)		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin		Located in middle 1/3 of basin	3	Located in upper 1/3 of basin
Sub-totals						
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
10		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals						
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low quantity and variety of food sources	2	Moderate quantity and variety of food sources		High habitat diversity
10		Low cover values (structural diversity, variety and seasonality)	2	Moderate cover values (structural diversity, variety and seasonality)		High sanctuary of refuge
medium		Habitat size < 5 acres	2	Habitat size 5 - 10 acres		Contiguous patches > 10 acres in
		Low connectivity along corridor, isolated from uplands	2	Moderate connectivity along corridor and to uplands		High connectivity to upland habitats
Sub-totals						
Rarity/Integrity	1	No federal or state listed species		Potential habitat for federal or state listed species		Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
8	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present*
low		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Sub-totals						
Combined Score	53					

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B 30

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – RO-R-1

Function		Assessment Factors: Low (1 pt)		Medium (2 pts)		High (3 pts)
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		0		15	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
11		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin		Located in middle 1/3 of basin	3	Located in upper 1/3 of basin
Sub-totals	1		4		6	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
11		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW	2	Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	0		8		3	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
12		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	0		6		6	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
12		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
high		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Sub-totals	1		2		9	
Combined Score	61					

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ORD 1545
B31

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – SA-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
12		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		2		9	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
10		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring	2	Moderate degree of bank armoring		Low degree of bank armoring
		Located in lower 1/3 of basin	2	Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	0		10		0	
Fish Habitat	1	High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
9		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	2		4		3	
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
8	1	Low sanctuary or refuge		Moderate sanctuary or refuge		High sanctuary or refuge
low	1	No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	3		2		3	
Rarity/Integrity	1	No federal or state listed species		Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
5	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present
low	1	Low native cover (> 50% invasive/non-native species)		Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Sub-totals	5		0		0	
Combined Score	44					

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ORD 1545
B32

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – SU-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation	2	Riparian area dominated by herbs or sparse woody vegetation		Riparian area dominated by dense woody vegetation
Score:	1	Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
6	1	Impervious surfaces > 25%		Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
low	1	Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	4		2		0	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:	1	No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
6	1	< 30% woody vegetation cover		30 - 70% woody vegetation		> 70% woody vegetation
low	1	High degree of bank armoring		Moderate degree of bank armoring		Low degree of bank armoring
		Located in lower 1/3 of basin	2	Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	4		2		0	
Fish Habitat	1	High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%	2	Average channel shade 25 - 50%		Average channel shade > 50%
6	1	Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
low	1	Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	4		2		0	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:	1	Low habitat diversity		Moderate habitat diversity		High habitat diversity
6	1	Low sanctuary or refuge		Moderate sanctuary or refuge		High sanctuary or refuge
low	1	No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	4		2		0	
Rarity/Integrity	1	No federal or state listed species		Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
5	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present
low	1	Low native cover (> 50% invasive/non-native species)		Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Sub-totals	5		0		0	
Combined Score	25					

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B33

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – TA-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
				Assessment Factors		
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
10		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
medium		Average side slope < 10%, or sparsely vegetated	2	Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		6		3	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains	3	Multiple and/or large stream-associated wetlands, floodplains
9		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring	2	Moderate degree of bank armoring		Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		4		3	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
10		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	1		6		3	
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
11	1	Low sanctuary or refuge		Moderate sanctuary or refuge		High sanctuary or refuge
medium	1	No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats	3	High connectivity to upland habitats
Sub-totals	2		2		6	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
11		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-totals*	1		4		3	
Combined Score	51					

(167)

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West Linn Goal 5 Inventory

Riparian Functional Values Assessment – TA-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation	2	Riparian area dominated by herbs or sparse woody vegetation		Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
10		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
medium		Average side slope < 10%, or sparsely vegetated	2	Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated	2	Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	0		10		0	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains	3	Multiple and/or large stream-associated wetlands, floodplains
12		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
high		High degree of bank armoring	2	Moderate degree of bank armoring		Low degree of bank armoring
		Located in lower 1/3 of basin		Located in middle 1/3 of basin	3	Located in upper 1/3 of basin
Sub-totals	0		6		6	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%	2	Average channel shade 25 - 50%		Average channel shade > 50%
10	1	Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-totals	1		6		3	
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
11		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
medium		No contiguous patches 5 acres in size	2	Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	0		8		3	
Rarity/Integrity	1	No federal or state listed species		Potential habitat for federal or state listed species		Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
8		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
low		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Sub-totals	3		2		3	
Combined Score	51					

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B35

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – TR-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
12		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		2		9	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains	3	Multiple and/or large stream-associated wetlands, floodplains
12		< 30% woody vegetation cover		30 - 70% woody vegetation	3	> 70% woody vegetation
high		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	1		2		9	
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
12		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-totals	0		6			
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
11		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
medium	1	No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	1		4			
Rarity/Integrity		No federal or state listed species	2	Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
10		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-totals	1		6			
Combined Score:	37					

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B36

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – TR-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		0		15	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
11		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
		Located in lower 1/3 of basin		Located in middle 1/3 of basin	3	Located in upper 1/3 of basin
Sub-totals	1		4		6	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
14		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-totals	0		2		12	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
12		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	0		6		6	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
12		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
high		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Sub-totals	1		2		9	
Combined Score	64					

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B 37

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – TU-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
14		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated	2	Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Subtotal						
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains	3	Multiple and/or large stream-associated wetlands, floodplains
11		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Subtotal						
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%	2	Average channel shade 25 - 50%		Average channel shade > 50%
13		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions	3	No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Subtotal						
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:	1	Low habitat diversity		Moderate habitat diversity		High habitat diversity
13		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in		Contiguous patches 5-10 acres in	3	Contiguous patches > 10 acres in
		Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats	3	High connectivity to upland habitats
Subtotal						
Sensitive Species, Ecological Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
11		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Subtotal						
Combined Score	**62**					

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – TU-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation	2	Riparian area dominated by herbs or sparse woody vegetation		Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
11		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
medium		Average side slope < 10%, or sparsely vegetated	2	Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated	2	Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Subtotal						
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains	3	Multiple and/or large stream-associated wetlands, floodplains
11		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Subtotal						
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:	1	Average channel shade < 25%		Average channel shade 25 - 50%		Average channel shade > 50%
12		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions	3	No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Subtotal						
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
14		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in	2	Contiguous patches 5-10 acres in		Contiguous patches > 10 acres in
		Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats	3	High connectivity to upland habitats
Subtotal						
Sensitive Species, Ecological Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
12		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
high		Low native cover (> 50% invasive/non-native species)		Medium native cover (10 - 50% invasive/non-native species)	3	High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Subtotal						
Combined Score	60					

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West Linn Goal 5 Inventory
Riparian Functional Values Assessment - TY-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
15		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
high		Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated	3	Average side slope >25%, and densely vegetated
		Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated	3	High soil erosion potential, and densely vegetated
Sub-totals	0		0		15	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
9		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		4		3	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%		Average channel shade 25 - 50%	3	Average channel shade > 50%
13		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
		Not listed as a fish-bearing by ODFW	2	Not surveyed by ODFW for fish		ODFW fish-bearing stream
Sub-totals	0		4		9	
Wildlife Habitat		Seasonal surface water	2	Permanent surface water		Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
14		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats	3	High connectivity to upland habitats
Sub-totals	0				12	
Rarity/Integrity		No federal or state listed species	2	Potential habitat for federal or state listed species		Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
9	1	No locally rare species or habitats		Potential locally rare species or habitats present		Locally rare species or habitats present
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance		Moderate human disturbance	3	Low human disturbance
Sub-totals	2		4		3	
Combined Score	60					

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West Linn Goal 5 Inventory
Riparian Functional Values Assessment – WI-R-1

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation	2	Riparian area dominated by herbs or sparse woody vegetation		Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'	2	Average vegetated riparian buffer: 25' to 50'		Average vegetated riparian buffer > 50'
8		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
low	1	Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	2		6		0	
Flood Management	1	Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
8		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
low		High degree of bank armoring	2	Moderate degree of bank armoring		Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2				0	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:	1	Average channel shade < 25%		Average channel shade 25 - 50%		Average channel shade > 50%
12		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions	3	No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-totals	1		2		9	
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
9		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
medium	1	No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size		Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	2		4		3	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
10		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance		Moderate human disturbance		Low human disturbance
Sub-total	2		2		6	
Combined Score	47					

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B41

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – WI-R-2

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
11		Impervious surfaces > 25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
medium		Average side slope < 10%, or sparsely vegetated	2	Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	1		4		6	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains	2	Some stream-associated wetlands, floodplains		Multiple and/or large stream-associated wetlands, floodplains
9	1	< 30% woody vegetation cover		30 - 70% woody vegetation		> 70% woody vegetation
medium		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	2		4		3	
Fish Habitat		High channel alteration (>25% altered)		Moderate channel alteration (5-25% altered)	3	Low channel alteration (natural or semi-natural, <5% altered)
Score:	1	Average channel shade < 25%		Average channel shade 25 - 50%		Average channel shade > 50%
13		Low LWD recruitment potential (<2% of trees are >16" dbh)		Medium LWD recruitment potential (2-50% of trees are >16"	3	High LWD recruitment potential (>50% of trees are >16" dbh)
high		Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions	3	No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-totals	1		0		12	
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
16		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
	1	Connectivity is low, isolated from upland habitats		Moderate connectivity to upland habitats	3	High connectivity to upland habitats
Sub-totals	1		0		15	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
11		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-totals	1		4		6	
Combined Score	60					

ORD 1545
B42

West Linn Goal 5 Inventory
Riparian Functional Values Assessment – WI-R-3

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation		Riparian area dominated by herbs or sparse woody vegetation	3	Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
10		Impervious surfaces >25%	2	Impervious surfaces: 10% - 25%		Impervious surfaces < 10%
medium	1	Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Sub-totals	2		2		6	
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)	2	Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)		High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains	3	Multiple and/or large stream-associated wetlands, floodplains
12		< 30% woody vegetation cover		30 - 70% woody vegetation	3	> 70% woody vegetation
high		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Sub-totals	1					
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:	1	Average channel shade < 25%		Average channel shade 25 - 50%		Average channel shade > 50%
11		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage		Blockages under some flow conditions	3	No fish barriers (all crossings by bridge or ford)
		Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish	3	ODFW fish-bearing stream
Sub-totals	1		2		6	
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity	2	Moderate habitat diversity		High habitat diversity
12		Low sanctuary or refuge	2	Moderate sanctuary or refuge		High sanctuary or refuge
high		No contiguous patches 5 acres in size		Contiguous patches 5-10 acres in size	3	Contiguous patches > 10 acres in size
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Sub-totals	0		6		6	
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
12		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
high		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
	1	High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Sub-totals	2		4		6	
Combined Score	57					

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West Linn Goal 5 Inventory

Riparian Functional Values Assessment – WI-R-4

Function		Low (1 pt)		Medium (2 pts)		High (3 pts)
			Assessment Factors			
Water Quality		Riparian area dominated by sparse herbs or no vegetation	2	Riparian area dominated by herbs or sparse woody vegetation		Riparian area dominated by dense woody vegetation
Score:		Average vegetated riparian buffer < 25'		Average vegetated riparian buffer: 25' to 50'	3	Average vegetated riparian buffer > 50'
10		Impervious surfaces > 25%		Impervious surfaces: 10% - 25%	3	Impervious surfaces < 10%
medium	1	Average side slope < 10%, or sparsely vegetated		Average side slope: 10% - 25%, moderately to densely vegetated		Average side slope >25%, and densely vegetated
	1	Low soil erosion potential, or sparsely vegetated		Moderate soil erosion potential, moderately to densely vegetated		High soil erosion potential, and densely vegetated
Subtotals						
Flood Management		Low floodplain functioning (VW:CW=1 or floods >5 years)		Moderate floodplain functioning (VW:CW>1.5, floods 2-5 years)	3	High floodplain functioning (VW:CW>1.5, floods <2 years)
Score:		No stream-associated wetlands, floodplains		Some stream-associated wetlands, floodplains	3	Multiple and/or large stream-associated wetlands, floodplains
12		< 30% woody vegetation cover	2	30 - 70% woody vegetation		> 70% woody vegetation
high		High degree of bank armoring		Moderate degree of bank armoring	3	Low degree of bank armoring
	1	Located in lower 1/3 of basin		Located in middle 1/3 of basin		Located in upper 1/3 of basin
Subtotals						
Fish Habitat		High channel alteration (>25% altered)	2	Moderate channel alteration (5-25% altered)		Low channel alteration (natural or semi-natural, <5% altered)
Score:		Average channel shade < 25%	2	Average channel shade 25 - 50%		Average channel shade > 50%
9		Low LWD recruitment potential (<2% of trees are >16" dbh)	2	Medium LWD recruitment potential (2-50% of trees are >16"		High LWD recruitment potential (>50% of trees are >16" dbh)
medium		Barrier(s) preventing juvenile and adult fish passage	2	Blockages under some flow conditions		No fish barriers (all crossings by bridge or ford)
	1	Surveyed but not listed as a fish-bearing by ODFW		Not surveyed by ODFW for fish		ODFW fish-bearing stream
Subtotals						
Wildlife Habitat		Seasonal surface water		Permanent surface water	3	Open water pools through summer, or multiple water types
Score:		Low habitat diversity		Moderate habitat diversity	3	High habitat diversity
14		Low sanctuary or refuge		Moderate sanctuary or refuge	3	High sanctuary or refuge
high		No contiguous patches 5 acres in		Contiguous patches 5-10 acres in	3	Contiguous patches > 10 acres in
		Connectivity is low, isolated from upland habitats	2	Moderate connectivity to upland habitats		High connectivity to upland habitats
Subtotals						
Rarity/Integrity		No federal or state listed species		Potential habitat for federal or state listed species	3	Listed federal or state species present*
Score:	1	No ONHP priority habitats		Potential ONHP priority habitats		ONHP priority habitats present*
11		No locally rare species or habitats		Potential locally rare species or habitats present	3	Locally rare species or habitats present*
medium		Low native cover (> 50% invasive/non-native species)	2	Medium native cover (10 - 50% invasive/non-native species)		High native cover (< 10% invasive/non-native species)
		High human-caused disturbance	2	Moderate human disturbance		Low human disturbance
Subtotals						
Combined Score	56					

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B44

ATTACHMENT "C"
AMENDMENTS TO
WEST LINN
COMMUNITY
DEVELOPMENT CODE

2.000 DEFINITIONS

Bankful Stage: The stage or elevation at which water overflows the natural banks of a stream or other waters of the state and beings to inundate upland areas. In the absence of physical evidence, the two-year recurrent flood elevation may be used to approximate the bankful stage.

Protected Water Feature: A wetland identified in the West Linn Local Wetlands Inventory or any major or minor open channel drainageway identified by the most recently adopted West Linn Surface Water Management Plan, except for small man-made open roadside drainage swales in residential areas, or any drainage course identified by the West Linn Riparian Corridor inventory as significant (not including the Willamette or Tualatin Rivers).

Riparian Corridor: Any area within and adjacent to a natural drainageway within West Linn (not including lands adjacent to the Willamette or Tualatin Rivers) that has been identified as significant by the West Linn Riparian Corridor Inventory.

Water Resource Area: Any area that consists of a wetland identified in the West Linn Local Wetlands Inventory and the required transition and setback area around the wetland pursuant to CDC Chapter 32, or any major or minor open channel drainageway identified by the most recently adopted West Linn Surface Water Management Plan and the required transition and setback area around the major or minor open channel pursuant to CDC Chapter 32, except for small man-made open roadside drainage swales in residential areas, or any riparian corridor (not including lands adjacent to the Willamette or Tualatin Rivers) and the required transition and setback area for the riparian corridor pursuant to CDC Chapter 32.

Water Resource Area Transition and Setback Area: The land adjacent to the protected water feature that constitutes a buffer, or transition, to protect the resource from conflicting development and activities.

32.000 ~~NATURAL DRAINAGEWAY~~ WATER RESOURCE AREA PROTECTION

32.010 PURPOSE AND INTENT

~~The purpose and intent of this chapter is to maintain existing natural drainageways, as designated by the Storm Drainage Master Plan, as open channels to preserve existing vegetation; to maintain drainageways as natural resource and habitat areas; to maintain the slope stability of the drainageway while at the same time, acknowledging that drainageways represent important utility corridors and, as such, may be required to accommodate utilities, reasonable enhancement and maintenance of the storm drainageways, development of roads, and other improvements based upon the criteria of this chapter and Chapter 85. (ORD. 1401)~~

CDC Chapter 32 has two primary purposes, which serve to accomplish different public policy objectives, but which have overlapping methods of meeting these purposes::

A. **Improve water quality and protect the functions and values of water resource areas that consist of protected water features and associated vegetated corridors. The functions and values of these areas include: providing a vegetated corridor to separate protected water features from development; maintaining or reducing stream temperatures; maintaining natural stream corridors; minimizing erosion, nutrient and pollutant loading into water; providing filtering, soil infiltration and natural water**

purification; and stabilizing slopes to prevent landslides contributing to sedimentation of water features.

B. **Control and prevent flooding and erosion for the protection of public health and safety.**

C. **Protect and improve the following functions and values that contribute to fish and wildlife habitat in urban streamside areas:**

1. **Microclimate and shade**
2. **Stream flow moderation and water storage**
3. **Bank stabilization, sediment, and pollution control**
4. **Large wood recruitment and retention and channel dynamics; and**
5. **Retention of organic material sources.**

D. **Provide mitigation standards for the replacement of both water quality values and ecological functions and values lost through development adjacent to water resource areas.**

E. **Control and prevent water pollution for the protection of public health and safety, and comply with federal laws including the Federal Clean Water and the Endangered Species Acts.**

32.020 APPLICABILITY

A. **This section applies to properties upon which a** ~~**For the purpose of this section, the subject property is defined as the land on which the**~~ natural drainageway, **wetland, riparian corridor,** and/or associated transition and setback area, is located. For example, the subject property may be defined as one property that contains a wetland or creek plus an adjacent property of different ownership that includes the transition area or setback area.

B. The provisions of this chapter apply to all zones and uses within the City limits. No person, unless excepted by Section 32.020(C) **or (D)**, may clear, fill, build in, or alter existing **water resource areas** ~~**natural drainageways**~~ without having obtained a permit from the ~~**Planning Commission**~~ **decision-making authority**.

C. The provisions of this chapter shall apply to development proposals that have ~~**natural drainageways, and/or associated transition and setback**~~ **water resource** areas~~;~~ within their project boundary. Therefore, the actual **wetland,** creek, open channel, or stream does not have to be on the subject property under review. ~~**These natural drainageways, for the purpose of this chapter, are identified by the Storm Drainage Master Plan (1996) maps as open channels. City Engineer shall conduct field assessment to verify if drainageway is an open channel or enclosed storm drain, and its exact location.**~~ This chapter shall not apply to designated **enclosed** storm drains that appear in the **most recently adopted West Linn Surface Water Management** ~~**Storm Drainage Master**~~ Plan**, unless the enclosed storm drain is opened as a result of the proposed development**. The provisions shall also not apply to small man-made open roadside drainage swales in residential areas**, even if such roadside swales are identified as open channels by the most recently adopted West Linn Surface Water Management Plan.** ~~**such as those identified in the Willamette area along 13th and 14th Streets**~~. **The provisions of this chapter also do not apply to drainage ditches and open channel improvements created in the interior of individual residential lots that are not identified on the Surface Water Managemetn Plan Map.**

D. Exceptions. The following actions are excepted from the provisions of

this chapter:

1. The action of any City officer or employee of any public utility to remove or alleviate from immediate danger to life or property, to restore existing utility service or to reopen a public thoroughfare to traffic**. provided that after the emergency has passed, adverse impacts are mitigated in accordance with CDC 32.070.**
2. The routine maintenance of any existing ~~**drainageway**~~ **water resource area** such as removing dead or dying vegetation **that constitutes a hazard to life or property, pollutants,** trash, eroded material, etc.
3. Routine repair and maintenance of legally established structures, utilities, ~~**and**~~ roads**, and manmade water control facilities such as constructed ponds or lakes, wastewater facilities, and stormwater treatment facilities** that do not alter the location or footprint of the structure, utility, or road.
4. **Stream, wetland, riparian and upland enhancement or restoration projects done with approval of city staff and regulatory agency personnel (e.g. ODFW or DSL).**
5. **Maintenance of existing gardens, pastures, lawns, and landscape perimeters, including the installation of new irrigation systems within existing gardens, lawns, and landscape perimeters. However, the city encourages restoration of areas within the drainageway transition to native vegetation.**
6. **Temporary and minor clearing not to exceed 200 square feet for the purpose of site investigations and pits for preparing soil profiles, provided that such areas are restored to their original**

condition when the investigation is complete. For wetlands, such clearing shall not occur within the actual wetland itself, but only within the adjacent wetland transition area. While such temporary and minor clearing is exempt from the provisions of this chapter, it is subject to all other city codes, including provisions for erosion control and tree removal.

7. **Removal of plants identified as nuisance or prohibited plants on the Metro Native Plant List and the planting or propagation of plants identified as native plants on the Metro Native Plant List. Handheld tools must be used to remove nuisance or prohibited plants, and after such removal all open soil areas greater than 25 square feet must be replanted.**

8. ~~**Repair or replacement of structures, utilities, or roads damaged by fire or other cause outside the control of the owner, provided that application for building permits are filed within one year of the damage or destruction and provided that the new structure, utility, or road is within the footprint of the damaged or destroyed structure, utility, or road.**~~ **Additions, alterations, replacement, or rehabilitation of existing structures or other site improvements, provided that:**

a. **The site footprint of any additions or alterations to existing structures (including decks), roadways, driveways, accessory uses and structures, and development shall not increase total encroachment into the water resource area required by Table 32.1, except that**

i. **a lateral extension of an existing building**

footprint by up to ten feet is allowed if the lateral extension does not encroach any further into the water resource area than the portion of the existing footprint immediately adjacent; and

ii. an addition to the existing structure on the side opposite of the water resource area shall be allowed.

b. Rehabilitation or replacement of an existing structure, including decks, shall not increase the existing structural footprint within the water resource area.

9. New or replacement accessory structures and features (such as pedestrian foot-bridges, gazebos, patios, and play structures) to existing residences, provided that the accessory structure complies with all setback criteria contained within Table 32.1, or the accessory structure is a replacement in kind of an existing structure on the same or lesser footprint.

10. New single-family residences on existing lots of record established on or prior to the effective date of this ordinance, provided that all proposed structures and improvements comply with the setback criteria contained within Table 32.1.

~~4~~11. Interior remodeling of a structure so long as the use of the structure is not changed.

32.03~~0~~25 PERMIT REQUIRED

No person shall be permitted to fill, strip, install pipe, undertake construction, or in any way alter an existing **~~drainageway~~ water resource area** without first obtaining a permit to do so from the **~~Planning Commission~~ decision making**

authority, paying the requisite fee, and otherwise complying with all applicable provisions of this ordinance.

32.030 PROHIBITED USES AND ACTIVITIES

Prohibited uses in water resource areas include the following:

A. Any new lawn area or garden area consisting primarily of non-native vegetation.

B. Planting of any species identified as nuisance or prohibited plants on the Metro Native Plant List.

C. Uncontained areas of hazardous materials as defined by the Department of Environmental Quality and dumping of any materials of any kind.

D. Trimming and removal of existing native vegetation from the transition and setback area unless it is to reestablish native vegetation in place of non-native oor invasive vegetation pursuant to CDC 32.020(D)(7), or if the vegetation constitutes a hazard to life or property pursuant to CDC 32.020(D)(2).

32.040 THE APPLICATION

A. An application for **development on property containing a water resource area** ~~**altering a natural drainageway**~~ shall be initiated by the property owner, or the owner's authorized agent, and shall be accompanied by the appropriate fee.

B. A pre-application conference shall be a prerequisite to the filing of the application.

C. The application shall include a **site plan and topographic** map of the parcel ~~**indicating the nature of the proposed alteration and its**~~

~~relationship to property zones, structures, trees, and any other pertinent features of the parcel~~ pursuant to Section 32.060. The applicant shall submit three copies of all maps and diagrams at original scale and three copies reduced to a paper size not greater than 11 x 17 inches, and an electronic copy of all maps on a compact disc. The Planning Director may require the map to be prepared by a registered land surveyor to ensure accuracy.

D. **~~The Planning Director may require the map to be prepared by a registered land surveyor to insure accuracy.~~** The site plan map shall be accompanied by a written narrative **addressing the approval criteria in Section 32.050** ~~and~~ **if necessary, addressing the~~explaining the~~** reason why the owner wishes to alter the **~~natural drainageway~~ water resource area**.

E. All proposed improvements to the drainageway channel or creek which might impact the storm load carrying ability of the drainageway shall be designed by a registered civil engineer.

F. **The ~~A~~a**pplicant shall present evidence in the form of adopted utility master plans or transportation master plans, or findings from a licensed engineer to demonstrate that the development or improvements are consistent with accepted engineering practices.

G. The applicant shall prepare an assessment of the existing condition of the water resource area consisting of an inventory of vegetation, including percentage ground and canopy coverage.

H. If necessary, the applicant shall also submit a mitigation plan pursuant to CDC 32.070, and a revegetation plan pursuant to CDC 32.080.

32.050 APPROVAL CRITERIA

No application for development on property containing a water resource area shall be approved unless the decision-making authority finds that the following standards have been satisfied, or can be satisfied by conditions of approval. ~~The Planning Commission shall make a written finding with respect to the following criteria when approving, approving with conditions, or denying an application for altering a natural drainageway, or for development projects that have natural drainageways within their project boundaries.~~

~~A~~1. Proposed development submittals shall identify all **~~natural drainageways~~ water resource areas** on the project site. **~~Drainageways that may flow intermittently and may be dry during the summer months, shall be so noted.~~** The **most currently adopted West Linn Surface Water Management ~~Storm Drainage Master~~** Plan **~~(1996)~~** shall be used as the basis for determining existence of drainageways. The exact location of drainageways identified in the **Surface Water Management ~~Storm Drainage Master~~** Plan, and drainageway classification (e.g., open channel vs. enclosed storm drains), may have to be verified in the field by the City Engineer. **The Local Wetlands Inventory shall be used as the basis for determining existence of wetlands. The exact location of wetlands on the subject property identified in the Local Wetlands Inventory shall be verified in a wetlands delineation analysis prepared for the applicant by a certified wetlands specialist. The Riparian Corridor inventory shall be used as the basis for determining existence of riparian corridors.**

~~B~~2. Proposed developments shall be so designed as to maintain the existing natural drainageways and utilize them as the primary method of

stormwater conveyance through the project site unless the **most recently adopted West Linn Surface Water Quality ~~Storm Drainage Master~~** Plan **~~(1996)~~** calls for alternate configurations (culverts, piping, etc.). Proposed development shall, particularly in the case of subdivisions, facilitate reasonable access to the drainageway for maintenance purposes.

C3. Development **~~should~~ shall** be conducted in a manner that will minimize adverse impact on **~~natural drainageways~~ water resource areas**. **Alternatives which avoid all adverse environmental impacts associated with the proposed action shall be considered first. For unavoidable adverse environmental impacts, alternatives that reduce or minimize these impacts shall be selected. If any portion of the water quality resource area is proposed to be permanently disturbed, the applicant shall prepare a mitigation plan as specified in CDC 32.070 designed to restore disturbed areas, either existing prior to development or disturbed as a result of the development project, to a healthy natural state.**

~~D~~4. **~~Natural drainageways~~ Water Resource Areas ~~and transition areas~~ shall** be protected from development or encroachment by dedicating the land title deed to the City for public open space purposes if either: 1) a finding can be made that the dedication is roughly proportional to the impact of the development; or, 2) the applicant chooses to dedicate these areas. Otherwise, these areas shall be preserved through a protective easement. Protective or conservation easements are not preferred because **~~natural drainageways and transition~~ water resource** areas protected by easements have shown to be harder to manage and, thus, more susceptible to disturbance and damage**~~. Natural vegetation, habitat areas, water quality, storm carrying capacity, hillside stability, typically suffer~~**

~~when these areas are privately held or protected only by easement~~. **Required 15-foot wide structural setback areas do not require preservation by easement or dedication.**

E. The protected **water resource** area shall include the drainage channel, creek, ~~or~~ wetlands, and the **required setback and** transition ~~zone~~ **area**. The **setback and** transition ~~zone~~ **area** shall **be determined using the following table:** ~~extend a minimum of 30 feet from the edge of the creek, drainage channel, or wetland in those cases where the land sloping away does so at less than 10 percent. A 25-foot transition shall apply when the drainage channel is determined to be a man-made drainage ditch identified on the Storm Drainage Master Plan, but not if it is a residential drainage swale as described in Section 32.020(C). When the slope is 10-25 percent, then the transition zone shall extend either: (a) 50 feet or, (b) to the point where the slope tapers off to less than 10 percent for more than 30 feet, whichever is less. If (b) applies, the transition shall be at a minimum of 30 feet.~~

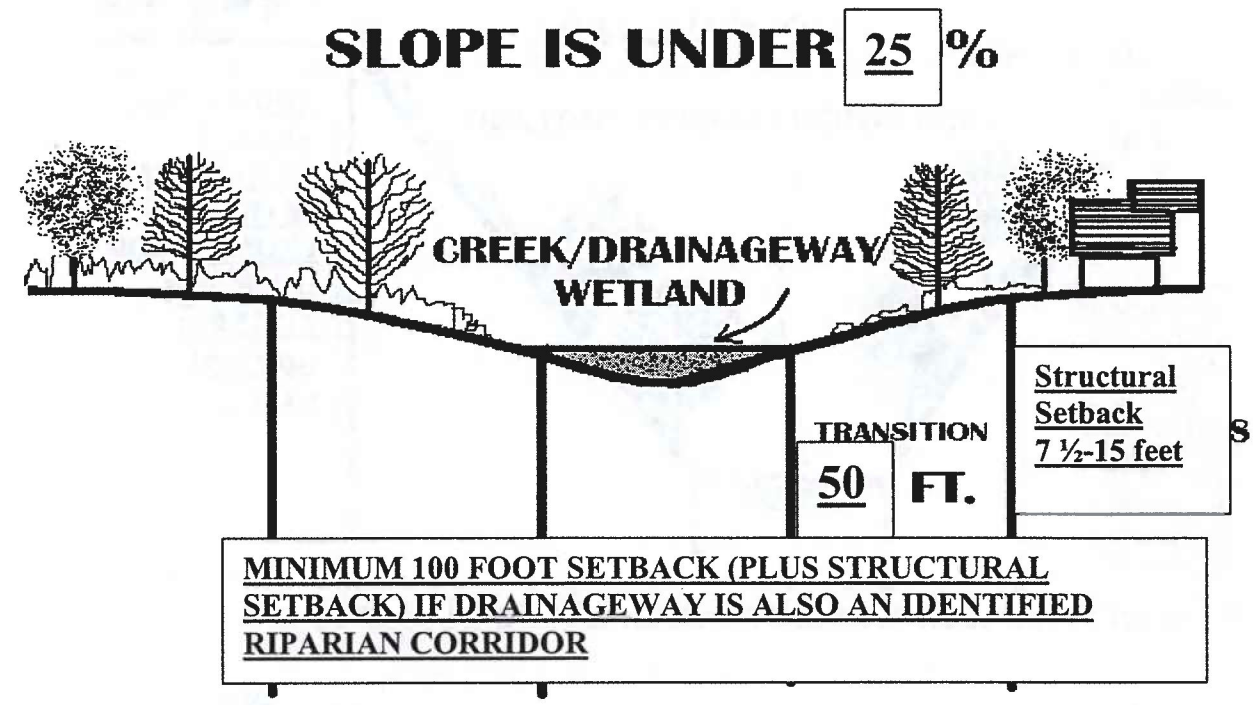
~~When the slope is over 25 percent and it is determined to be a ravine with clearly delineated edges, then the top of the ravine shall mark the transition area boundary. When the slope is over 25 percent and the drainageway boundary is ill-defined due to variations of grades, slumps, fill areas, etc., the transition boundary shall be either: (a) the point where the slope tapers off to less than 10 percent for more than 50 feet (the minimum transition shall be 30 feet, or (b) when the drainageway does not taper off, then the transition shall be 150 feet. The percentage of grade is determined by the average grade of the first 50 feet from the edge of the wetland or body of water. Alternately, the City Engineer may determine which type of~~

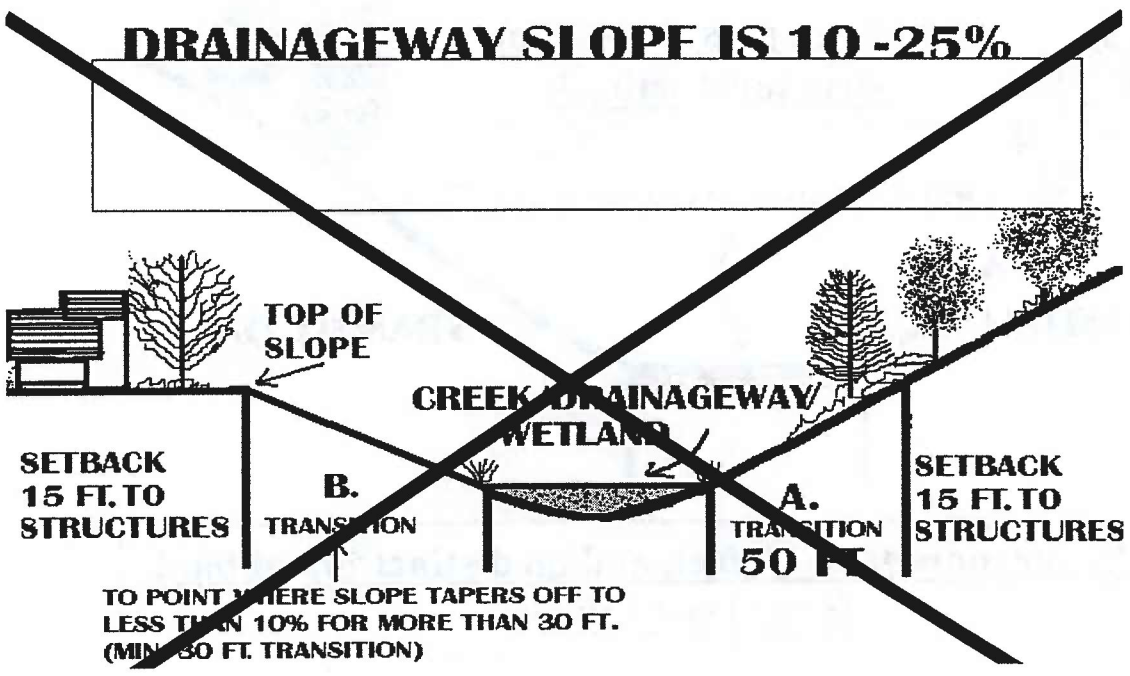
~~**drainageway category applies by site visit in those cases where there are significant variations in grade that defy classification using the above methodology. Distances are measured in plan view (i.e., as shown on the site plan).**~~

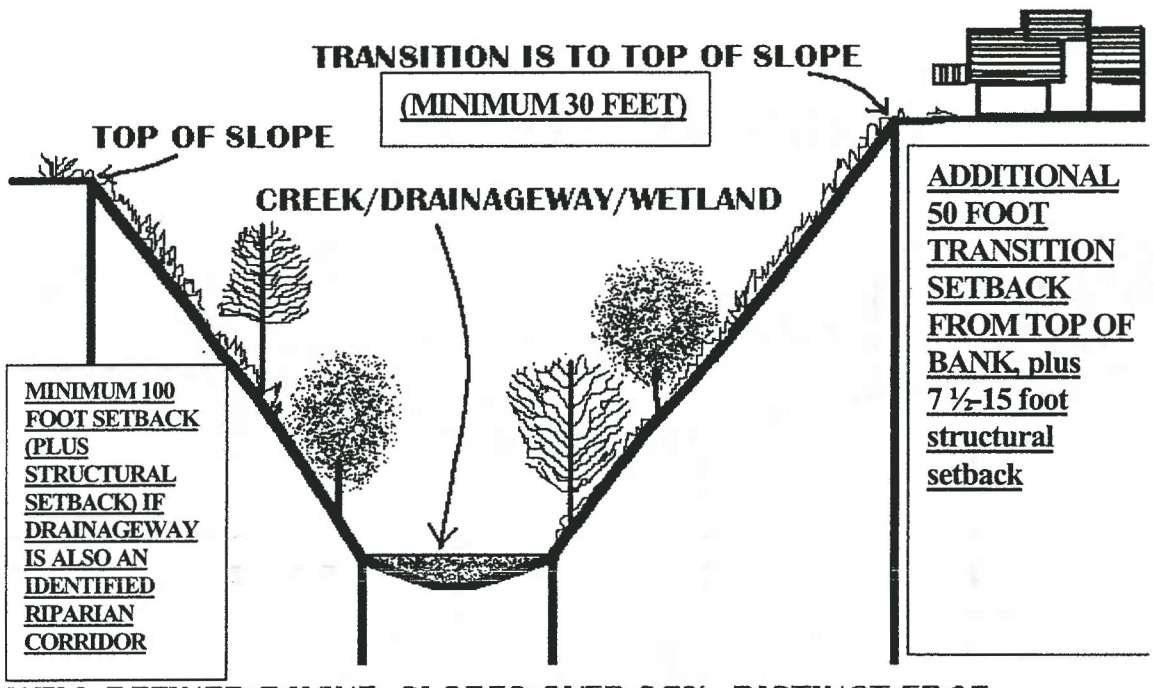
Table 32-1. Required Widths of Setback and Transition Area.

Protected Water Feature Type (see CDC Chapter 2 Definitions)	Slope Adjacent to Protected Water Feature	Starting Point for Measurements from Water Feature	Width of Setback and Transition Area on each side of the water feature
Wetland, Major Drainageway, Minor Drainageway	0% - 25%	• Edge of bankful flow or 2-year storm level; • Delineated edge of wetland	50 feet plus structural setback
Wetland, Major Drainageway, Minor Drainageway	≥ 25% to a distinct top of ravine[1]	• Edge of bankful flow or 2-year storm level; • Delineated edge of wetland	Distance from starting point of measurement to top of ravine[1] (30 foot minimum), plus an additional 50-foot setback, plus structural setback.
Wetland, Major Drainageway, Minor Drainageway	≥ 25% for more than 30 feet, and no distinct top of ravine for at least 150 feet	• Edge of bankful flow or 2-year storm level; • Delineated edge of wetland	200 feet, plus structural setback
Riparian Corridor	any	• Edge of bankful flow or 2-year storm level	100 feet or the setback required under major and minor drainageway provisions, whichever is greater, plus structural setback.
Formerly Closed Drainage Channel Reopened (see 32.050(N)	n/a	• Edge of bankful flow or 2-year storm level	Variable: See CDC 32.050(N)

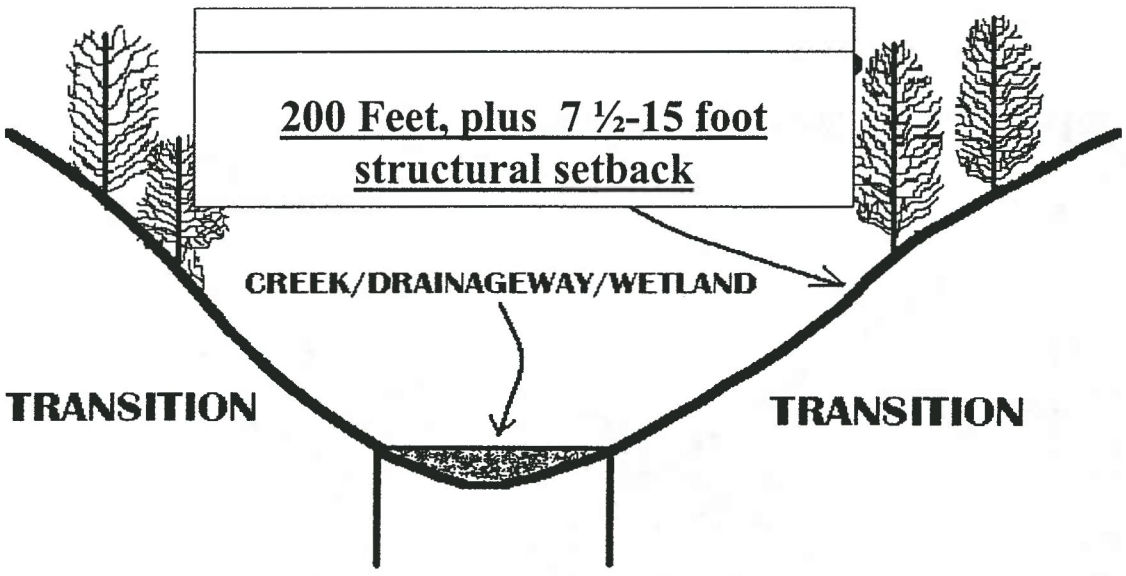
[1]Where the protected water feature is confined by a ravine or gully, the top of ravine is the location where the slope breaks at least 15% and the slope beyond the break remains less than 25% for at least 50 feet.
At least three slope measurements along the water feature, at no more than 100-foot increments, shall be made for each property for which development is proposed. Depending upon the width of the property, the width of the protected corridor will vary.


SLOPE IS UNDER 25 %
CREEK/DRAINAGEWAY/
WETLAND
TRANSITION
50 FT.
Structural
Setback
7 ½-15 feet
MINIMUM 100 FOOT SETBACK (PLUS STRUCTURAL SETBACK) IF DRAINAGEWAY IS ALSO AN IDENTIFIED RIPARIAN CORRIDOR


DRAINAGEWAY SLOPE IS 10 -25%
TOP OF
SLOPE
SETBACK
15 FT. TO
STRUCTURES
B.
A.
SETBACK
15 FT. TO
STRUCTURES
50 FT
TO POINT WHERE SLOPE TAPERS OFF TO
LESS THAN 10% FOR MORE THAN 30 FT.
(MIN. 50 FT. TRANSITION)



WELL DEFINED RAVINE. SLOPES OVER 25%. DISTINCT EDGE



≥ 25% for more than 30 feet, and no distinct top of bank for at least 150 feet

~~**Vacant legal residential lots of record established prior to this ordinance which would be restricted from development by these provisions shall be allowed to construct one dwelling unit consistent with the underlying zoning, but must still keep the greatest reasonable distance from the creek or wetland with a minimum distance of 30 feet. Non-residential lots of record may be built upon only after successful application for a Class II variance with minimum 30-foot setback.**~~

E. Roads, driveways, utilities, or passive use recreation facilities may be built in ~~**the transition zone**~~ and across ~~**drainageways**~~ **water resource areas** when no other practical alternative exists. ~~**For utility purposes, the determination of what is practical shall be based upon prudent engineering practices so long as it has no significant negative impact on transition zone and wetlands.**~~ Construction shall minimize impacts. Construction to the minimum dimensional standards for roads is ~~**encouraged**~~ **required**. ~~**Variances to reduce road widths are encouraged as a way to minimize impacts.**~~ Full mitigation and revegetation is required**, with the applicant to submit a mitigation plan pursuant to CDC Section 32.070 and a revegetation plan pursuant to CDC Section 32.080**. **The maximum disturbance width for utility corridors is as follows:**

a. **For utility facility connections to utility facilities, no greater than 10 feet wide.**

b. **For upgrade of existing utility facilities, no greater than 15 feet wide.**

c. **For new underground utility facilities, no greater than 25 feet wide, and disturbance of no more than 200 linear feet of Water**

Quality Resource Area, or 20% of the total linear feet of Water Quality Resource Area, whichever is greater.

~~**Seasonal or intermittent streams are those streams, or portions of streams, that flow only in direct response to precipitation. They receive little or no water from springs. They carry no measurable flow for three months of the year. The transition area from the edge of these seasonal streams shall be 15 feet.**~~

5~~G~~. **Prior to construction, the water resource area shall be protected with an anchored chain link fence (or approved equivalent) at its perimeter and shall remain undisturbed except as specifically allowed by an approved water resource area permit. Such fencing shall be maintained until construction is complete.** The ~~**transition**~~ **water resource** area ~~**(an area that is to be protected)**~~ shall be identified with City-approved permanent markers at all boundary direction changes and at 30- to 50-foot intervals that clearly delineate the extent of the protected area.

6~~H~~. ~~**Consideration should be given to development of passive recreational opportunities on major drainageways.**~~ **Paved trails, walkways, or bike paths shall be located at least 15 feet from the edge of a protected water feature except for approved crossings. All trails, walkways, and bike paths shall be constructed so as to minimize disturbance to existing native vegetation. All trails, walkways, and bike paths shall be constructed with a permeable material and utilize Low Impact Development (LID) construction practices.**

7~~I~~. Sound engineering principles regarding downstream impacts, soil stabilization, erosion control, and adequacy of improvements to accommodate the intended drainage through the drainage basin ~~**are**~~ **shall**

be used. Storm drainage ~~**should**~~ **shall** not be diverted from its natural watercourse. Inter-basin transfers of storm drainage shall not be permitted.

8~~J~~. ~~**A construction fence and/or appropriate erosion control measures, as necessary, shall be established through all phases of construction along the perimeter of the transition area as described in Chapter 30 of this Code.**~~ **Appropriate erosion control measures based on CDC Chapter 31 requirements shall be established throughout all phases of construction.**

9~~K~~. Vegetative improvements to areas within the ~~**natural drainageway**~~ **water resource** area may be required if the site is found to be in an unhealthy or disturbed state**, or if portions of the site within the water resource area are disturbed during the development process**. "Unhealthy or disturbed" includes those sites that **have a combination of native trees, shrubs, and groundcover on less than 80% of the water resource area and less than 50% tree canopy coverage in the water resource area,** ~~**are heavily populated by exotic or non-indigenous species, areas overgrown with invasive plants, or areas that lack the proper balance of canopy trees, understory plants, and soil stabilizing groundcovers. Disturbed areas also include areas which have fill, debris, garbage, old tires, etc., which must be removed.**~~ "Vegetative improvements" ~~**consist of**~~ **will be documented by** submitting a **revegetation** plan **meeting CDC Section 32.080 criteria that will result in the water resource area having a combination of native trees, shrubs, and groundcover on more than 80% of its area, and more than 50% tree canopy coverage in its area,** ~~**which calls for removal of non-indigenous, exotic, or invasive species which will be replaced by plant**~~

~~**species in a manner to be approved by the City Parks Director and consistent with the purposes of Chapter 30. Once approved, the applicant is responsible for implementing the plan prior to final inspection or the City's acceptance of dedication of the property.**~~ **Where any existing vegetation is proposed to be permanently removed, or the original land contours disturbed, a mitigation plan meeting CDC Section 32.070 criteria shall also be submitted. Interim erosion control measures such as mulching shall be used to avoid erosion on bare areas. Upon approval of the mitigation plan, the applicant is responsible for implementing the plan during the next available planting season.**

~~**10L.**~~ **Structural** Setback area: where **a structural setback area is specifically** required, development projects shall keep all foundation walls and footings at least 15 feet from the edge of the **water resource area** transition **and setback** area **if this area is located in the front or rear yard of the lot, and 7 ½ feet from the edge of the water resource area transition and setback area if this area is located in the side yard of the lot**. ~~**Decks and s**~~Structural elements may not be built on or cantilever over the setback area. Roof overhangs of up to three feet are permitted in the setback. **Decks are permitted within the structural setback area.**

M. **Stormwater Treatment Facilities may only encroach a maximum of 25 feet into the outside boundary of the water resource area; and the area of encroachment must be replaced by adding an equal area to the water quality resource area on the subject property. Facilities that infiltrate storm water onsite, including the associated piping, may be placed at any point within the water resource area outside of the**

actual drainage course so long as the forest canopy and the areas within ten feet of the driplines of significant trees are not disturbed. Only native vegetation may be planted in these facilities.

N. **As part of any proposed land division or Class II Design Review application, any covered or piped drainageways identified on the Surface Water Quality Management Plan Map shall be opened, unless the City Engineer determines that such opening would negatively impact the affected storm drainage system and the water quality within that affected storm drainage system in a manner that could not be reasonably mitigated by the project's site design. The design of the reopened channel and associated transition area shall be considered on an individualized basis, based upon the following factors:**

1. **The ability of the reopened storm channel to safely carry storm drainage through the area.**

2. **Continuity with natural contours on adjacent properties**

3. **Continuity of vegetation and habitat values on adjacent properties.**

4. **Erosion control**

5. **Creation of filters to enhance water quality**

6. **Provision of water temperature conducive to fish habitat**

7. **Consideration of habitat and water quality goals of the most**

recently adopted West Linn Surface Water Management Plan.

8. Consistency with required site Mitigation Plans, if such plans are needed.

The maximum required setback under any circumstance shall be the setback required as if the drainage way were already open.

O. The decision-making authority may approve a reduction in applicable front yard setbacks abutting a public street to a minimum of fifteen feet and a reduction in applicable side yard setbacks abutting a public street to 7 ½ feet if the applicant demonstrates that the reduction is necessary to create a building envelope on an existing or proposed lot of at least 5,000 square feet.

P. Storm Drainage Channels not identified on the Surface Water Management Plan Map, but identified through the development review process, shall be subject to the same setbacks as equivalent mapped storm drainage channels.

32.060 SITE PLAN

A. All site plans and maps shall include the name, address, and telephone number of the applicant, the scale of the plan, a north arrow, and a vicinity map.

B. The applicant shall submit a site plan drawn to a 1"=10' to 1"=30' scale, which contains the following information:

1. Existing and proposed contour lines at the following minimum intervals:

a. Two-foot intervals for slopes from 0-25 percent; and,

b. Five-foot intervals for slopes in excess of 25 percent.

2. A slope map delineating areas greater than and less than 25% slope.

3. Location of the water resource areas on the site.

4. Location of proposed stormwater facilities;

5. Location of all existing natural features including, but not limited to, delineation of water resource areas. The widths of the transition and setback areas described in Table 32-1 shall be shown on the site plan.

6. Location of all trees measured at six inches diameter at breast height (DBH) or greater and a description of existing vegetation species. Where only a portion of a water quality resource area is to be disturbed, the tree inventory need only apply to the impacted area. The remaining treed area shall be depicted by outlining the canopy cover.

7. Detailed site plans of the proposed development outlining total disturbance area, including proposed building footprints, site property improvements, grading plans, accessways, utilities, and landscaping.

8. The presence of wetlands shown on site plans shall be based on wetlands delineations conducted following methods accepted by the U.S. Army Corps of Engineers and the Oregon Division of State Lands. Written concurrence by the Oregon Division of State Lands DSL with the wetlands delineation must be obtained and submitted as part of the development application. The delineation shall be prepared by a certified wetlands specialist.

32.070 MITIGATION PLAN

A mitigation plan shall be required if any portion of the water resource area is proposed to be permanently disturbed by development.

A. All mitigation plans must contain an alternatives analysis demonstrating that:

1. No practicable alternatives to the requested development exist that will not disturb the water resource area; and,

2. Development in the water resource area has been limited to the area necessary to allow for the proposed use; and,

3. An explanation of the rationale behind choosing the alternative selected, including how adverse impacts to the water resource area will be avoided and/or minimized.

B. A mitigation plan shall contain the following information:

1. A description of adverse impacts that will be caused as a result of development.

2. An explanation of how adverse impacts to resource areas will be avoided, minimized, and/or mitigated in accordance with, but not limited to, the revegetation provisions of CDC Section 32.050(K).

3. A list of all responsible parties including, but not limited to, the owner, applicant, contractor, or other persons responsible for work on the development site.

4. A map showing where the specific mitigation activities will occur.

5. An implementation schedule, including timeline for construction, mitigation, mitigation maintenance, monitoring, reporting, and a contingency plan. All in-stream work in fish-

bearing streams shall be done in accordance with the Oregon Department of Fish and Wildlife water work periods.

6. Assurances shall be established to rectify any mitigation actions that are not successful. This may include bonding or other surety.

7. Evidence that a Joint Permit Application (to the U.S. Army Corps and OR DSL) if impacts to wetlands are greater than 0.10 acres, has been submitted and accepted for review.

C. Mitigation of any water resource areas that are not wetlands are permanently disturbed shall be accomplished by creation of a mitigation area equal in size to the area being disturbed. Mitigation areas may be land that is either

1. On-site, not within the water resource area, and is characterized by existing vegetation that does not meet the standards set forth in CDC Section 32.050(K), or

2. Off-site, and is characterized by existing vegetation that does not meet the standards set forth in CDC Section 32.050(K).

The applicant shall prepare and implement a revegetation plan for the mitigation area pursuant to CDC Section 32.080, and which shall result in the area meeting the standards set forth in CDC Section 32.050(K). Adequacy of off-site mitigation areas on city property must be consistent with and meet approval of the City Department of Parks and Recreation. Any off-site mitigation occurring on privately-owned land shall be protected with a conservation easement.

D. The Mitigation Plan for any wetland area to be disturbed shall be 1)

prepared and implemented with the guidance of professionals with experience and credentials in wetland areas and values, and 2) be consistent with requirements set forth by regulatory agencies (U.S. Army Corps and OR DSL) in a Joint Permit Application, if such an Application is necessary for the disturbance. . Where the alternatives analysis demonstrates that there are no practicable alternatives for mitigation on site, off-site mitigation shall be located as follows:

1. As close to the development site as is practicable above the confluence of the next downstream tributary, or if this is not practicable;

2. Within the watershed where the development will take place, or as otherwise specified by the City in an approved wetland mitigation bank.

E. To ensure that the mitigation area will be protected in perpetuity, proof that the area has been dedicated to the City or a conservation easement has been placed on the property where the mitigation is to occur is required.

32.080 REVEGETATION PLAN REQUIREMENTS

Metro's native plant list is incorporated by reference as a part of CDC Chapter 32, and all plants used in revegetation plans shall be plants found on the Metro native plant list. Performance standards for planting upland, riparian and wetland plants include the following:

A. Native trees and shrubs will require temporary irrigation from June 15 to October 15 for the three years following planting.

B. Invasive non-native or noxious vegetation shall be removed within the area to be revegetated prior to planting.

C. **Replacement trees must be at least one-half inch in caliper, measured at 6 inches above the ground level for field grown trees or above the soil line for container grown trees (the one-half inch minimum size may be an average caliper measure, recognizing that trees are not uniformly round) unless they are oak or madrone, which may be one gallon size. Shrubs must be in at least a one-gallon container or the equivalent in ball and burlap and must be at least 12 inches in height.**

D. **Trees shall be planted between 8 and 12 feet on-center and shrubs shall be planted between 4 and 5 feet on-center, or clustered in single species groups of no more than 4 plants, with each cluster planted between 8 and 10 feet on center. When planting near existing trees, the dripline of the existing tree shall be the starting point for plant spacing requirements.**

E. **Shrubs must consist of at least two different species. If 10 trees or more are planted, then no more than 50% of the trees may be of the same species.**

F. **The responsible party shall provide an appropriate level of assurance documenting that 80 percent survival of the plants has been achieved after three years, and shall provide annual reports to the Planning Director on the status of the revegetation plan during the three year period.**

32.090 REDUCTION IN STANDARDS FOR HARDSHIP

The purpose of CDC Section 32.090 is to ensure that compliance with CDC Chapter 32 does not cause unreasonable hardship. To avoid such instances, the requirements of CDC Chapter 32 may be reduced. Reductions are also allowed when strict application of CDC Chapter 32 would deprive an owner of all economically viable use of land. The decision making authority may

impose such conditions as are deemed necessary to limit any adverse impacts that may result from granting relief.

A. **Lots located completely inside the water resource area. Development may occur on lots located completely within the water resource area that are recorded with the County Assessor's Office on or before the effective date of this ordinance. Development shall disturb the minimum necessary area to allow the proposed use or activity, and in any situation no more than 5,000 square feet of the water resource area, including access roads and driveways, subject to the erosion and sediment control standards in CDC Chapter 31, and subject to a finding that the proposed development does not increase danger to life and property due to flooding and erosion.**

B. **Lots located partially inside the water resource area. A reduction to avoid the loss of all economically viable use of a vacant lot recorded with the County Assessor's Office on or before the effective date of this ordinance that is partially inside the water resource area is permitted. Development on such lots shall not disturb more than 5,000 square feet of the water resource area, including access roads and driveways, subject to the erosion and sediment control standards of CDC Chapter 31. Applicants must demonstrate the following:**

1. **Without the proposed reduction, the applicant would be denied economically viable use of the subject property. To meet this criterion, the applicant must show that no other application could result in permission for an economically viable use of the subject property. Evidence to meet this criterion shall include a list of uses allowed on the subject property.**

2. The proposed intrusion is the minimum necessary to allow economically viable use of the subject property.

3. The proposed reduction will comply with CDC Chapter 31, Erosion Control;

C. If a reduction in standards is granted pursuant to criteria of CDC 32.090(B), the reduction shall be subject to the following conditions:

1. The minimum width of the water resource areas's transition and setback area shall be 15 feet on each side of a wetland or drainage course.

2. As mitigation for the permanent disturbance of any portion of the normally required water resource area, an equal area on the property which would not normally be within the water resource area shall be revegetated to meet the standards of CDC Section 32.050(K). If there does not exist enough site area to meet this requirement, the applicant shall revegetate the entire area of the property that would not normally be within the water resource area, adjacent to the actual water resource area, and is not proposed for permanent disturbance to meet the standards of CDC Section 32.050(K).

D. Any further reduction of the standards of this chapter shall require approval of a Variance pursuant to CDC Chapter 75.

~~**32.060 APPEAL**~~

~~**Any decision by the Planning Commission on a water resource area application may be appealed to the City Council as described by Section 99.240(A).**~~

32.~~070~~100 PENALTIES

Violation of any provision or requirement of this chapter or conditions of approval is a Class A infraction**, and shall also constitute a public nuisance**. Each day of violation constitutes a separate offense. In addition, the City retains the authority to require any **~~natural drainageway;~~ water resource area** which has been altered illegally, to be re-established to its natural condition, including replanting trees, shrubs, etc. and reseeding open areas at the owner's expense. In addition, the City Attorney may institute any necessary legal proceedings to enforce the provisions of this chapter, or cure any problems resulting from violations of this chapter.

CHAPTER 30: WETLAND AND RIPARIAN AREA, WOULD BE DELETED IN ITS ENTIRETY

99.060 APPROVAL AUTHORITY

PLANNING COMMISSION AUTHORITY

B. The Planning Commission shall have the authority to:

2. Approve, deny, or approve with conditions:

q. A water resource area permit pursuant to Chapter 32.

99.080 NOTICE

TYPES OF NOTICE FOR LAND USE ACTIONS

~~Natural Drainageway Permit or Wetland and Riparian Area~~ Water Resource Area Permit	B**

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Water Quality Resource Area and Wetland Code Revisions
Clean Copy, Chapter 2 definitions and new Chapter 32 only
Final Adopted Amendments

2.000 DEFINITIONS

Bankful Stage: The stage or elevation at which water overflows the natural banks of a stream or other waters of the state and beings to inundate upland areas. In the absence of physical evidence, the two-year recurrent flood elevation may be used to approximate the bankful stage.

Protected Water Feature: A wetland identified in the West Linn Local Wetlands Inventory or any major or minor open channel drainageway identified by the most recently adopted West Linn Surface Water Management Plan, except for small man-made open roadside drainage swales in residential areas , or any drainage course identified by the West Linn Riparian Corridor inventory as significant (not including the Willamette or Tualatin Rivers)..

Riparian Corridor: Any area within and adjacent to a natural drainageway within West Linn (not including lands adjacent to the Willamette or Tualatin Rivers) that has been identified as significant by the West Linn Riparian Corridor Inventory.

Water Resource Area: Any area that consists of a wetland identified in the West Linn Local Wetlands Inventory and the required transition and setback area around the wetland pursuant to CDC Chapter 32, or any major or minor open channel drainageway identified by the most recently adopted West Linn Surface Water Management Plan and the required transition and setback area around the major or minor open channel pursuant to CDC Chapter 32, except for small man-made open roadside drainage swales in residential areas, or any riparian corridor (not including lands adjacent to the Willamette or Tualatin Rivers) and the required transition and setback area for the riparian corridor pursuant to CDC Chapter 32...

Water Resource Area Transition and Setback Area: The land adjacent to the protected water feature that constitutes a buffer, or transition, to protect the resource from conflicting development and activities.

32.000 WATER RESOURCE AREA PROTECTION

32.010 PURPOSE AND INTENT

CDC Chapter 32 has two primary purposes, which serve to accomplish different public policy objectives, but which have overlapping methods of meeting these purposes:

A. Improve water quality and protect the functions and values of water resource areas that consist of protected water features and associated vegetated corridors. The functions and values of these areas include: providing a vegetated corridor to separate protected water features from development; maintaining or reducing stream temperatures; maintaining natural stream corridors; minimizing erosion, nutrient and pollutant loading into water; providing filtering, soil infiltration and natural water purification; and stabilizing slopes to prevent landslides contributing to sedimentation of water features.

B. Control and prevent flooding and erosion for theprotection of public health and safety.

C. Protect and improve the following functions and values that contribute to fish and wildlife habitat in urban streamside areas:

   1. Microclimate and shade
   2. Stream flow moderation and water storage
   3. Bank stabilization, sediment, and pollution control
   4. Large wood recruitment and retention and channel dynamics; and
   5. Retention of organic material sources.

D. Provide mitigation standards for the replacement of both water quality values and ecological functions and values lost through development adjacent to water resource areas.

E. Control and prevent water pollution for the protection of public health and safety, and comply with federal laws including the Federal Clean Water and Endangered Species Acts.

32.020 APPLICABILITY

A. This section applies to properties upon which a natural drainageway, wetland, riparian corridor, and/or associated transition and setback area, is located. For example, the subject property may be defined as one property that contains a wetland or creek plus an adjacent property of different ownership that includes the transition area or setback area.

B. The provisions of this chapter apply to all zones and uses within the City limits. No person, unless excepted by Section 32.020(C) or (D), may clear, fill, build in, or alter existing water resource areas without having obtained a permit from the decision-making authority.

C. The provisions of this chapter shall apply to development proposals that have water resource areas within their project boundary. Therefore, the actual wetland, creek, open channel, or stream does not have to be on the subject property under review. This chapter shall not apply to designated enclosed storm drains that appear in the most recently adopted West Linn Surface Water Management Plan, unless the enclosed storm drain is opened as a result of the proposed development. The provisions shall also not apply to small man-made open roadside drainage swales in residential areas, even if such roadside swales are identified as open channels by the most recently adopted West Linn Surface Water Management Plan. The provisions of this chapter also do not apply to drainage ditches and open channel improvements created in the interior of individual residential lots that are not identified on the Surface Water Managemetn Plan Map.

D. Exceptions. The following actions are excepted from the provisions of this chapter:

1. The action of any City officer or employee of any public utility to remove or alleviate from immediate danger to life or property, to

restore existing utility service or to reopen a public thoroughfare to traffic. provided that after the emergency has passed, adverse impacts are mitigated in accordance with CDC 32.070.

2. The routine maintenance of any existing water resource area such as removing dead or dying vegetation that constitutes a hazard to life or property, pollutants,, trash, eroded material, etc.
3. Routine repair and maintenance of legally established structures, utilities, roads, and manmade water control facilities such as constructed ponds or lakes, wastewater facilities, and stormwater treatment facilities that do not alter the location or footprint of the structure, utility, or road.
4. Stream, wetland, riparian and upland enhancement or restoration projects done with approval of city staff and regulatory agency personnel (e.g., ODFW, OR DSL)..
5. Maintenance of existing gardens, pastures, lawns, and landscape perimeters, including the installation of new irrigation systems within existing gardens, lawns, and landscape perimeters. However, the city encourages restoration of areas within the drainageway transition to native vegetation.
6. Temporary and minor clearing not to exceed 200 square feet for the purpose of site investigations and pits for preparing soil profiles, provided that such areas are restored to their original condition when the investigation is complete. For wetlands, such clearing shall not occur within the actual wetland itself, but only within the adjacent wetland transition area. While such temporary and minor clearing is exempt from the provisions of this chapter, it is subject to all other city codes, including provisions for erosion control and

tree removal.

7. Removal of plants identified as nuisance or prohibited plants on the Metro Native Plant List and the planting or propagation of plants identified as native plants on the Metro Native Plant List. Handheld tools must be used to remove nuisance or prohibited plants, and after such removal all open soil areas greater than 25 square feet must be replanted.

8. Additions, alterations, replacement, or rehabilitation of existing structures or other site improvements, provided that:

   a. The site footprint of any additions or alterations to existing structures (including decks), roadways, driveways, accessory uses and structures, and development shall not increase total encroachment into the water resource area required by Table 32.1, except that

      i. a lateral extension of an existing building footprint by up to ten feet is allowed if the lateral extension does not encroach any further into the water resource area than the portion of the existing footprint immediately adjacent; and

      ii. an addition to the existing structure on the side opposite of the existing water resource area shall be allowed.

   b. Rehabilitation or replacement of an existing structure, including decks, shall not increase the existing structural footprint within the water resource area.

9. New or replacement accessory structures and features (such as pedestrian foot-bridges, gazebos, patios, and play structures)) to

existing residences, provided that the accessory structure complies with all setback criteria contained within Table 32.1, or the accessory structure is a replacement in kind of an existing structure on the same or lesser footprint.

10. New single-family residences on existing lots of record established on or prior to the effective date of this ordinance, provided that all proposed structures and improvements comply with the setback criteria contained within Table 32.1.
11. Interior remodeling of a structure so long as the use of the structure is not changed.

32.025 PERMIT REQUIRED

No person shall be permitted to fill, strip, install pipe, undertake construction, or in any way alter an existing water resource area without first obtaining a permit to do so from the decision making authority, paying the requisite fee, and otherwise complying with all applicable provisions of this ordinance.

32.030 PROHIBITED USES

Prohibited uses in water resource areas include the following:

A. Any new lawn area or garden area consisting primarily of non-native vegetation.

B. Planting of any species identified as nuisance or prohibited plants on the Metro Native Plant List.

C. Uncontained areas of hazardous materials as defined by the Department of Environmental Quality and dumping of any materials of any kind.

D. Trimming and removal of existing native vegetation from the transition and setback area unless it is to reestablish native vegetation in place of

non-native or invasive vegetation pursuant to CDC 32.020(D)(7), or if the vegetation constitutes a hazard to life or property pursuant to CDC 32.020(D)(2).

32.040 THE APPLICATION

A. An application for development on property containing a water resource area shall be initiated by the property owner, or the owner's authorized agent, and shall be accompanied by the appropriate fee.

B. A pre-application conference shall be a prerequisite to the filing of the application.

C. The application shall include a site plan and topographic map of the parcel pursuant to Section 32.060. The applicant shall submit three copies of all maps and diagrams at original scale and three copies reduced to a paper size not greater than 11 x 17 inches, and an electronic copy of all maps on a compact disc. The Planning Director may require the map to be prepared by a registered land surveyor to ensure accuracy.

D. The site plan map shall be accompanied by a written narrative addressing the approval criteria in Section 32.050 and if necessary, addressing the reason why the owner wishes to alter the natural drainageway.

E. All proposed improvements to the drainageway channel or creek which might impact the storm load carrying ability of the drainageway shall be designed by a registered civil engineer.

F. The applicant shall present evidence in the form of adopted utility master plans or transportation master plans, or findings from a licensed engineer to demonstrate that the development or improvements are consistent with accepted engineering practices.

G. The applicant shall prepare an assessment of the existing condition of the

water resource area consisting of an inventory of vegetation, including percentage ground and canopy coverage.

H. If necessary, the applicant shall also submit a mitigation plan pursuant to CDC 32.070, and a revegetation plan pursuant to CDC 32.080.

32.050 APPROVAL CRITERIA

No application for development on property containing a water resource area shall be approved unless the decision-making authority finds that the following standards have been satisfied, or can be satisfied by conditions of approval.

A. Proposed development submittals shall identify all water resource areas on the project site. The most currently adopted Surface Water Management Plan) shall be used as the basis for determining existence of drainageways. The exact location of drainageways identified in the Surface Water Management Plan, and drainageway classification (e.g., open channel vs. enclosed storm drains), may have to be verified in the field by the City Engineer. The Local Wetlands Inventory shall be used as the basis for determining existence of wetlands. The exact location of wetlands identified in the Local Wetlands Inventory on the subject property shall be verified in a wetlands delineation analysis prepared for the applicant by a certified wetlands specialist. The Riparian Corridor inventory shall be used as the basis for determining existence of riparian corridors.

B. Proposed developments shall be so designed as to maintain the existing natural drainageways and utilize them as the primary method of stormwater conveyance through the project site unless the most recently adopted West Linn Surface Water Management Plan calls for alternate configurations (culverts, piping, etc.). Proposed development shall, particularly in the case of subdivisions, facilitate reasonable access to the

drainageway for maintenance purposes.

C. Development shall be conducted in a manner that will minimize adverse impact on water resource areas. Alternatives which avoid all adverse environmental impacts associated with the proposed action shall be considered first. For unavoidable adverse environmental impacts, alternatives that reduce or minimize these impacts shall be selected. If any portion of the water quality resource area is proposed to be permanently disturbed, the applicant shall prepare a mitigation plan as specified in CDC 32.070 designed to restore disturbed areas, either existing prior to development or disturbed as a result of the development project, to a healthy natural state.

D. Water resource areas shall be protected from development or encroachment by dedicating the land title deed to the City for public open space purposes if either: 1) a finding can be made that the dedication is roughly proportional to the impact of the development; or, 2) the applicant chooses to dedicate these areas. Otherwise, these areas shall be preserved through a protective easement. Protective or conservation easements are not preferred because water resource areas protected by easements have shown to be harder to manage and, thus, more susceptible to disturbance and damage. Required 15-foot wide structural setback areas do not require preservation by easement or dedication.

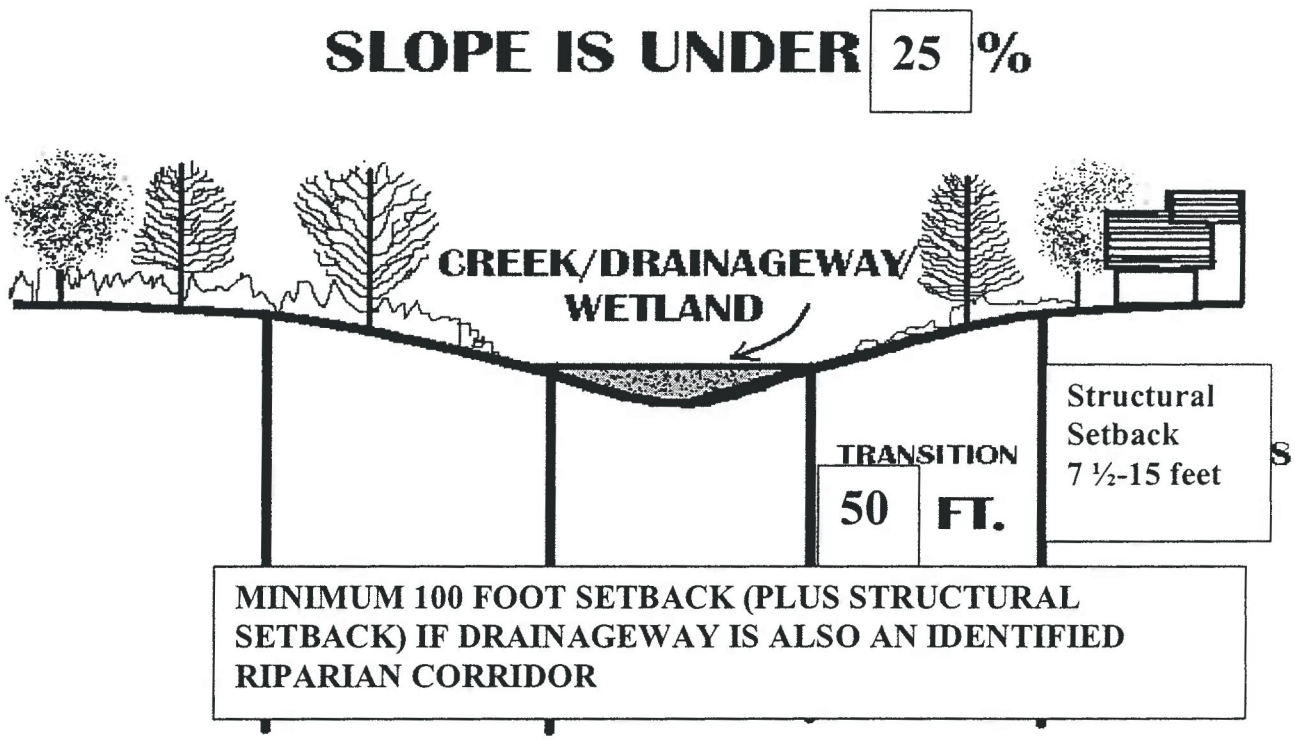
E. The protected water resource area shall include the drainage channel, creek, wetlands, and the required setback and transition area. The setback and transition area shall be determined using the following table:

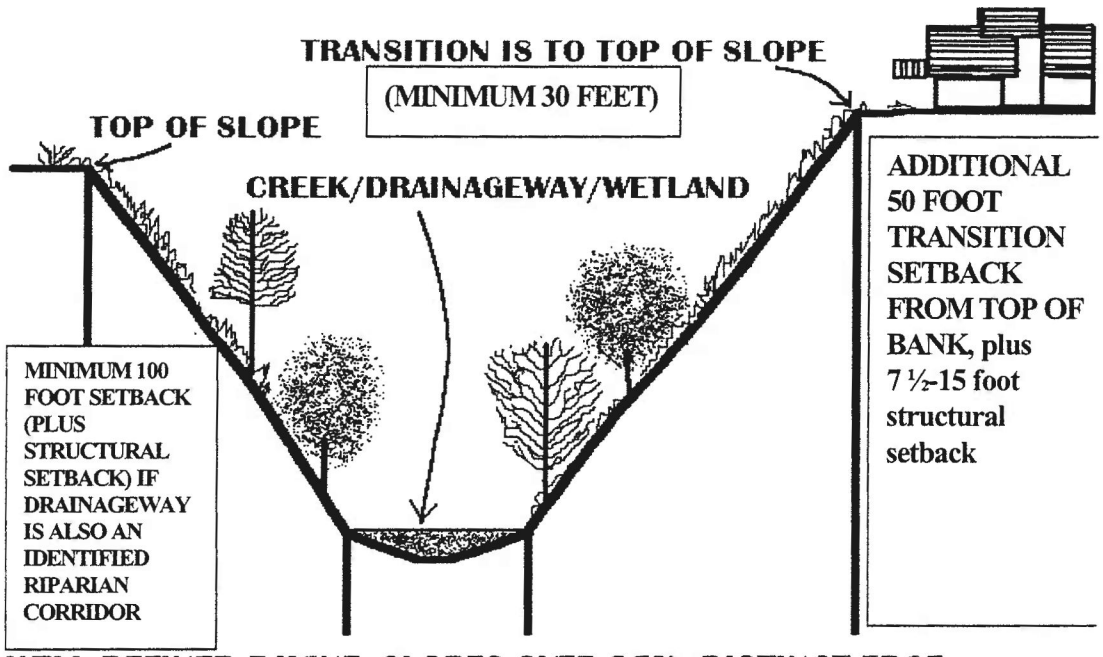
Table 32-1. Required Widths of Setback and Transition Area.

Protected Water Feature Type (see CDC Chapter 2 Definitions)	Slope Adjacent to Protected Water Feature	Starting Point for Measurements from Water Feature	Width of Setback and Transition Area on each side of the water feature
Wetland, Major Drainageway, Minor Drainageway	0% - 25%	• Edge of bankful flow or 2-year storm level; • Delineated edge of wetland	50 feet plus structural setback.
Wetland, Major Drainageway, Minor Drainageway	≥ 25% to a distinct top of ravine[1]	• Edge of bankful flow or 2-year storm level; • Delineated edge of wetland	Distance from starting point of measurement to top of ravine[1] (30 foot minimum), plus an additional 50-foot setback, plus structural setback.
Wetland, Major Drainageway, Minor Drainageway	≥ 25% for more than 30 feet, and no distinct top of ravine for at least 150 feet	• Edge of bankful flow or 2-year storm level; • Delineated edge of wetland	200 feet, plus structural setback
Riparian Corridor	any	• Edge of bankful flow or 2-year storm level	100 feet or the setback required under major and minor drainageway provisions, whichever is greater., plus structural setback
Formerly Closed Drainage Channel Reopened (see 32.050(N)	n/a	• Edge of bankful flow or 2-year storm level	Variable: See CDC 32,050(N)

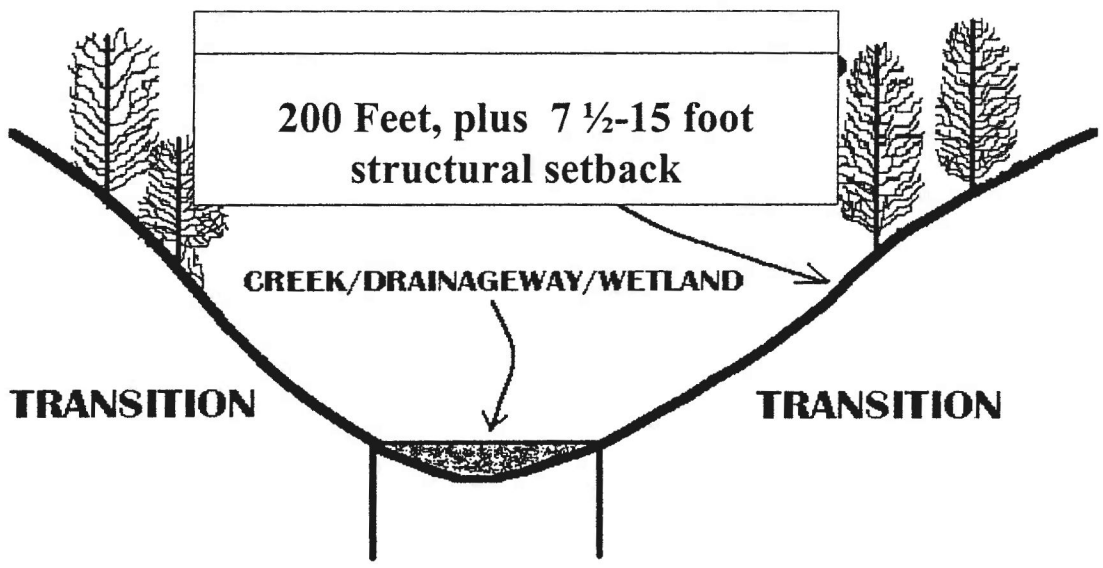
[1]Where the protected water feature is confined by a ravine or gully, the top of ravine is the location where the slope breaks at least 15% and the slope beyond the break remains less than 25% for at least 50 feet.

At least three slope measurements along the water feature, at no more than 100-foot increments, shall be made for each property for which development is proposed. Depending upon the width of the property, the width of the protected corridor will vary.


SLOPE IS UNDER 25 %
CREEK/DRAINAGEWAY/
WETLAND
TRANSITION
50 FT.
Structural
Setback
7 ½-15 feet
MINIMUM 100 FOOT SETBACK (PLUS STRUCTURAL SETBACK) IF DRAINAGEWAY IS ALSO AN IDENTIFIED RIPARIAN CORRIDOR



WELL DEFINED RAVINE. SLOPES OVER 25%. DISTINCT EDGE



≥ 25% for more than 30 feet, and no distinct top of bank for at least 150 feet

F. Roads, driveways, utilities, or passive use recreation facilities may be built in and across water resource areas when no other practical alternative exists. Construction shall minimize impacts. Construction to the minimum dimensional standards for roads is required. Full mitigation and revegetation is required, with the applicant to submit a mitigation plan pursuant to CDC Section 32.070 and a revegetation plan pursuant to CDC Section 32.080. The maximum disturbance width for utility corridors is as follows:

a. For utility facility connections to utility facilities, no greater than 10 feet wide.

b. For upgrade of existing utility facilities, no greater than 15 feet wide.

c. For new underground utility facilities, no greater than 25 feet wide, and disturbance of no more than 200 linear feet of Water Quality Resource Area, or 20% of the total linear feet of Water Quality Resource Area, whichever is greater.

G. Prior to construction, the water resource area shall be protected with an anchored chain link fence (or approved equivalent) at its perimeter and shall remain undisturbed except as specifically allowed by an approved water resource area permit. Such fencing shall be maintained until construction is complete. The water resource area shall be identified with City-approved permanent markers at all boundary direction changes and at 30- to 50-foot intervals that clearly delineate the extent of the protected area.

H. Paved trails, walkways, or bike paths shall be located at least 15 feet from the edge of a protected water feature except for approved crossings. All

trails, walkways, and bike paths shall be constructed so as to minimize disturbance to existing native vegetation. All trails, walkways, and bike paths shall be constructed with a permeable material and utilize Low Impact Development (LID) construction practices.

I. Sound engineering principles regarding downstream impacts, soil stabilization, erosion control, and adequacy of improvements to accommodate the intended drainage through the drainage basin shall be used. Storm drainage shall not be diverted from its natural watercourse. Inter-basin transfers of storm drainage shall not be permitted.

J. Appropriate erosion control measures based on CDC Chapter 31 requirements shall be established throughout all phases of construction.

K. Vegetative improvements to areas within the water resource area may be required if the site is found to be in an unhealthy or disturbed state, or if portions of the site within the water resource area are disturbed during the development process. "Unhealthy or disturbed" includes those sites that have a combination of native trees, shrubs, and groundcover on less than 80% of the water resource area and less than 50% tree canopy coverage in the water resource area. "Vegetative improvements" will be documented by submitting a revegetation plan meeting CDC Section 32.080 criteria that will result in the water resource area having a combination of native trees, shrubs, and groundcover on more than 80% of its area, and more than 50% tree canopy coverage in its area. Where any existing vegetation is proposed to be permanently removed, or the original land contours disturbed, a mitigation plan meeting CDC Section 32.070 criteria shall also be submitted. Interim erosion control measures such as mulching shall be used to avoid erosion on bare areas. Upon approval of the mitigation plan, the applicant is responsible for implementing the plan

during the next available planting season.

L. Structural Setback area: where a structural setback area is specifically required, development projects shall keep all foundation walls and footings at least 15 feet from the edge of the water resource area transition and setback area if this area is located in the front or rear yard of the lot, and 7 ½ feet from the edge of the water resource area transition and setback area if this area is located in the side yard of the lot. Structural elements may not be built on or cantilever over the setback area. Roof overhangs of up to three feet are permitted in the setback. Decks are permitted within the structural setback area.

M. Stormwater Treatment Facilities may only encroach a maximum of 25 feet into the outside boundary of the water resource area; and the area of encroachment must be replaced by adding an equal area to the water quality resource area on the subject property. Facilities that infiltrate storm water onsite, including the associated piping, may be placed at any point within the water resource area outside of the actual drainage course so long as the forest canopy and the areas within ten feet of the driplines of significant trees are not disturbed. Only native vegetation may be planted in these facilities.

N. As part of any proposed land division or Class II Design Review application, any covered or piped drainageways identified on the Surface Water Quality Management Plan Map shall be opened, unless the City Engineer determines that such opening would negatively impact the affected storm drainage system and the water quality within that affected storm drainage system in a manner that could not be reasonably mitigated by the project's site design. The design of the reopened channel and

associated transition area shall be considered on an individualized basis, based upon the following factors:

1. The ability of the reopened storm channel to safely carry storm drainage through the area.

2. Continuity with natural contours on adjacent properties

3. Continuity of vegetation and habitat values on adjacent properties.

4. Erosion control

5. Creation of filters to enhance water quality

6. Provision of water temperature conducive to fish habitat

7. Consideration of habitat and water quality goals of the most recently adopted West Linn Surface Water Management Plan.

8. Consistency with required site Mitigation Plans, if such plans are needed.

The maximum required setback under any circumstance shall be the setback required as if the drainage way were already open.

The maximum required setback under any circumstance shall be the setback required as if the drainage way were already open.

O. The decision-making authority may approve a reduction in applicable front yard setbacks abutting a public street to a minimum of fifteen feet and a reduction in applicable side yard setbacks abutting a public street to 7 ½ feet if the applicant demonstrates that the reduction is necessary to create a

building envelope on an existing or proposed lot of at least 5,000 square feet.

P. Storm Drainage Channels not identified on the Surface Water Management Plan Map, but identified through the development review process, shall be subject to the same setbacks as equivalent mapped storm drainage channels.

32.060 SITE PLAN

A. All site plans and maps shall include the name, address, and telephone number of the applicant, the scale of the plan, a north arrow, and a vicinity map.

B. The applicant shall submit a site plan drawn to a 1"=10' to 1"=30' scale, which contains the following information:

1. Existing and proposed contour lines at the following minimum intervals:
   a. Two-foot intervals for slopes from 0-25 percent; and,
   b. Five-foot intervals for slopes in excess of 25 percent.
2. A slope map delineating areas greater than and less than 25% slope.
3. Location of the water resource areas on the site.
4. Location of proposed stormwater facilities;
5. Location of all existing natural features including, but not limited to, delineation of water resource areas. The widths of the transition and setback areas described in Table 32-1 shall be shown on the site plan.
6. Location of all trees measured at six inches diameter at breast height (DBH) or greater and a description of existing vegetation

species. Where only a portion of a water quality resource area is to be disturbed, the tree inventory need only apply to the impacted area. The remaining treed area shall be depicted by outlining the canopy cover.

7. Detailed site plans of the proposed development outlining total disturbance area, including proposed building footprints, site property improvements, grading plans, accessways, utilities, and landscaping.

8. The presence of wetlands shown on site plans shall be based on wetlands delineations conducted following methods accepted by the U.S. Army Corps of Engineers and the Oregon Division of State Lands. Written concurrence by the Oregon Division of State Lands DSL with the wetlands delineation must be obtained and submitted as part of the development application. The delineation shall be prepared by a certified wetlands specialist.

32.070 MITIGATION PLAN

A mitigation plan shall be required if any portion of the water resource area is proposed to be permanently disturbed by development.

A. All mitigation plans must contain an alternatives analysis demonstrating that:

1. No practicable alternatives to the requested development exist that will not disturb the water resource area; and,
2. Development in the water resource area has been limited to the area necessary to allow for the proposed use; and,
3. An explanation of the rationale behind choosing the alternative selected, including how adverse impacts to the water resource area will be avoided and/or minimized.

B. A mitigation plan shall contain the following information:

1. A description of adverse impacts that will be caused as a result of development.
2. An explanation of how adverse impacts to resource areas will be avoided, minimized, and/or mitigated in accordance with, but not limited to, the revegetation provisions of CDC Section 32.050(K).
3. A list of all responsible parties including, but not limited to, the owner, applicant, contractor, or other persons responsible for work on the development site.
4. A map showing where the specific mitigation activities will occur.
5. An implementation schedule, including timeline for construction, mitigation, mitigation maintenance, monitoring, reporting, and a contingency plan. All in-stream work in fish-bearing streams shall be done in accordance with the Oregon Department of Fish and Wildlife water work periods.
6. Assurances shall be established to rectify any mitigation actions that are not successful. This may include bonding or other surety.
7. Evidence that a Joint Permit Application (to the U.S. Army Corps and OR DSL) if impacts to wetlands are greater than 0.10 acres, has been submitted and accepted for review.

C. Mitigation of any water resource areas that are not wetlands that are permanently disturbed shall be accomplished by creation of a mitigation area equal in size to the area being disturbed. Mitigation areas may be land that is either

1. On-site, not within the water resource area, and is characterized by existing vegetation qualifying that does not meet the standard set

forth in CDC Section 32.050(K), or

2. Off-site, and is characterized by existing vegetation that does not meet the standard set forth in CDC Section 32.050(K).

The applicant shall prepare and implement a revegetation plan for the mitigation area pursuant to CDC Section 32.080, and which shall result in the area meeting the standards set forth in CDC Section 32.050(K). Adequacy of off-site mitigation areas on city property must be consistent with and meet approval of the City Department of Parks and Recreation. Any off-site mitigation occurring on privately-owned land shall be protected with a conservation easement.

D. The Mitigation Plan for any wetland area to be disturbed shall be 1) prepared and implemented with the guidance of professionals with experience and credentials in wetland areas and values, and 2) be consistent with requirements set forth by regulatory agencies (U.S. Army Corps and OR DSL) in a Joint Permit Application, if such an Application is necessary for the disturbance. Where the alternatives analysis demonstrates that there are no practicable alternatives for mitigation on site, off-site mitigation shall be located as follows:

1. As close to the development site as is practicable above the confluence of the next downstream tributary, or if this is not practicable;
2. Within the watershed where the development will take place, or as otherwise specified by the City in an approved wetland mitigation bank.

E. To ensure that the mitigation area will be protected in perpetuity, proof that the area has been dedicated to the City or a conservation easement has

been placed on the property where the mitigation is to occur is required.

32.080 REVEGETATION PLAN REQUIREMENTS

Metro's native plant list is incorporated by reference as a part of CDC Chapter 32, and all plants used in revegetation plans shall be plants found on the Metro native plant list. Performance standards for planting upland, riparian and wetland plants include the following:

A. Native trees and shrubs will require temporary irrigation from June 15 to October 15 for the three years following planting.

B. Invasive non-native or noxious vegetation shall be removed within the area to be revegetated prior to planting.

C. Replacement trees must be at least one-half inch in caliper, measured at 6 inches above the ground level for field grown trees or above the soil line for container grown trees (the one-half inch minimum size may be an average caliper measure, recognizing that trees are not uniformly round) unless they are oak or madrone, which may be one gallon size. Shrubs must be in at least a one-gallon container or the equivalent in ball and burlap and must be at least 12 inches in height.

D. Trees shall be planted between 8 and 12 feet on-center and shrubs shall be planted between 4 and 5 feet on-center, or clustered in single species groups of no more than 4 plants, with each cluster planted between 8 and 10 feet on center. When planting near existing trees, the dripline of the existing tree shall be the starting point for plant spacing requirements.

E. Shrubs must consist of at least two different species. If 10 trees or more are planted, then no more than 50% of the trees may be of the same species.

F. The responsible party shall provide an appropriate level of assurance documenting that 80 percent survival of the plants has been achieved after

three years, and shall provide annual reports to the Planning Director on the status of the revegetation plan during the three year period.

32.090 REDUCTION IN STANDARDS FOR HARDSHIP

The purpose of CDC Section 32.090 is to ensure that compliance with CDC Chapter 32 does not cause unreasonable hardship. To avoid such instances, the requirements of CDC Chapter 32 may be reduced. Reductions are also allowed when strict application of CDC Chapter 32 would deprive an owner of all economically viable use of land. The decision making authority may impose such conditions as are deemed necessary to limit any adverse impacts that may result from granting relief.

A. Lots located completely inside the water resource area. Development may occur on lots located completely within the water resource area that are recorded with the County Assessor's Office on or before the effective date of this ordinance. Development shall disturb the minimum necessary area to allow the proposed use or activity, and in any situation no more than 5,000 square feet of the water resource area, including access roads and driveways, subject to the erosion and sediment control standards in CDC Chapter 31, and subject to a finding that the proposed development does not increase danger to life and property due to flooding and erosion.

B. Lots located partially inside the water resource area. A reduction to avoid the loss of all economically viable use of a vacant lot recorded with the County Assessor's Office on or before the effective date of this ordinance that is partially inside the water resource area is permitted. Development on such lots shall not disturb more than 5,000 square feet of the water resource area, including access roads and driveways, subject to the erosion and sediment control standards of CDC Chapter 31. Applicants must demonstrate the following:

1. Without the proposed reduction, the applicant would be denied economically viable use of the subject property. To meet this criterion, the applicant must show that no other application could result in permission for an economically viable use of the subject property. Evidence to meet this criterion shall include a list of uses allowed on the subject property.
2. The proposed intrusion is the minimum necessary to allow economically viable use of the subject property.
3. The proposed reduction will comply with CDC Chapter 31, Erosion Control;

C. If a reduction in standards is granted pursuant to criteria of CDC 32.090(B), the reduction shall be subject to the following conditions:

1. The minimum width of the water resource area's transition and setback area shall be 15 feet on each side of a wetland or drainage course.
2. As mitigation for the permanent disturbance of any portion of the normally required water resource area, an equal area on the property which would not normally be within the water resource area shall be revegetated to meet the standards of CDC 32.050(K). If there does not exist enough site area to meet this requirement, the applicant shall revegetate the entire area of the property that would not normally be within the water resource area, adjacent to the actual water resource area, and is not proposed for permanent disturbance to meet the standards of CDC 32.050(K)

D. Any further reduction of the standards of this chapter shall require approval of a Variance pursuant to CDC Chapter 75.

32.100 PENALTIES

Violation of any provision or requirement of this chapter or conditions of approval is a Class A infraction, and shall also constitute a public nuisance. Each day of violation constitutes a separate offense. In addition, the City retains the authority to require any water resource area which has been altered illegally, to be re-established to its natural condition, including replanting trees, shrubs, etc. and reseeding open areas at the owner's expense. In addition, the City Attorney may institute any necessary legal proceedings to enforce the provisions of this chapter, or cure any problems resulting from violations of this chapter.