

Note: Anyone wishing to speak at any Planning Commission meeting is encouraged to do so. If you wish to speak, please rise and, after you have been recognized by the Chair, give your name and complete address for the record. You will then be allowed to speak. Please note that the public testimony may be limited by the Chair and normally is not allowed after the Public Hearing is closed.

**ASHLAND PLANNING COMMISSION
REGULAR MEETING
SEPTEMBER 9, 2008
AGENDA**

- I. **CALL TO ORDER:** 7:00 PM, Civic Center, 1175 E. Main Street

- II. **ANNOUNCEMENTS**

- III. **APPROVAL OF AGENDA**

- IV. **CONSENT AGENDA**
 - A. **Approval of Minutes**
 - 1. **August 12, 2008 Planning Commission Minutes**

- V. **PUBLIC FORUM**

- VI. **TYPE III PUBLIC HEARINGS**
 - A. **Water Resource Protection Zones Ordinance**

- VII. **UNFINISHED BUSINESS**

- VIII. **OTHER**
 - A. **Overview of City Employment Lands Inventory**

- IX. **ADJOURNMENT**

**CITY OF
ASHLAND**



In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Community Development office at 541-488-5305 (TTY phone is 1-800-735-2900). Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to the meeting (28 CFR 35.102-35.104 ADA Title 1).

**CITY OF
ASHLAND**
ASHLAND PLANNING COMMISSION
REGULAR MEETING
MINUTES
AUGUST 12, 2008

CALL TO ORDER

Commission Chair John Stromberg called the meeting to order at 7:00 p.m. in the Civic Center Council Chambers, 1175 East Main Street.

Commissioners Present:

John Stromberg, Chair
Michael Dawkins
Mike Morris
Debbie Miller
Michael Church
Pam Marsh
Melanie Mindlin
Tom Dimitre

Staff Present:

Bill Molnar, Community Development Director
Brandon Goldman, Senior Planner
April Lucas, Administrative Assistant

Absent Members:

Dave Dotterer, excused

Council Liaison:

Cate Hartzell

ANNOUNCEMENTS

Community Development Director Bill Molnar noted a Planning Commissioner training opportunity scheduled for September 13 in Baker, Oregon and asked any members who are interested to contact staff.

Stromberg announced he and Planning Manager Maria Harris are working on organizing another Water Resources site visit and anticipates this will occur before their next meeting. He noted they have identified a qualified ecological scientist who is familiar with this area and she would be joining them on the site visits.

Mr. Molnar announced the 5-lot subdivision on Strawberry Lane has been appealed to the Land Use Board of Appeals.

APPROVAL OF AGENDA

Commissioners Miller/Dimitre m/s to approve agenda. Voice Vote: all AYES. Motion passed.

CONSENT AGENDA

A. Approval of Minutes

1. June 10, 2008 Hearings Board Minutes
2. July 8, 2008 Hearings Board Minutes
3. July 8, 2008 Planning Commission Minutes
4. July 22, 2008 Planning Commission Minutes

The following corrections were made to the minutes:

- 1) June 10, 2008 Hearings Board – The commissioners present were John Stromberg, Dave Dotterer, and Michael Church.
- 2) July 22, 2008 Planning Commission – Marsh clarified her position regarding the “Factoring Sustainability into the Comprehensive Plan” agenda item and stated there are other entities who may also want to get involved in this discussion.

Commissioners Marsh/Mindlin m/s to approve the July 8, 2008 and July 22, 2008 Planning Commission minutes. Voice Vote: all AYES. Motion passed.

Commissioners Church/Stromberg m/s to approve the June 10, 2008 and July 8, 2008 Hearings Board minutes. Voice Vote: all AYES. Motion passed.

PUBLIC FORUM

No one came forward to speak.

TYPE III PUBLIC HEARINGS

A. Ashland Land Use Ordinance – Annexation and Zone Change Amendments

Senior Planner Brandon Goldman provided a presentation on the Annexation and Zone Change draft ordinance. Following the presentation, he requested the Commission enter into deliberations and issue a formal recommendation to the City Council. Mr. Goldman stated the proposed changes are isolated to those sections that relate to affordable housing and the amendments address the following issues: 1) percentage of affordability, 2) land dedication option, 3) housing types and constructions standards, 4) distribution of affordable housing, and 5) construction timing.

Percentage of Affordability

Mr. Goldman stated the proposed ordinance would create a weighted point system for affordable housing units, would allow for a mix of housing types, would allow for variations in income levels, and would enable developers to provide both workforce and affordable housing opportunities. He noted the proposed language adds flexibility in targeting various households but largely retains the range currently in place.

Land Dedication Option

Mr. Goldman stated this option allows developers to provide land in lieu of actually developing the affordable housing. He stated this option is contingent that the land is sufficient to accommodate at least 25% of the projects base density, and that the land is located within the project and meets the distribution requirements. He stated any land dedicated would be deed restricted for a 60 year period and the ownership of the land that is transferred to a qualified affordable housing provider would have to occur prior to commencement of the project or issuance of building permit for any of the market rate units.

Housing Types & Construction Standards

Mr. Goldman explained this provision requires the affordable units to be proportionate in terms of number of bedrooms to the market rate units and it also establishes minimum floor areas for the affordable units. Additionally, the external design and materials need to be similar and the internal features and amenities need to be comparable.

Distribution of Affordable Housing

Mr. Goldman noted the intent of this provision is to scatter the affordable units throughout the project to reduce the potential for stigmatization of "low-income areas."

Construction Timing

Mr. Goldman explained the current ordinance has no requirement for exactly when the affordable units have to be built. He stated the proposed ordinance addresses this issue and provides that only 50% of the market rate units can be built up front, at which point the developer would have to build 50% of the affordable units. They could then construct 40% of the market rate units before the remaining 50% of the affordable units need to be built.

Mr. Goldman explained the proposed ordinance includes some flexibility to entertain alternate development proposals; however, these exceptions are not automatic and would be subject to approval by the City Council. He noted the Housing Commission recommends Council approval of the proposed ordinance with the exception of eliminating rental units at 80% AMI from being considered qualifying affordable units for the purposes of meeting the annexation requirements.

Mr. Goldman commented on the exceptions and provided further clarification to the Commission. He noted possible examples of when an exception might be needed or preferred. Comment was made questioning if the phrase "mix of housing" denotes number of units. Mr. Goldman clarified the number is the "bargaining chip" that would allow for a deviation in terms of mix of type.

Comment was made questioning the comparable materials requirement. Mr. Goldman noted the ordinance makes a distinction between interior and exterior materials and stated the intent of this language is for the affordable housing units to not be starkly different from the market rate units. Mindlin voiced concern with non-profits being held to the same standard for the exterior materials on affordable units. Mr. Molnar noted the materials do not need to be exactly the same and clarified the ordinance language states "visually compatible" and "building materials and finishes shall be substantially the same in type."

Comment was made questioning the construction timing provision. Mr. Goldman clarified this language came out of conditions of approval the Planning Commission added to the Verde Village and Willow Brook projects. He noted this was included in the ordinance so the developer knows up front what will be asked of them. Stromberg expressed concern that this language may result in the land dedication not being a viable option for most developers. Councilor Hartzell voiced support for the proposed language and stated if they remove this, it may take a long time to get the affordable units built out. Mr. Goldman noted there is an exception to this language and an applicant could submit an alternate phasing proposal for approval. Mr. Molnar noted this would create a situation where the developer has to form a responsible relationship with the non-profit early on in the process.

Stromberg asked the Commission whether they were comfortable with requiring the affordable units to look the same (externally) as the market rate housing. Marsh voiced her support for this provision. She stated the point of all this is to create diverse, heterogeneous neighborhoods and they need to be consistent on design features in order to accomplish this. Dawkins also voiced his support and stated the idea is to get as many people as possible into affordable units and to have them compatible so they don't stick out from the other units.

Marsh questioned how the language "affordable housing units shall be distributed throughout the project" would apply to smaller projects. Mr. Goldman acknowledged that the clustering problem most commonly applies to larger scale developments and clarified the burden of proof for this provision is on the developer. Comment was made questioning if there should be criteria included in the ordinance for this provision. Morris commented on the difficulty in including specific criteria that would apply to all developments. Stromberg voiced concern with creating a procedure where the developer does not know if they are meeting the criteria until it comes before the Planning Commission. Comment was made noting that the applicant will have to work with staff during the initial stages. Church stated they may be overanalyzing this and if something does not work, they can come back and change it.

Mr. Goldman clarified why the proposed language reads "exceptions" instead of "variances."

Commissioners Dawkins/Morris m/s to send this on to Council. DISCUSSION: Marsh cited the Housing Needs Analysis and recommended they remove the language "or rental units" from 18.106.030.G.1(c). Dawkins stated he is willing to accept this amendment. **Commissioners Dawkins/Marsh amended motion. Roll Call Vote on Motion as Amended: Commissioners Dawkins, Marsh, Morris, Miller, Church, Mindlin, Dimitre and Stromberg, YES. Motion passed.**

UNFINISHED BUSINESS

A. Sustainability Proposal

Stromberg noted Commissioners Marsh and Mindlin have been working on developing the proposal that will be forwarded to the City Council. Marsh noted the Informational Memorandum, which was emailed to the commissioners, and asked if they have any specific feedback before this is submitted to the Council. Mindlin pointed out that the commissioners would be carrying out this proposal and not relying on staff.

Mindlin commented on the definition of sustainability. She stated this has been defined in many ways and recommended they start by finding out how the community has defined this. Marsh commented on transportation needs and whether this should be part of the Planning Commission's scope. She recommended they develop formal links between planning and transportation and noted it is very difficult to separate these out. Mr. Molnar noted that he and Associate Planner Derek Severson have been meeting with the Public Works Department regarding the creation of a Transportation Commission. He said the feeling is that the Transportation and Planning Commissions should take a more active role in making recommendations on the City's Capital Improvement Plan. Morris expressed concern with looking at what everyone else is doing and adjusting their policies accordingly, rather than making their own decision about where the City wants to go. Stromberg stated that he does not think they will be bound by what they observe and stated this is just a first step before they come up with their own ideas.

OTHER BUSINESS

A. Regional Problem Solving Update

Community Development Director Bill Molnar provided the Regional Problem Solving update to the Commission and noted this issue would be coming before them later this year.

Stromberg questioned if the City had been allocated a growth rate and whether this needed to be imbedded in the City's Comprehensive Plan. Mr. Molnar noted this issue came up early in the process and the City Council submitted a letter indicating their concerns with this. He noted the County is responsible for allocating the population growth and clarified the City of Ashland did not identify any urban reserves. He stated he does not foresee the City making any significant changes to the Comprehensive Plan, other than recognizing that a regional plan has been adopted. He added the plan is not that substantive to the City until they start identifying urban reserves.

Mr. Molnar provided a brief overview of the Participants Agreement and outlined the following approval process:

STEP 1: LCDC will review the plan and participants' agreement in October, 2008 and provide tentative acceptance of the local plan amendments.

STEP 2: Local agencies will agree to sign the participants' agreement. (This is where the Planning Commission will become involved.)

STEP 3: Once the local agencies sign in agreement, LCDC will sign the participants' agreement.

STEP 4: Jackson County will then start their adoption process and begin incorporating the agreement into the Jackson County Comprehensive Plan. Mr. Molnar noted cities can either go through a parallel process of amending their Comprehensive Plans to identify these urban reserves, or they can wait until County has completed their adoption process.

Commissioners Marsh/Morris m/s to continue meeting to 9:10 p.m. Voice Vote: all AYES. Motion passed.

B. Hearings Board Assignments

Mr. Molnar stated the Hearings Board members for September through December are Morris, Marsh and Dawkins; however due to the record being left open at the Hearings Board meeting today, he asked that Stromberg fill in for Marsh at the next hearing. He added Morris, who was not at the Hearings Board meeting today, would need to review the planning record and video of the meeting in order to be prepared.

Mr. Molnar requested clarification about what happens when a commissioner cannot attend the Hearings Board. It was clarified the commissioner is responsible for finding a replacement. If they are unable to do so, they need to inform the Commission Chair and staff.

Stromberg commented on a recent incident that happening during a Planning Commission meeting and stated he would like to establish a rule that no member of the public or the press may linger near the door behind the dais. He clarified this should curtail any future distractions.

ADJOURNMENT

Meeting adjourned at 9:10 p.m.

*Respectfully submitted,
April Lucas, Administrative Assistant*

ASHLAND PLANNING DEPARTMENT
STAFF REPORT
September 9, 2008

PLANNING ACTION: 2007-01137

APPLICANT: City of Ashland

ORDINANCE REFERENCE: 18.62 Physical and Environmental Constraints

REQUEST: Adoption of an Ordinance adding Chapter 18.63 Water Resource Protection Zones to and modifying Chapter 18.62 Physical and Environmental Constraints of the Ashland Land Use Ordinance (ALUO). Also, an Ordinance to amend the Ashland Comprehensive Plan to adopt the Water Resources Map including significant wetlands and riparian corridors with the Local Wetlands Inventory and Assessment and Riparian Corridor Inventory adopted by reference, as a technical study within the Ashland Comprehensive Plan, and to revise the Floodplain Corridor Lands Map to provide consistency with the stream classifications with the Water Resources Map.

I. Relevant Facts

A. Background

The revision of Ashland's regulations regarding the protection of wetlands, streams and riparian corridors has been a multi-year project involving a significant amount of staff time, consultant time and volunteer time (Wetland and Riparian Technical Advisory Committee, Planning Commission and City Council). The project was identified as a City of Ashland Council Goal in 2001. In the spring of 2003, Fishman Environmental Services was awarded a contract to conduct a local wetland and riparian inventory. Approximately 1,500 letters were mailed to properties with potential natural resources sites, requesting the property owner to permit the consultants' access to their property to conduct fieldwork. Subsequently, two public open house meetings to discuss and update citizens on the status of the inventory and project were held in June 2003 and in November 2003. The Oregon Division of State Lands approved Ashland's Local Wetlands Inventory and Assessment and Riparian Corridor Inventory in March 2007.

The second phase of the project was conducted during 2004-2005 when staff worked with the Wetland and Riparian Technical Advisory Committee to write a draft ordinance. The draft that came out of the technical advisory committee was reviewed by Fishman Environmental Services. The final phase of the project began approximately a year ago with a series of Planning Commission study sessions in August and November 2007. The study sessions were followed by a public workshop in April 2008 for interested property owners and the general public. Oregon state law requires a written notice to be mailed to property owners when a proposed land use regulation may affect the use of their property. As a result, approximately 1,800 notices were mailed to property owners that

have properties containing or located near wetlands and streams in Ashland. At the April 22, 2008 Public Workshop, approximately 40 people attended, and thirteen people asked questions and made comments regarding the draft ordinance.

While the revision of Ashland’s regulations regarding wetlands, streams and riparian corridors was initiated by the City Council in 2001, the revised regulations are required to meet Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas and Open Spaces. The Oregon Administrative Rules (OAR 660-23-000) which outline the procedures and requirements for complying with Statewide Planning Goal 5 was revised in September 1996. Under the revised rules, cities and counties throughout Oregon are obligated to compile inventories of “significant” wetlands and riparian corridors. As a second step, the City is required to examine existing local ordinances and adopt or update their regulatory program to address protection of significant wetlands and riparian corridors. Cities and counties are required to address the revised Statewide Planning Goal 5 rules when conducting periodic review and when amending comprehensive plans and land use regulations. As with any local revision to land use regulations, the Department of Land Conservation and Development (DLCD) must approve the proposed revisions to the Ashland Land Use Ordinance and Ashland Comprehensive Plan.

The revised rules for complying with Statewide Planning Goal 5 include a “Safe Harbor” approach which is a prescribed course of action that satisfies the rule requirements. The Safe Harbor approach includes requirements such as requiring a riparian corridor boundary of 50 feet from top of bank for fish-bearing streams with a flow less than 1,000 cfs, the protection of significant wetlands and placing restrictions on grading, excavation, fill and vegetation removal in protected riparian corridors and wetlands. Cities and counties have the option of using the Safe Harbor approach in revising regulations for wetlands and riparian corridors. The benefit of using the Safe Harbor approach is that the approval process through DLCDC is streamlined, and a fairly complex “ESEE” (economic, social, environmental and energy) analysis is not required. The proposed ordinance and Comprehensive Plan amendments have been drafted to meet the Safe Harbor approach. Staff has been working with DLCDC to determine if the proposed package meets the prescribed course of action, but a decision is still forthcoming. Ultimately, an ESEE analysis may be required by DLCDC.

1. Project Time Line

The following summarizes the time line of the Water Resources Ordinance project to date.

City Council Identifies “Developing an Updated Riparian Area Protection Ordinance” as Council Goal	April 2001
Wetlands and Riparian Corridor Inventory Work	2003-2005

Wetlands and Riparian Technical Advisory Committee	2004 - 2005
Technical Review of Draft Ordinance by Fishman Environmental Services	Nov 2005
City Council Identifies “Complete Riparian Ordinance” as Council Goal Goals	2005-2007
Oregon Division of State Lands Inventory Approval	March 2007
Planning Commission Study Sessions	Aug and Nov 2007
Planning Commission Public Workshop with Measure 56 Notice	April 22, 2008
Planning Commission Public Hearings	May 13, 2008 June 24, 2008 July 22, 2008

2. Why are wetlands and riparian corridors valuable natural resources?

Wetland functions include water quality improvement, floodwater storage, and fish and wildlife habitat. Wetlands function like natural tubs or sponges, storing water and slowly releasing it. This process slows the water’s momentum and erosive potential, reduces flood heights and allows for ground water recharge. After being slowed by a wetland, water moves around plants, allowing the suspended sediment to drop out and settle to the wetland floor. Pollutants that are dissolved in the water are often absorbed by plant roots and microorganisms in the soil. Abundant vegetation and shallow water provide diverse habitats for fish and wildlife.¹

A riparian area is the area of land adjacent to a stream. Healthy riparian areas reduce the chance of damaging floods, improve water quality and provide habitat and food for fish and wildlife. Plants in healthy riparian areas perform numerous functions: 1) provide wood to streams, creating fish habitat and slowing the stream current during and after storms, 2) shade streams in summer for fish health and minimize evaporation loss of water, 3) reduce erosion by holding soil in place with roots, 4) filter sediment out of muddy runoff, keeping sediment from smothering fish habitat, 5) allow heavy winter rains to soak into the soil instead of running into the stream – this reduces flooding and allows water to be released slowly to the stream during the dry season, 6) filter out pollutants, such as fertilizers, pesticides and animal wastes and 7) provide important food sources, homes, shelter and travel corridors for wildlife, fish and other aquatic organisms.

¹ “Functions and Values of Wetlands”, United States Environmental Protection Agency, September 2001

Healthy riparian areas include a variety of types and ages of plants including trees, shrubs, grasses and groundcovers. Plants adapted to local rainfall, climate, insects and soil conditions tend to be easier to care for because they need less water and pesticides.²

Wetlands and riparian areas are now largely appreciated for the myriad of functions they provided to society as well as for their aesthetic and intrinsic values. Cities are increasingly finding the conservation of wetlands and riparian areas enhances community character and is an important quality of life measure. The preservation and restoration of water resources and incorporation of wetlands and riparian corridors in open spaces generally is considered a positive aspect of property, whether it is privately held or a public open space.

3. Why revise local regulations regarding the protection of wetlands, streams and riparian corridors?

- **To further protect wetlands, streams and riparian corridors.**

Wetlands and riparian corridors currently have limited protection under the Ashland Land Use Ordinance (ALUO). The Physical and Environmental Constraints chapter of the ALUO is the primary set of local regulations addressing protection of water resources. While extensive revisions were made to the ALUO in the late 1980's and early 1990's to address needed changes to the City's flood management program, only modest modifications have been undertaken since the mid 1980's to protect the functions and values associated with wetlands and riparian areas.

The primary protection of wetlands is through the Performance Standards Options chapter which requires identification and protection of significant natural resources. Wetlands are not addressed in the Physical and Environmental Constraints chapter. Standard protection measures for wetlands such as a buffer area, a building setback from wetlands and mitigation measures are not addressed in the ALUO. Similarly, of the more than 20 streams in Ashland, only six of those are protected by delineated floodplains (Ashland, Bear, Clay, Emigrant, Hamilton and Kitchen). Fish-bearing streams such as Kitchen and Tolman creeks under state regulations require a 50-foot wide buffer while existing ALUO requirements require a 20-foot setback from the creek. Noxious and invasive plants are not addressed in existing local regulations. Native plants are addressed only in the Site Design and Use Standards for commercial, industrial and employment development, and the existing local regulations do not address plant materials in the buffer area for water resources in residential developments.

The majority of creeks, which do not include mapped floodplains, have setbacks ranging 10 to 20 feet from the creek. Over the past decade and a half

² "Taking Care of Streams in Washington, Oregon, Idaho and Alaska", October 2002, Pacific Northwest Extension publication

since the Physical and Environmental Constraints chapter was revised, it has become apparent to Staff that structures placed within 10 feet of the creek typically result in impacts within the 10-foot wide buffer (e.g. construction impacts, structure maintenance impacts and construction of prohibited structures).

- **To make the ALUO consistent with the Ashland Comprehensive Plan.**

The Environmental Resources Element of Ashland's Comprehensive Plan (Chapter IV) includes a variety of goals and policies related to the preservation and protection of Ashland's wetlands and riparian areas. The Environmental Resources Element of Ashland's Comprehensive Plan was revised, approved and adopted in 1991. The 1991 revisions included several goals and policies related to Ashland's wetlands and riparian areas that were not implemented in the ALUO. The following goals and policies are from the Environmental Resources Element of the Ashland Comprehensive Plan.

Protect the quality of riparian resource lands, and preserve their wildlife habitats.

To preserve and protect significant wetlands, and to mitigate potential impacts on these areas due to development and conflicting uses.

Evaluate the quantity and quality of wetland resources inside the City Limits and within the Urban Growth Boundary through the compilation of an inventory of significant wetlands.

Develop site review procedures and performance standards, using buffering techniques, setbacks and mitigation measures, to reduce the impacts of development on significant wetland areas.

Examine the Physical and Environmental Constraints chapter of Ashland's Land Ordinance concerning wetland and riparian areas, and insure that existing zoning regulations maintain these valuable areas in a natural state.

Utilize local resources to form a technical advisory committee to identify potential plants and animals which rely on wetland habitat for their continued existence. Retaining these area [in] a natural state should be of high priority, and development should consider and accommodate the habitat utilized by these plants and animals.

To preserve existing wildlife habitats and natural areas within the city wherever possible.

- **City Council Goal**

The completion of the riparian ordinance is a City Council goal. The Physical

and Environmental Constraints chapter of the ALUO was last revised with respect to riparian areas in 1989. Since then, the important functions and values of wetlands and riparian areas, and connection to a community's quality of life have become much more apparent, as reflected in the goal of the City Council.

- **Riparian protection has become part of Ashland's storm water management plan.**

The City of Ashland 2000 Storm Water and Drainage Master Plan advocates non-traditional storm water management techniques that include protection and restoration of Ashland's stream corridors. One of the recommended regulatory tools identified for achieving the goals of the plan is the adoption of riparian corridor protection measures.

- **To comply with Statewide Planning Goal 5.**

Statewide Planning Goal 5 requires local communities to inventory and adopt land use protections for significant natural resources such as wetlands and riparian areas. Adoption of a Local Wetland Inventory and an updated ordinance that regulates activities within and adjacent to significant wetlands and fish-bearing streams is intended to fulfill this State requirement.

4. Attachments

The following materials are attached to the Staff Report.

- Ashland Land Use Ordinance Chapters
 - A: 18.63 Strikeout/Underline Copy - Draft Chapter 18.63 Water Resource Protection Zones – changes made since 6.24.08 version are shown
 - B: 18.63 With Changes Copy – Draft Chapter 18.63 Water Resource Protection Zones – changes shown in copy A are integrated with notes explaining changes
 - C: 18.62 Strikeout/Underline Copy – Draft Revised Chapter 18.62 Physical and Environmental Constraints
- Draft Water Resources Map
- Local Wetlands Inventory and Assessment and Riparian Corridor Inventory with Oregon Division of State Lands Approval Letter
- Written Comments Received Since July 22, 2008 Planning Commission Meeting

- “A Guide to Riparian Tree Planting in Southwest Oregon”, M. Bennett and G. Ahrens, September 2007, Oregon State University Extension Service

B. Description of Proposal

1. Chapter 18.63 Water Resource Protection Zones and Revisions to Chapter 18.62 Physical and Environmental Constraints

The revision of Ashland’s regulations regarding the protection of wetlands, streams and riparian corridors includes a proposed new chapter to the Ashland Land Use Ordinance (ALUO), Chapter 18.63 Water Resource Protection Zones, and the modification of an existing chapter of the ALUO, Chapter 18.62 Physical and Environmental Constraints.

The revisions to Chapter 18.62 Physical and Environmental Constraints consist of removing section 18.62.075 which pertains to development standards for Riparian Preservation Lands. Additionally, the terminology of Riparian Preservation Lands and drainage channels is replaced with the new classifications of Riparian Corridors, Local Streams and Intermittent and Ephemeral Streams.

The proposed Chapter 18.63 Water Resource Protection Zones establishes protection zones adjacent to streams and wetlands, as well as limits and, in some cases, prohibits building, grading and paving in the protection zones. The focus of the proposed chapter is establishing a buffer zone around wetlands and streams to protect the functions of the natural areas. Wetlands and riparian areas improve water quality, aid floodwater control, and provide habitat and food for fish and wildlife. The buffer zone is largely protected from the impacts of new development and from the removal of native vegetation. Removal of noxious and invasive plants is permitted and enhancement and restoration is encouraged. Exempt Activities and Uses are identified for the water resource protection zones which generally address pre-existing situations that will become non-conforming if the proposed chapter is adopted, and encouraging the restoration of the protection zones if earthwork is not involved.

Three types of planning approvals included in the proposed chapter are Limited Activities and Uses, Water Resource Protection Zone Reductions and Hardship Variances. Limited Activities and Uses include a specific set of items which are intended to address items such as streets and utilities that are necessary to balance various city goals and policies that deal with issues such as adequate infrastructure and a connected street network. Additionally, Limited Activities and Uses provide a local review of wetland, stream and riparian area channel and enhancement projects. Water Resource Protection Zone Reductions allow the hearing authority to approve a reduction of the protection zone up to 50 percent if development standards addressing restoration, enhancement and mitigation are addressed. Water Resource Protection Zone Reductions serve two purposes – to provide pre-existing non-conforming lots an avenue for development and to provide partitions and subdivisions an incentive to perform restoration and

enhancement of the wetlands and riparian corridors. Hardship Variances are intended to provide an outlet for pre-existing lots that are rendered not buildable by the application of the proposed chapter. A Hardship Variance process is required by the Safe Harbor provisions for complying with Statewide Planning Goal 5.

2. Changes to June 24 Draft of Chapter 18.63

Two copies of draft Chapter 18.63 Water Resource Protection Zones (Attachments A and B) and one copy of the revisions to Chapter 18.62 Physical and Environmental Constraints (Attachment C) are attached. Attachment A shows the revisions made to the latest draft of Chapter 18.63 from June 24, 2008 with ~~deleted text shown in strikeout~~ new text shown in underline. Attachment B is the same document with the changes accepted so as to provide the Planning Commission with a version that is easier to read.

Edits from July 22 Planning Commission Meeting

At the July 22, 2008 Planning Commission meeting, the Commission provided staff direction regarding the potential edits identified in the June 24 draft of Chapter 18.63. The following summarizes the edits made based on that discussion. **All page number references correspond to Attachment A.**

- **Landscape Maintenance in Water Resource Protection Zone** (p 4)
The June 24 draft expanded the definition of hand-held equipment or machinery to include lighter power equipment such as chainsaws, weed eaters, push lawn mowers and brush mowers. Removal of non-native, noxious and invasive plants (e.g. weeds and blackberries) is an exempt activity with hand-held equipment.
- **Top of Bank Definition** (p 7)
In the June 24 draft, staff had identified a possible change to the top of bank definition from the City of Portland based on the change in slope. After further research, staff believes the previous definition should be used. The City of Portland has had difficulty administering the top of bank definition using change in slope and is currently considering changing the top of bank definition. A review of similar water resource ordinances in the state show that the top of bank is widely used. Staff found that several jurisdictions included a list of physical characteristics that indicate where top of bank is, and this was added to the definition.
 - **Center Line of Stream** (p 9) – For Local Streams and Intermittent and Ephemeral Streams, the measurement for the Stream Bank Protection Zone was changed to the center line of the stream. Riparian Corridors continue to be measured 50 feet from top of bank, which is consistent with the Safe Harbor approach.
- **Non-Native Planting**

The June 24 draft included an exemption allowing 15 percent of the total lot area in the Stream Bank Protection Zone to be planted in non-native vegetation. This section was eliminated due to concerns about difficulty in administration. Instead, the Planning Commission suggested the native plant list be expanded to include native and compatible plants.

- **Outdoor Use Area (p12)**
The June 24 draft included an exemption allowing an outdoor yard or garden area up to 150 square feet in size in the Stream Bank Protection Zone to be planted in non-native vegetation. It wasn't clear whether the majority of the Commission felt the provision should remain or be deleted, so it remains in the current draft for further discussion.
- **Nonconforming Structures (p14)**
Language exempting the replacement of legally established nonconforming "primary" structures that are destroyed by a fire or natural hazard from the requirements of the proposed chapter was added. There was a discussion of whether non-primary structures like outdoor seating areas and decks for businesses should also be exempt. A potential solution was suggested expanding the definition of primary structure to include all commercial structures. It wasn't clear whether the majority of the Commission felt all commercial structures (primary and non-primary) should be exempt if destroyed by a fire or natural hazard, so language was not added to this effect.
- **Previously Approved Building Envelopes and Driveways (p 14)**
Language permits previously approved building envelopes and driveways that would be nonconforming to be built as approved, and exempt from the requirements of the proposed chapter. The Planning Commission suggested adding a time limit to the exemption for previously approved building envelopes and driveways. As a result, language was added allowing the exemption for 3 years after the effective date of the ordinance.

Additional Edits

Many of the edits to the June 24 draft of Chapter 18.63 are to clean up and better organize the document. For example, terminology was corrected for consistency, numerical references were added and corrected as section numbers changed and numbering and lettering sequences were corrected. There were several substantive changes that are summarized below. **All page references correspond to Attachment A.**

- **Installation of Unpaved Trails (p 12 and p 16)**
Language was added allowing unpaved trails in the Water Resource Protection Zones. Members of the Planning Commission had raised the importance of allowing people to access and experience the natural areas in private and public open spaces. Additionally, in discussions with Parks Department staff, the installation of walking and hiking trails in public parks property was identified as an important activity. Installation of paved trails would be required to obtain a Limited Activity and Use planning approval.

- Paving and Reconstructing Existing Streets and Driveways** (p 15 and p 19)
 Replacement of existing streets and driveways in Stream Bank Protection Zones was previously identified as a Limited Activity and Use. If a street or driveway is in place in the Stream Bank Protection Zone and used to access properties, it is likely to need to be paved, repaved and possibly reconstructed in the future. An exemption was added permitting the paving and reconstruction of existing streets and driveways if no more than five percent additional surface area in the Stream Bank Protection Zone is disturbed. The same projects that disturb more than five percent additional surface area in the Stream Bank Protection Zone are required to obtain a Limited Activity and Use planning approval.
- Reorganization of Limited Activities and Uses, Water Resource Protection Zone Reductions and Hardship Variances**
 While the changes were not substantive, it is important to note that sections 18.63.070 – 18.63.110 were reorganized. The standards and criteria were consolidated according to each land use approval and repetitive standards were eliminated. Since each of the three planning approvals requires a mitigation plan, standards related to vegetation preservation and restoration were moved to the Mitigation Requirements section 18.63.120. Repetitive language in the application requirements was also eliminated.

3. Water Resources Map and Local Wetlands Inventory and Assessment and Riparian Corridor Inventory

The wetlands and streams addressed by the revisions to the Ashland Land Use Ordinance are identified on the draft Water Resources Map. The map identifies wetlands by two classifications – Significant and Possible Wetlands. There are 14 Significant Wetlands identified and approximately 30 Possible Wetlands. The map also identifies streams by three classifications – Riparian Corridors, Local Streams and Intermittent and Ephemeral Streams. There are six Riparian Corridors, eight Local Streams and 20 Intermittent and Ephemeral Streams. The Riparian Corridor streams are: *Ashland Creek, Bear Creek, Emigrant Creek, Kitchen Creek, Neil Creek, and Tolman Creek*. The Local Streams are: *Ashland Creek, Cemetery Creek, Clay Creek, Hamilton Creek, Hamilton Creek Tributaries 1 and 2, Wrights Creek, Wrights Creek Tributary 5*. The Intermittent and Ephemeral Streams are: *Ashland Creek Tributary 1, Beach Creek, Cemetery Creek, Fordyce Creek, Golf Course Creek, Hamilton Creek, Hamilton Creek Tributary 1, Knoll Creek, Mook (Clear) Creek, Mountain Creek, Paradise Creek, Pinecrest Creek, Roca Creek, Strawberry Creek, Twin Creek, West Fork Wrights Creek, Wrights Creek Tributaries 1,2, 3 and 5*.

The Water Resources Map is required to be adopted as part of the Ashland Comprehensive Plan. In addition, the Floodplain Corridor Lands Map must be revised so the stream classifications are consistent with the Water Resources Map (i.e. Riparian Land Corridor will be changed to Local Stream, Riparian Land Drainage will be changed to Intermittent and Ephemeral Streams). Currently, the regulated riparian corridors are covered under Chapter 18.62 Physical and

Environmental Constraints, and are identified on the Floodplain Corridor Lands Map, which is an adopted Comprehensive Plan Map.

The draft Water Resources Map and the revisions to the Ashland Land Use Ordinance are in part based upon the Local Wetlands Inventory and Assessment and Riparian Corridor Inventory. The streams identified on the draft Water Resource Map were inventoried, identified as significant and adopted by the City in 1987. Cities and counties throughout Oregon are obligated to compile such inventories under Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas and Open Spaces. The City is required to examine existing local ordinances and adopt or update their regulatory program to address protection of significant wetlands and riparian corridors.

Fishman Environmental Services conducted the Local Wetlands Inventory and Assessment and Riparian Corridor Inventory of local wetlands and riparian corridors within Ashland's Urban Growth Boundary (UGB). The initial inventory work started in May 2003. Approximately 1,500 letters were mailed to properties with potential natural resources sites, requesting the property owner to permit the consultants' access to their property to conduct fieldwork. Approximately 625 (51%) permission request forms were returned to the City, with over 500 property owners allowing access to their property. The Planning Department with Fishman Environmental Services conducted two public open house meetings to discuss and update citizens on the status of the project. The first meeting was held on June 4, 2003 to describe the inventory requirements as prescribed under Statewide Goal 5, while a second public meeting was held on November 20, 2003 to present the draft inventory maps and solicit public comment. After refining the draft inventory maps, the local inventory of wetland and riparian corridors was forwarded to the Oregon Division of State Lands (DSL) in March 2004 for review. The Oregon Division of State Lands (DSL) is required to review and approve the inventory. After refining the draft inventory maps, DSL approved the Local Wetlands Inventory and Assessment and Riparian Corridor Inventory in March 2007.

II. Project Impact

The proposed Chapter 18.63 Water Resource Protection Zones has three primary areas of revisions to existing regulations. First, the systematic protection of wetlands including a buffer area will be established. Second, the size of the buffer area for streams will increase. In the case of Riparian Corridors the increase is from 20 to 50 feet from top of bank, for Local Streams the change is from 20 feet from top of bank to 40 feet from the center line of the stream, and for Intermittent and Ephemeral Stream the change is from 10 feet from top of bank to 30 feet from center line of the stream. Finally, the nature of the activities in the water resource protection zones will focus on protecting and enhancing wetland and riparian area functions through limitations on building, paving and grading and the regulation of plant installation and removal (i.e. native plant installation, noxious and invasive plant removal).

As stated earlier, the Physical and Environmental Constraints Chapter of the ALUO is the primary set of local regulations regarding streams and riparian corridors. The regulations focus

on flood management and not impeding flood waters by locating structures outside of the floodplain. For example, new residential construction is largely required outside of the floodplain corridor lands and new non-residential uses are required to be located above flood elevations and constructed to the flood-proof standards in Chapter 15.10. The application of local floodplain regulations since 1987 has resulted in relatively little residential damage during flood events, and the main benefit to riparian areas is creating corridors relatively free of new residential buildings. For the 28 streams identified on the Water Resources Map, the majority of these floodplain corridors range from 10 to 20 feet from the top of bank, with larger widths on the six streams with delineated floodplains (Ashland, Bear, Clay, Emigrant, Hamilton and Kitchen). Wetlands are not addressed in the Physical and Environmental Constraints chapter, and have been protected through the Performance Standards Options chapter and by state regulations.

The impact of requiring riparian buffers and regulating the Stream Bank Protection Zones will be to create a protected area that will be relatively free of new building, grading and paving. Additionally, the vegetation in the protection zone will be required to be managed in a manner that supports stream and riparian functions of water quality, temperature control, floodwater storage and fish and wildlife habitat. Currently, in most cases vegetation removal other than trees in the riparian corridor is not regulated. As a result, established riparian plants can be removed and plants not conducive to riparian area functions can be planted up to the stream bank.

The impact of requiring wetland buffers and regulating the Wetland Protection Zones is similar to that of the Stream Bank Protection Zone in terms of limiting building, grading and paving and requiring vegetation management. While the preservation of wetlands is regulated by state and federal agencies, the ordinance revisions provide additional protection measures for wetlands such as a buffer area and a setback from wetlands.

One of the primary strengths of the ordinance is that it establishes requirements for mitigation and enhancement for developments proposing to disturb the area of the protection zones. The mitigation requirements are designed to be proportional to the size of the project ranging from a Limited Activity and Use such as maintenance of a public utility line that disturbs surface area, to a Hardship Variance to an addition to an existing single-family home to a Water Resource Protection Zone Reduction for a subdivision.

In terms of impact to private property owners, increasing the size of the riparian buffers and requiring wetland buffers can potentially impact the size of the developable area. For properties adjacent to the six streams with delineated floodplains, the impact will be negligible because the existing floodplain boundaries are wider and existing regulations already limit further development. The proposed Water Resource Protection Zone Chapter 18.63 includes provisions for the transfer of density in the water resource protection zones to lands outside the water resource protection zone within the same development for land divisions. Additionally, the Water Resource Protection Zone Reduction and Hardship Variances provide two processes to address lots existing before the effective date of the ordinance that will not be able to meet the proposed requirements. Finally, vacant lots with non-conforming building envelopes and driveway plans that were approved prior to the effective date of the ordinance are exempt from the requirements of the proposed ordinance for a period of 3 years.

A. Talent Irrigation District (TID) Use of Streams

The issue of the use of natural streams for the distribution of TID water was raised in previous discussion concerning the proposed ordinance revisions. According to data from the Ashland Engineering Division, TID uses nine of the 28 streams identified on the Water Resource Map for the distribution of irrigation water to customers and the return of unused irrigation water. The streams used for TID water delivery and return are Ashland, Tolman, Cemetery, Clay, Hamilton, Wrights, Golf Course, Paradise and Roca. Therefore, three of the 20 streams classified as Intermittent and Ephemeral Streams are used for TID delivery and return – Golf Course, Paradise and Roca. This is somewhat counter to the assertion that all or most of the streams classified as intermittent and Ephemeral would not flow if it were not for TID water.

III. Procedural

The procedure for a legislative amendment is described in 18.108.170 as follows:

- A. It may be necessary from time to time to amend the text of the Land Use Ordinance or make other legislative amendments in order to conform with the comprehensive plan or to meet other changes in circumstances and conditions. A legislative amendment is a legislative act solely within the authority of the Council.
- B. A legislative amendment may be initiated by the Council, by the Commission, or by application of a property owner or resident of the City. The Commission shall conduct a public hearing on the proposed amendment at its earliest practicable meeting after it is submitted, and within thirty days after the hearing, recommend to the Council, approval, disapproval, or modification of the proposed amendment.
- C. An application for amendment by a property owner or resident shall be filed with the Planning Department thirty days prior to the Commission meeting at which the proposal is to be first considered. The application shall be accompanied by the required fee.
- D. Before taking final action on a proposed amendment, the Commission shall hold a public hearing. After receipt of the report on the amendment from the Commission, the Council shall hold a public hearing on the amendment. Notice of time and place of the public hearings and a brief description of the proposed amendment shall be given notice in a newspaper of general circulation in the City not less than ten days prior to the date of hearing.
- E. No application of a property owner or resident for a legislative amendment shall be considered by the Commission within the twelve month period immediately following a previous denial of such request, except the Commission may permit a new application if, in the opinion of the Commission, new evidence or a change of circumstances warrant it.

IV. Conclusions and Recommendations

Staff recommends the Planning Commission recommend approval of revisions to Ashland's regulations regarding the protection of wetlands, streams and riparian corridors including: 1) adding Chapter 18.63 Water Resource Protection Zones to and modifying Chapter 18.62 Physical and Environmental Constraints of the Ashland Land Use Ordinance, 2) the amendment to the Ashland Comprehensive Plan to adopt the Water Resources Map including significant wetlands and riparian corridors with the Local Wetlands Inventory and Assessment and Riparian

Corridor Inventory adopted by reference, as the official inventory of locally significant wetlands as well as a technical study within the Ashland Comprehensive Plan, and 3) an amendment to the Ashland Comprehensive Plan to revise the Floodplain Corridor Lands Map to provide consistency with the stream classifications with the Water Resources Map.

ATTACHMENT A

AMC 18.63 Strikeout/Underline Copy

Draft Chapter 18.63 Water Resource Protection Zones
(Changes made since June 24, 08 version are shown)



Chapter 18.63
WATER RESOURCE PROTECTION ZONES

SECTIONS:

- 18.63.010 Purpose and Intent
- 18.63.020 Applicability
- 18.63.030 Definitions
- 18.63.040 ~~Establishment~~ Inventory of Ashland's Water Resources
- 18.63.050 ~~Location~~ Establishment of Water Resource Protection Zones
- 18.63.060 Exempt Activities and Uses within Water Resource Protection Zones
- 18.63.070 Limited Activities and Uses within Water Resource Protection Zones
- 18.63.080 ~~Additional Requirements for Land Divisions and Property Line Adjustments~~
~~within Water Resource Protection Zones~~ Reductions
- 18.63.090 ~~Map Errors and Adjustments, Water Resource Protection Zone Reductions and~~
~~Hardship Variances~~
- 18.63.100 ~~Approval Process~~ Standards for Land Divisions and Property Line Adjustments
Within Water Resource Protection Zones Reductions
- 18.63.110 ~~Mitigation Requirements~~ Approval Process
- 18.63.120 Mitigation Requirements
- 18.63.130 Map Errors and Adjustments

18.63.010 Purpose and Intent

The purpose and intent of this chapter are:

- A. To implement ~~federal and state~~ and federal law with respect to the protection of clean water, pollution control and preservation of endangered species.
- B. To protect Ashland's Goal 5 significant wetlands and riparian areas, thereby protecting and restoring the hydrologic, ecologic and land conservation functions these areas provide for the community.
- C. To implement the provisions of Statewide Planning Goals 6 and 7, which require the buffering and separation of those land uses and activities that lead to or may create impacts on water quality, as well as to reduce the risk to people and property resulting from the inappropriate management of wetland and riparian areas.
- D. To implement the goals and policies of the Environmental Resources chapter of Ashland's Comprehensive Plan with respect to water resources, wetlands, floodplains and stream flooding.
- E. To reduce flood damage and potential loss of life in areas subject to periodic flooding.



F. To better manage storm water drainage, minimize maintenance costs, protect properties adjacent to drainage ways, improve water quality, protect riparian and aquatic fish and wildlife habitat and provide opportunities for trail connections.

G. To protect water associated with Ashland's hydrology for human uses, fish and wildlife and their habitats.

H. To control erosion and limit sedimentation.

I. To protect the amenity values and educational opportunities of Ashland's wetlands, water bodies and associated riparian areas as community assets.

J. To improve public appreciation and understanding of wetlands and riparian areas for their unique ecosystem structures and functions and for the human-nature interactions they provide.

K. To improve and promote coordination among local, state, and federal agencies regarding development activities near Ashland's wetlands, water bodies and associated riparian areas.

L. In cases of hardship, to provide a procedure to alter wetlands and riparian areas only when offset by appropriate mitigation, as stipulated in the ordinance and other applicable state and federal requirements.

18.63.020 Applicability

A. The provisions of this Chapter apply to all lands containing Water Resources and Water Resource Protection Zones. Water Resources include all streams and wetlands. Water Resource Protection Zones are buffer areas of varying widths surrounding Water Resources and include Stream Bank Protection Zones and Wetland Protection Zones. Water Resources and Water Resource Protection Zones are defined, established and protected in this Chapter.

B. ~~Federal and State and federal~~ wetland and riparian regulations will continue to apply within the City of Ashland, regardless of whether or not these areas are mapped on ~~the Ashland's~~ Water Resources Map. Nothing in this chapter shall be interpreted as superseding or nullifying ~~federal or state or federal~~ requirements. Additionally, the City of Ashland shall provide notification to the Oregon Department of State Lands (DSL), as required by Division 23 Administrative Rules, for all applications concerning development permits or other land use decisions affecting wetlands on the inventory.

C. The burden is on the property owner to demonstrate that the requirements of this Chapter are met or are not applicable to development activity or other proposed use or alteration of land. The Staff Advisor may make a determination based on the ~~Ashland~~ Water Resources Map, field check, and any other relevant maps, site plans and information that a Water Resource or Water



Resource Protection Zone is not located on a particular site or is not impacted by proposed development, activities or uses. In cases where the location of the Water Resource or Water Resource Protection Zone is unclear or disputed, the Staff Advisor may require a survey, delineation prepared by a natural resource professional, or a sworn statement from a natural resource professional that no Water Resources or Water Resource Protection Zones exist on the site.

D. All Water Resources and Water Resource Protection Zones shall be protected from alteration and development, except as specifically provided in this Chapter. No person or entity shall alter or allow, or permit or cause to be altered any real property designated as a Water Resource or Water Resource Protection Zone, except as set forth in an exemption, planning action or permit authorized in this Chapter. No person or entity shall use or allow, or permit or cause to be used, property designated as a Water Resource or Water Resource Protection Zone, except as set forth in an exemption, planning action or permit authorized in this Chapter.

18.63.030 Definitions

Alter or Alteration - means any human-induced physical change to the existing condition of land or improvements thereon including but not limited to clearing, grubbing, draining, removal of vegetation (chemical or otherwise), excavation, grading, placement of fill material, placement of structures or impervious surfaces or other construction. **"Permit to be altered"** means allowing or failing to prevent the alteration.

Approval Authority – The Staff Advisor, Planning Commission or its Hearings Board, Hearings Officer, or City Council as determined by the applicable procedural requirements.

Ashland Water Resources Map – The adopted City of Ashland map which identifies the approximate locations of Water Resources in Ashland including officially recognized streams and wetlands identified on Ashland's Local Wetland Inventory.

Comment [u1]: Moved to "Water Resources Map" definition below.

Bank Full Stage - means the two-year recurrence interval flood elevation.

Clearing - means the removal, redistribution or disturbance of vegetation, soil or substrate that may include trees, brush, grass, ground cover, or other vegetative matter from a site.

Drainage Ditch or Channels" include:

1. Roadside ditches that carry only storm water runoff from the adjacent road and the immediate surrounding area. (Drainage ditches do not include historically altered streams or channels that convey surface water flows. These features are still classified as streams for the purpose of this ordinance.)
2. Constructed channels designed as part of the storm water infrastructure and drain directly from storm water facilities or storm pipe systems.



Enhancement - means actions performed to improve the condition or functions and values of a Water Resource and its associated Protection Zone. Enhancement actions include but are not limited to increasing plant diversity, increasing fish and wildlife habitat, installing environmentally compatible erosion controls, and removing invasive plant species.

Fill Material - means a deposit of earth or other natural or manmade material placed by artificial means.

Filling - means the act of placing fill material in any amount, including the temporary stockpiling of fill material.

Fish Bearing or Fish Habitat Use - means inhabited at any time of the year by anadromous or game fish species or fish that are listed as threatened or endangered species under the federal or state or federal endangered species acts. Fish use is determined from Oregon Department of Forestry Stream Classification, Oregon Department of Fish and Wildlife and Oregon Department of State Lands maps for salmonid fish distribution.

Comment [u2]: Section 18.63050, Establishment of Water Resource Zones refers to fish-bearing. Fish use is not referenced in the chapter.

Hand-Held Equipment or Machinery - means equipment or machinery held in and operated by hand. Hand-held equipment or machinery includes but is not limited to manual tools, weed eaters, chainsaws, and equipment or machinery with wheels and a weight of 100 pounds or less (e.g. push lawn mowers, brush mowers). For the purposes of this ordinance, equipment or machinery with wheels and a weight in excess of 100 pounds are not considered hand-held equipment.

Impervious Surface – means surface materials which prevent the normal infiltration of storm water into the ground.

Lawn - means grass or similar materials maintained as a ground cover of less than 6 inches in height. For purposes of this ordinance, lawn is not considered native vegetation regardless of the species used.

Legally Created Lot or Parcel of Record - for purposes of this chapter includes a lot or parcel that was legally created and recorded prior to the adoption of land division ordinances or a lot or parcel shown on a final plat approved and recorded prior to the effective date of the ordinance codified in this chapter. A “legally created lot or parcel of record” also includes a lot or parcel recorded after the effective date of the ordinance codified in this chapter, but only if the lot or parcel was approved on a preliminary plat approved prior to the effective date of the ordinance codified in this chapter and the final plat recordation is in compliance with the original approved timetable of development.

Legally Established Nonconforming Activities, Uses and Structures - Nonconforming activities, uses and structures that were legally established prior to the effective date of this ordinance.



Local Native Plant Species – means those plant species appropriate to planting in or adjacent to a Water Resource that are native species indigenous to Jackson County. Local native plant species are adapted to the elevation, weather, soils and hydrology of the area; will support the desired structures, functions, and values of the water resource; and once established require significantly less maintenance than non-native species. The City of Ashland Planning Division maintains a list of recognized site-appropriate native plant species for both wetland and stream bank water resource applications, along with a list of known local suppliers.

Mitigation - means taking one or more of the following actions listed in order of priority:

1. Avoiding the impact altogether by not taking a certain development action or parts of that action.
2. Minimizing impacts by limiting the degree or magnitude of the development action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the development action by monitoring and taking appropriate corrective measures.
5. Compensating for the impact by replacing or providing comparable substitute resources or environments.

Mitigation Plan - means a plan that outlines the activities that will be undertaken to alleviate project impacts to sensitive areas.

Natural Resources Professional – A “natural resources professional” includes individuals who have a Bachelors degree, or the equivalent or greater, in the field of natural resources, biology, ecology, or related fields, and at least four (4) years of relevant post graduate experience.

Non-native Species - means a plant species which is not indigenous to the local area.

Noxious, Invasive and/or Non-native Vegetation – means plant species which are recognized as having a significant potential to disrupt the functions and values of local Water Resource ecosystems. The City of Ashland Planning Division maintains a list of recognized noxious, invasive and non-native plants.

Other Possible Wetland – means an area that appears to meet wetland criteria but is too small (less than 0.5 acre according to Oregon Department of State Lands (DSL) rules) to require its inclusion in the Local Wetland Inventory. The Ashland Water Resources Map notes areas that are in the Other Possible Wetland designation. However, there may be additional existing areas that meet the Other Possible Wetland designation, but are not included on the Ashland Water Resources Map.



Power Assisted Equipment or Machinery - means equipment or machinery other than hand-held equipment. For the purposes of this ordinance, equipment or machinery with wheels is considered power assisted equipment.

Primary Structure – A building in which the principal use of the zoning district in which it is located is conducted.

Protection Zone – An area subject to the provisions of this chapter which includes a Water Resource and an associated buffer area of varying width, as established herein, located adjacent to the Water Resource and in which certain human activities are regulated in order to protect the structures and functions of the resource.

Restoration - means efforts performed to re-establish the functional values and characteristics of a critical area that have been destroyed or degraded by past alterations (e.g., filling, grading or draining).

Riparian Area – means the area adjacent to a Stream Bank Water Resource, consisting of the area of transition from an aquatic ecosystem to a terrestrial ecosystem, which affects or is directly affected by the Water Resource.

Riparian Buffer – An area adjacent to the riparian area that preserves and protects the riparian area and its environmental functions.

Riparian Corridor - "Riparian corridor" is a Goal 5 resource that includes the water areas, fish habitat, adjacent riparian areas, and wetlands within the riparian area boundary. A Riparian Corridor is a type of Stream Bank Protection Zone.

Stream – A stream means a channel such as a river or creek that carries flowing surface water, including perennial, intermittent and ephemeral streams with defined channels, and excluding man-made irrigation and drainage channels. Drainage channels do not include historically altered streams or channels that convey surface water flows. A stream is a type of Water Resource.

Stream, Ephemeral - An ephemeral stream generally flows only during and following a rain event. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow. Intermittent and Ephemeral Streams is a type of Stream Bank Protection Zone.

Stream, Intermittent - An intermittent stream generally flows only during part of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow. Intermittent and Ephemeral Streams is a type of Stream Bank Protection Zone.



Stream, Perennial - A perennial stream has flowing water year-round during a typical year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Stream, Local – Local Streams is a type of Stream Bank Protection Zone.

Stream Bank Protection Zone – An area subject to the provisions of this chapter which includes a stream and an associated buffer area of varying width, as established herein, located adjacent to the stream, and in which certain human activities are regulated in order to protect the structures and functions of the stream. A Stream Bank Protection Zone is a type of Water Resource Protection Zone. There are three types of Stream Bank Protection Zones defined, established and protected in this Chapter – Riparian Corridor, Local Streams and Intermittent and Ephemeral Streams.

Stream Bank Protection Zone Boundary - An imaginary line that is a standard distance upland from the top of bank.

Stream Corridor Functions - include providing shade for the stream, stream bank and channel stability, woody debris for the stream, sediment retention, litter for aquatic organisms in the stream, water filtration, aquatic and riparian fish and wildlife habitat.

Top of Bank - means the stage or elevation at which water overflows the natural banks of streams or other waters of the state and begins to inundate upland areas. Physical characteristics that indicate the elevation include a clear, natural line impressed on the shore, a change from bare soil to upland vegetation (e.g. oak, fir, pine), a change in vegetation from riparian vegetation (e.g. willows, big leaf maple, alders) to upland vegetation (e.g. oak, fir, pine), a textural change of depositional sediment or changes in the character of the soil (e.g. from sand, sand and cobble, cobble and gravel to upland soils), absence of fine debris (needles, leaves, cones and seeds), and the presence of water-borne litter or debris, water-stained leaves or water lines on tree trunks. In the absence of physical evidence or where the top of each bank is not clearly defined, the two-year recurrence interval flood elevation may be used to approximate the top of bank, or the line of non-aquatic vegetation, whichever is most landward.

Comment [u3]: Provides specific factors to determine the top of bank. Based on Oregon Division of State Lands definition.

Upland – Land not characterized by the presence of riparian area, water bodies or wetlands.

Water Resource - means a riparian, local, intermittent, or ephemeral stream corridor or a wetland, as distinguished from a Protection Zone, which extends upland from the Water Resource.

Water Resources Map – The adopted City of Ashland map which identifies the approximate locations of Water Resources in Ashland including officially recognized streams and wetlands identified on Ashland's Local Wetland Inventory.



Water Resource Protection Zone - An area subject to the provisions of this chapter which includes a Water Resource and an associated buffer area of varying width, as established herein, located adjacent to the Water Resource and in which certain human activities are regulated in order to protect the structures, functions and values of the resource. Water Resource Protection Zone is a category including Stream Bank Protection Zones and Wetland Protection Zones, and is used throughout this title to refer to Stream Bank Protection Zones and Wetland Protection Zones.

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

Wetlands, Locally Significant – means those wetlands identified on the Ashland Water Resources Map and determined “significant wetlands” using the criteria adopted the Oregon Department of State Lands (DSL). Locally Significant Wetlands is a type of Wetland Protection Zone.

Wetlands, Other Possible – Other Possible Wetlands is a type of Wetland Protection Zone.

Wetland Boundary - means a line marked on a map or flagged in the field that identifies the approximate wetland/non-wetland boundary.

Wetland Buffer – means an area extending away from the outer delineated wetland boundary or upland edge that is preserved for the purpose of protecting the functions and values of the wetland by serving to reduce the adverse effects of adjacent land uses on water quality and habitat functions of the wetland.

Wetland Delineation - means a determination of wetland presence that includes marking the wetland boundaries on the ground and/or on a detailed map prepared by professional land survey or similar accurate methods.

Wetland Functions – include wildlife habitat, fish habitat, water quality and hydrological control.

Wetland Protection Zone – An area subject to the provisions of this chapter that includes all wetlands determined to be locally significant and other possible wetlands with confirmed jurisdictional wetland presence, and an associated buffer area of varying width, as established herein, located adjacent to the wetland, and in which certain human activities are regulated in order to protect the structures and functions of the wetland. A Wetland Protection Zone is a type of Water Resource Protection Zone. There are two types of Wetland Protection Zones defined, established and protected in this Chapter – Locally Significant Wetlands and Other Possible Wetlands.



Wetland Specialist – means an individual who has the appropriate credentials verifying proven expertise and vocational experience conducting wetland delineations.

18.63.040 Establishment Inventory of Ashland's Water Resources

The approximate locations of Ashland's Water Resources are identified on official maps adopted by the City of Ashland and added to the Comprehensive Plan through ordinance 2419 (May 1987), ordinance 2528 (July 1989) and ordinance _____ (June 2008). Because the Comprehensive Plan maps are acknowledged to be approximate, the more precise wetland boundaries can be mapped, staked and used for development review purposes without a modification of the Comprehensive Plan maps.

18.63.050 Location Establishment of Water Resource Protection Zones

A Water Resource Protection Zone is hereby established adjacent to all Water Resources to protect their integrity, function and value. The boundaries of the following Water Resource Protection Zones shall be established by an on-site survey based upon the following standards.

A. Stream Bank Protection Zones. The following types of Water Resource Protection Zones are hereby established to protect streams and their associated riparian resources. The approximate locations of streams are identified on the Ashland Water Resources Map.

1. **Riparian Corridor** - The required protection zone for Riparian Corridor fish-bearing streams with an annual average stream flow less than 1,000 cubic feet per second shall extend 50-feet upland from the top of bank. Streams subject to this classification are: ~~Ashland Creek, Bear Creek, Emigrant Creek, Kitchen Creek, Neil Creek, and Tolman Creek.~~

Comment [u4]: Streams in this classification may change if cfs and/or fish-bearing status changes. Ordinance is more timeless if it references Water Resources Map.

2. **Local Streams** - The required protection zone for non-fish-bearing Local Streams shall extend 30 feet upland from the top of bank or 40-feet from the centerline of the stream, whichever is greater. Streams subject to this classification are: ~~Ashland Creek, Cemetery Creek, Clay Creek, Hamilton Creek, Hamilton Creek Tributaries 1 and 2, Wrights Creek, Wrights Creek Tributary 5.~~ [Note: Different sections of the same creek may be listed in more than one Stream Bank Protection Zone classification. Consult Ashland Water Resources Map to determine Stream Bank Protection Zone classification by location.]

Comment [u5]: Protection zone measured from center line of stream per Planning Commission direction from 7.22.08 meeting

3. **Intermittent and Ephemeral Streams** - The required protection zone for intermittent and ephemeral streams shall extend 20 feet upland from the top of bank or 30-feet from the centerline of the stream, whichever is greater. Streams subject to this classification are: ~~Ashland Creek Tributary 1, Beach Creek, Cemetery Creek, Fordyce Creek, Golf Course Creek, Hamilton Creek, Hamilton Creek Tributary 1, Knoll Creek, Mook (Clear) Creek, Mountain Creek, Paradise Creek, Pincrest Creek, Roca Creek, Strawberry Creek, Twin Creek, West Fork Wrights Creek, Wrights Creek Tributaries 1, 2, 3 and 5.~~ [Note: Different sections of the same creek may be listed in more than one Stream Bank Protection Zone classification. Consult Ashland Water Resources Map to determine Stream Bank Protection Zone classification by location.]

Comment [u6]: Streams in this classification may change if cfs and/or fish-bearing status changes. Ordinance is more timeless if it references Water Resources Map.

Comment [u7]: Protection zone measured from center line of stream per Planning Commission direction from 7.22.08 meeting

Comment [u8]: Streams in this classification may change if cfs and/or fish-bearing status changes. Ordinance is more timeless if it references Water Resources Map.



4. **Significant Wetland Presence** - Where a Stream Bank Protection Zone includes all or part of a significant wetland as identified on official maps adopted by the City of Ashland, the distance to the Stream Bank Protection Zone boundary shall be measured from, and include, the upland edge of the wetland.

5. **Determination of Protection Zone** - The measurement of the Stream Bank Protection Zones shall be a horizontal distance. In areas where the top of each bank is not clearly defined, the boundary of the Stream Bank Protection Zone shall be determined by measuring from the ordinary high water level based upon a two-year flood interval occurrence, or the line of non-aquatic vegetation (edge of riparian area boundary), whichever is most landward.

B. Wetland Protection Zones. The following types of Water Resource Protection Zones are hereby established to protect wetland resources. The approximate locations of Locally Significant Wetlands and Other Wetlands are identified on the ~~Ashland~~ Ashland Water Resources Map. The precise boundary of a Wetland Protection Zone shall be established through conducting an on-site wetland delineation and survey based upon the following standards.

1. **Locally Significant Wetlands** – For wetlands classified as locally significant on the ~~Ashland~~ Ashland Water Resources Map, the Wetland Protection Zone shall consist of all lands identified to have a wetland presence on the wetland delineation, plus a wetland buffer consisting of all lands within 50-feet of the upland-wetland edge. The measurement shall be a horizontal distance. A wetland delineation prepared by a qualified wetland specialist shall be submitted to the City of Ashland that graphically represents the location of wetlands on a site plan map in accordance with section 18.63.10~~10~~.A.3. An average buffer width of 50-feet may be utilized around the perimeter of a significant wetland upon submission of evidence and a detailed plan by a natural resources professional demonstrating that equal or better protection of the functions and values of the resource will be ensured, and that there will be an enhanced buffer treatment through the implementation and maintenance of a restoration and enhancement plan within the buffer area.

2. **Other Possible Wetlands** – For wetlands not classified as locally significant on the ~~Ashland~~ Ashland Water Resources Map, the Wetland Protection Zone shall consist of all lands identified to have a wetland presence on the wetland delineation, plus all lands within 20-feet of the upland-wetland edge. Other Possible Wetlands includes all areas designated as such on the ~~Ashland~~ Ashland Water Resources Map and any unmapped wetlands discovered on site. The measurement shall be a horizontal distance. A wetland delineation prepared by a qualified wetland specialist shall be submitted to the City of Ashland that graphically represents the location of wetlands on a site plan map in accordance with section 18.63.10~~10~~.A.3. An average buffer width of 20-feet may be utilized around the perimeter of a possible wetland upon submission of evidence and a detailed plan by a natural resources professional demonstrating that equal or better protection of the functions and values of the resource will be ensured.



18.63.060 Exempt Activities and Uses within Stream Bank and Wetland Water Resource Protection Zones

Comment [u9]: For consistency with "Sections" at beginning of chapter and for consistency throughout document.

A. Exempt Activities Within Stream Bank Protection Zones. The following activities and uses do not require a permit or authorization from the City to be conducted in a Stream Bank Protection Zone, provided the following requirements are met. All disturbed soil surface areas shall be re-planted using local native plant species, erosion control material shall be applied (e.g. mulch, hay, jute-netting, or comparable) and temporary irrigation facilities shall be installed. Re-planting, erosion control and temporary irrigation shall be installed within 90 days of authorized land- soil surface area disturbances. Soil disturbance shall not result in permanent changes to the topography of the Stream Bank Protection Zone. ~~Similarly, u~~Using herbicides, pesticides or chemical fertilizers in the Stream Bank Protection Zone shall not be permitted as part of the exempt activities ~~below unless expressly authorized.~~ All applicable state and federal permits have been or will be obtained prior to commencement of the activity or use.

Comment [u10]: This applies to all exempt activities. To delete repetition, similar language was removed from individual exempt activities.

1. Non-native, Noxious and Invasive Vegetation Removal - Removal of non-native vegetation, and noxious and invasive vegetation listed on the City of Ashland's Noxious and Invasive Plant List with hand-held equipment. The act of removing non-native, noxious and invasive vegetation shall not result in the removal of native vegetation including native trees of all sizes (e.g. tree saplings, mature trees); or the removal of non-native trees greater than six inches diameter at breast height, or disturbance of the soil surface area.

2. Routine Planting - The planting of local native plant species or the replacement of non-native plants with local native plant species ~~without the use of power assisted machinery or equipment~~ with hand-held equipment.

3. Fuel Reduction - Cutting or thinning of vegetation with hand-held equipment or machinery, consistent with City standards for Wildfire Lands described in the Physical and Environmental Constraints Chapter 18.62 and determined to be necessary as part of an approved fire hazard prevention/fuel reduction plan, provided that the cutting/thinning is the minimum necessary to alleviate the potential hazard.

4. Testing – Site investigative work with minimal surface area disturbance conducted by or required by a ~~C~~city, ~~C~~county, ~~S~~state, or ~~F~~federal agency, such as but not limited to surveys, percolation tests, soil borings or other similar tests.

5. Landscaping, Lawn and Tree Maintenance - The limitations imposed by this chapter do not include the routine maintenance of existing vegetation within a Stream Bank Protection Zone, provided that the following requirements are met.

~~a. Using herbicides, pesticides or chemical fertilizers in the Stream Bank Protection Zone shall not be permitted as part landscaping, lawn and tree maintenance activities.~~



a. Existing lawn within the riparian corridor may be maintained, but not expanded within the Stream Bank Protection Zone.

b. Maintenance pruning of existing trees shall be kept to a minimum and shall be in accordance with the Tree Preservation and Protection Chapter 18.61 and with the American National Standards Institute (ANSI) standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, or resource functions (i.e. shade, soil stability, erosion control, etc.)

6. **Outdoor Uses** – The establishment of outdoor uses such as yards and gardens where the outdoor use area meets all of the following.

a. The total outdoor use area in the Stream Bank Protection Zone, including existing and new outdoor use areas in the Stream Bank Protection Zone, does not exceed 150 square feet per lot.

b. The outdoor use area is located at least ten feet from the upland of the top of bank of a stream.

c. ~~The permanent alteration of the Stream Bank Protection Zone by grading or by the placement of structures, fill or impervious surfaces is prohibited.~~
Porous solid surfaces, with the exception of decks, may be installed in the outdoor use area.

Comment [u11]: Similar language added to Section A above so it applies to all exempt activities. Removed from individual exempt activities to delete repetition.

d. No trees six inches diameter at breast height (dbh) are removed.

Comment [u12]: Permits the use of pervious materials for a patio in the outdoor area.

e. Plantings do not include plants on the City of Ashland's Noxious and Invasive Plant List. Non-native vegetation may be used in the exempt outdoor use areas except new lawn is not permitted within the Stream Bank Protection Zone as outlined below.

~~i. Using herbicides, pesticides or chemical fertilizers within the Stream Bank Protection Zone is not permitted in conjunction with outdoor uses.~~

~~ii. New lawn is not permitted within the Stream Bank Protection Zone.~~

Comment [u13]: Repetitive – covered previously under Section A above.

7. **Trails** - The establishment of trails where all of the following are met.

Comment [u14]: Allows installation of unpaved trails in Stream Bank Protection Zones for private and public open spaces. Paved trails would be required to get a Type I land use approval.

a. Trails shall be confined to a single ownership or be with a public trail easement.



b. The trail installation shall retain the general topography of the Stream Bank Protection Zone.

c. Trail width shall not exceed thirty (30) inches, stair width shall not exceed fifty (50) inches, and trail grade shall not exceed twenty (20) percent except for the portion of the trail containing stairs.

d. Plant trimming shall not exceed a height of eight (8) feet and a width of six (6) feet.

e. Native trees larger than six (6) inches in diameter and breast height and native shrubs or conifers larger than five (5) feet tall shall not be removed. Tree removal shall be in accordance with the Tree Preservation and Protection Chapter 18.61.

f. Trails shall not be paved with concrete, asphalt or comparable surfacing such as pervious concrete and asphalt.

g. Trails shall be at least fifteen (15) feet from the top of bank from Riparian Corridors, and at least ten (10) feet from the top of bank from Local Streams and Intermittent and Ephemeral Streams.

8. **City Emergency Activities** - Emergency repair authorized by the City Administrator or his/her designee which must be undertaken immediately, or for which there is insufficient time for full compliance with this chapter, in order to address at least one of the following.

- a. Prevent an imminent threat to public health or safety.
- b. Prevent imminent danger to public or private property.
- c. Prevent an imminent threat of serious environment degradation.

9. **Drainage Facility Maintenance** – Maintenance of ~~intentionally created wetlands, approved storm water quality facilities or surface water systems~~ streams to maintain natural flow in accordance with agency-approved management plans.

Comment [u15]: To provide clarity as to when silt or vegetation can be removed from natural and man-made drainage facilities such as wetlands and streams.

10. **Legally Established Nonconforming Activities, Uses and Structures** – Legally established nonconforming activities, uses and structures may continue subject to the following provisions.

a. **Structure Maintenance and Expansion.** Existing legally established nonconforming structures within or partially within a Stream Bank Protection Zone may be ~~continued, used~~ and maintained, but shall not have the existing building footprint or impervious surface expanded or enlarged unless the expansion or enlargement occurs outside the Stream Bank Protection Zone. Additional stories may

Comment [u16]: Language applies to nonconforming activities and uses, not to structures.



be added to existing structures in the Stream Bank Protection Zone if the existing building footprint does not change in size or shape and additional surface area in the Stream Bank Protection Zone is not disturbed.

b. Fire and Natural Hazards. A primary structure that is legally established nonconforming may be rebuilt if damaged or destroyed by a fire or a natural hazard (e.g. flood). Repair and reconstruction of a nonconforming structure under this section shall be in accordance with the requirements of the Flood Damage Prevention Regulations Chapter 15.10. In non-residential zoning districts, legally established nonconforming structures may be rebuilt if damaged or destroyed by a fire or a natural hazard.

Comment [u17]: Provide cross reference to Ashland Code requirements.

Comment [u18]: Would exempt legally established nonconforming structures such as decks in C-1, E-1 and M-1 zoning districts.

c. Previously Approved Building Envelopes. A previously approved building envelope within or partially within a Stream Bank Protection Zone, which would be prohibited by this chapter or subject to the limitations and controls imposed by this Chapter, may be built upon as originally approved and does not have to meet the requirements of this Chapter if the following conditions are met:

- i. The building envelope was established and received City of Ashland Planning Division approval prior to the effective date of this ordinance.
- ii. The building envelope is located on a vacant lot.
- iii. The building envelope is located on a legally created lot or parcel of record which was created prior to the effective date of this ordinance.
- iv. Building permits are approved and construction is commenced there under within thirty-six (36) months from the effective date of this ordinance.

Comment [u19]: Provides a time limit for nonconforming building envelopes.

d. Previously Approved Driveways. An approved driveway within or partially within a Stream Bank Protection Zone, which would be prohibited by this chapter or subject to the limitations and controls imposed by this Chapter, may be built as originally approved and does not have to meet the requirements of this Chapter if the following conditions are met.

- i. The driveway location was established and received City of Ashland Planning Division approval prior to the effective date of this ordinance.
- ~~ii. The driveway location is identified on a vacant lot.~~
- ~~iii. The driveway location is identified on~~ will provide access to a legally created lot or parcel of record which was created prior to the effective date of this ordinance.
- iii. Building permits are approved and construction is commenced there under within thirty-six (36) months from the effective date of this ordinance.

Comment [u20]: Provides a time limit for nonconforming driveways.

e. Activities and Uses. Existing legally established nonconforming activities or uses within or partially within a Stream Bank Protection Zone may be continued but shall



not have the activity or use increased, expanded, enlarged or intensified, unless the increase, expansion, enlargement or intensification occurs outside of the Stream Bank Protection Zone.

f. **City Public Facility Maintenance.** Routine maintenance of ~~City public~~ piped drainage facilities, utilities and irrigation pumps, which were created or developed as part of a drainage or utility system, and which does not disturb additional riparian surface area.

g. **Private Facility Maintenance.** Routine maintenance of existing private drainage facilities, utilities and irrigation pumps that do not disturb additional riparian surface area.

h. **Access Maintenance.** Maintenance of existing public and private ~~roads, streets,~~ driveways and utility lines when located in city right-of-way or public easement, and which does not disturb additional riparian surface area.

i. **Access Paving, Repaving or Reconstruction.** Paving, repaving or reconstruction of existing public and private streets and driveways if work disturbs no more than five percent (5%) additional surface area within the Stream Bank Protection Zone. Public streets and driveways shall be located in city right-of-way or public easement.

Comment [u21]: Allows existing streets and driveways to be repaved and rebuilt.

ij. **Discontinuance.** Discontinued nonconforming activities or uses are deemed abandoned after six months and may not be resumed except in full conformity with this Chapter. Discontinued nonconforming activities or uses may be resumed within six months from such discontinuance, but not thereafter, when demonstrating clear evidence of non-abandonment. No change or resumption of a nonconforming activity or use of land shall be permitted that will result in a greater adverse impact as measured against impacts associated with the former nonconforming activity or use of land. Impacts on the Water Resource's values and functions such as water quality, fish and wildlife habitat, flood control capacity, and slope stability shall be considered when evaluating a request to change or resume a former nonconforming use.

B. Exempt Activities Within Wetland Protection Zones. The following activities and uses do not require a permit or authorization from the City to be conducted ~~or to continue~~ in a Wetland Protection Zone, provided the following requirements are met. All disturbed soil surface areas shall be re-planted using local native plant species, erosion control material shall be applied (e.g. mulch, hay, jute-netting, or comparable) and temporary irrigation facilities shall be installed. Re-planting, erosion control and temporary irrigation shall be installed within 90 days of authorized ~~land soil surface area~~ disturbances. Soil disturbance shall not result in permanent changes to the topography of the Wetland Protection Zone. ~~Similarly, u~~Using herbicides, pesticides or chemical



fertilizers in the Wetland Protection Zone shall not be permitted as part of the exempt activities ~~below unless expressly authorized.~~ All applicable state and federal permits have been or will be obtained prior to commencement of the activity or use.

1. **Routine Planting** - The planting of local native plant species or the replacement of non-native plants with local native plant species ~~without the use of power-assisted machinery or equipment~~ with hand-held equipment.

2. **Landscaping and Tree Maintenance** - The limitations imposed by this chapter do not include the routine maintenance of existing vegetation within a Wetland Protection Zone, provided that the following requirements are met.

~~a. Using herbicides, pesticides or chemical fertilizers in the Wetlands Protection Zone shall not be permitted as part landscaping, lawn and tree maintenance activities.~~

~~b.~~ a Maintenance pruning of existing trees shall be kept to a minimum and shall be in accordance with the Tree Preservation and Protection Chapter 18.61 and with the American National Standards Institute (ANSI) standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, or resource functions (i.e. shade, soil stability, erosion control, etc.)

3. Trails - The establishment of trails where all of the following are met.

a. Trails shall be confined to a single ownership or be with a public trail easement.

b. The trail installation shall retain the general topography of the Wetland Protection Zone.

c. Trail width shall not exceed thirty (30) inches, stair width shall not exceed fifty (50) inches, and trail grade shall not exceed twenty (20) percent except for the portion of the trail containing stairs.

d. Plant trimming shall not exceed a height of eight (8) feet and a width of six (6) feet.

e. Native trees larger than six (6) inches in diameter and breast height and native shrubs or conifers larger than five (5) feet tall shall not be removed. Tree removal shall be in accordance with the Tree Preservation and Protection Chapter 18.61.

f. Trails shall not be paved with concrete, asphalt or comparable surfacing such as pervious concrete and asphalt.

Comment [u22]: Allows installation of unpaved trails in Wetland Protection Zones for private and public open spaces. Paved trails would be required to get a Type I land use approval.



g. Trails construction shall be permitted within a wetland if approved by state and federal agencies.

4. **City Emergency Activities** - Emergency repair authorized by the City Administrator or his/her designee which must be undertaken immediately, or for which there is insufficient time for full compliance with this chapter, in order to address at least one of the following.

- a. Prevent an imminent threat to public health or safety.
- b. Prevent imminent danger to public or private property.
- c. Prevent an imminent threat of serious environment degradation.

5. **Legally Established Nonconforming Activities, Uses and Structures** – Legally established nonconforming activities, uses and structures may continue subject to the following provisions.

a. **Structure Maintenance and Expansion.** Existing legally established nonconforming structures within or partially within a Wetland Protection Zone may be ~~continued, used~~ and maintained, but shall not have the existing building footprint or impervious surface expanded or enlarged unless the expansion or enlargement occurs outside the Wetland Protection Zone. Additional stories may be added to existing structures in the Wetland Protection Zone if the existing building footprint does not change in size or shape and additional surface area in the Wetland Protection Zone is not disturbed.

Comment [u23]: Language applies to nonconforming activities and uses, not to structures.

b. **Activities and Uses.** Existing legally established nonconforming activities or uses within or partially within a Wetland Protection Zone may be continued but shall not have the activity or use increased, expanded, enlarged or intensified, unless the increase, expansion, enlargement or intensification occurs outside of the Wetland Protection Zone.

c. **Discontinuance.** Discontinued nonconforming activities or uses are deemed abandoned after six (6) months and may not be resumed except in full conformity with this Chapter. Discontinued nonconforming activities or uses may be resumed within six months (6) from such discontinuance, but not thereafter, when demonstrating clear evidence of non-abandonment. No change or resumption of a nonconforming activity or use of land shall be permitted that will result in a greater adverse impact as measured against impacts associated with the former nonconforming activity or use of land. Impacts on the Water Resource's values and functions such as water quality, fish and wildlife habitat, flood control capacity, and slope stability shall be considered when evaluating a request to change or resume a former nonconforming use.



18.63.070 Limited Activities and Uses within Water Resource Protection Zones

The following activities and uses within Water Resource Protection Zones are allowed under a Type I land use procedure provided the activities or uses comply with the standards set forth in section ~~18.63.100.B~~ 18.63.070.C.

A. Limited Activities and Uses within Stream Bank Protection Zones.

1. **Channel and Riparian Enhancement Activities** – Stream channel repair and enhancement as well as riparian habitat restoration and enhancement resulting in a net gain in ecological function. Channel and riparian enhancement activities not otherwise associated with development involving building, grading or paving are encouraged, and planning action application fees associated with reviewing these activities for compliance with applicable land use standards may be waived, at the discretion of the Staff Advisor.

2. **Removal of Vegetation** – Removal of vegetation from within a Stream Bank Protection Zone is prohibited, except when authorized with the following limited activities and uses.

a. Removal of non-native, invasive and/or noxious vegetation with power-assisted machinery or equipment.

b. Removal of emergent in-channel vegetation that is likely to cause flooding using non-invasive methods such as mowing or weed-whacking that do not disturb the underlying substrate. Mechanized removal of emergent in-channel vegetation that would involve associated removal of soil below the ordinary high water line is not allowed and would otherwise be subject to state and federal wetland permitting requirements. [Note: The removal of any material from streams mapped as Essential Salmon Habitat by the Oregon Department of State Lands requires a wetland permit. Bear Creek, Ashland Creek, Neil Creek and Emigrant Creek are mapped as Essential Salmon Habitat.]

c. Hazardous Tree Removal. A hazard tree is a tree that is physically damaged to the degree that it is likely to fall and injure persons or property. In addition to the standards described in ~~18.63.070.C.100.B~~, the application shall also address the standards for a Tree Removal Permit for hazard trees found in the Tree Preservation & Protection Chapter 18.61.080.A.

~~d. Routine maintenance of City utilities and transportation facilities located within a Stream Bank Protection Zone that do not disturb additional surface area within the Protection Zone, provided the proposed maintenance complies with any applicable state and federal permitting requirements.~~

Comment [u24]: Modified and moved to Section 4 below.



3. **Building, Paving, and Grading Activities** - The permanent alteration of the Stream Bank Protection Zone by grading or by the placement of structures, fill or impervious surfaces is prohibited, except when authorized with the following limited activities and uses.

a. The location and construction of public streets, bridges, utilities, pedestrian and multi-use path connections deemed necessary to maintain a functional system. This title, the Comprehensive Plan, Transportation System Plan, Utility Master Plans and other adopted documents shall guide this determination.

b. ~~Replacement~~ Paving, repaving or reconstruction of existing public and private roads, streets and driveways if work disturbs more than five percent (5%) additional surface area within the Stream Bank Protection Zone. Public roads, streets and driveways shall be located in city right-of-way or public easement.

c. Installation or replacement of ~~city~~ public and private drainage facilities, utilities, and irrigation pumps.

d. Replacement of legally established nonconforming structures located within the original building footprint, except those legally established nonconforming primary structures exempted in 18.63.060.A.9.b, provided replacement does not disturb additional surface area within the Stream Bank Protection Zone.

e. Erosion control and stream bank stabilization measures that have been approved by the Oregon Department of State Lands (DSL), the U.S. Army Corps of Engineers, or other state or federal regulatory agencies, and that utilize non-structural bio-engineering methods.

f. Construction of a storm water outfall discharging treated storm water from an adjacent developed area provided that the discharge meets local, state and federal water quality regulations.

g. The installation of a bridge or similar, bottomless crossing structure for the purpose of constructing a public or private street, bicycle or pedestrian crossing, as well as to provide a means of access to an otherwise inaccessible or landlocked property.

h. Installation or expansion of structural flood control measures, including but not limited to concrete retaining walls, gabions, gravity blocks, etc., shall generally be prohibited, but approved only if demonstrated that less-invasive, non-structural methods will not adequately meet the stabilization or flood control needs.

4. **Routine Maintenance of Public Utilities** - Routine maintenance of public utilities located within a Stream Bank Protection Zone that disturbs additional surface area within the Protection Zone, provided the proposed maintenance complies with any applicable state and federal permitting requirements.

Comment [u25]: Maintenance of public utilities is exempt in Section 18.63.060 Exempt Activities and Uses if additional surface area is not disturbed.



B. Limited Activities and Uses Within Wetland Protection Zones.

1. **Wetland Restoration and Enhancement Activities** - Wetland restoration and enhancement activities resulting in a net gain in ecological function. Wetland restoration and enhancement activities not otherwise associated with development involving building, grading or paving are encouraged, and planning action application fees associated with reviewing these activities for compliance with applicable land use standards may be waived, at the discretion of the Staff Advisor.

2. **Removal of Vegetation** – Removal of vegetation from within a Wetland Protection Zone is prohibited, except when authorized with the following limited activities and uses.

a. Removal of non-native, invasive and/or noxious vegetation with power-assisted machinery or equipment.

b. Perimeter mowing and other cutting necessary for hazard prevention.

c. Hazardous Tree Removal. A hazard tree is a tree that is physically damaged to the degree that it is likely to fall and injure persons or property, and such hazard or danger cannot reasonably be alleviated by treatment or pruning. In addition to the standards described in ~~18.63.070.C-100.B~~, the application shall also address the standards for a Tree Removal Permit for hazard trees found in the Tree Preservation & Protection Chapter 18.61.080.A.

~~d. Routine maintenance of City utilities and transportation facilities located within a Wetland Protection Area that do not disturb additional wetland surface area, provided the proposed maintenance complies with any applicable State and Federal wetland permitting requirements.~~

Comment [u26]: Moved to below to Section 4 for consistency with previous Stream section.

3. **Building, Paving and Grading Activities** – The erection of structures, installation of impervious surfaces, grading, excavation, and placement fill within Wetland Protection Zones is prohibited, except when authorized with the following limited activities and uses.

a. The location and construction of public streets, bridges, utilities, pedestrian and multi-use path connections deemed necessary to maintain a functional system and upon finding that no other another reasonable, alternate location outside the Wetland Protection Zone exists. This chapter, the Comprehensive Plan, Transportation System Plan (TSP), adopted utility master plans and other adopted documents shall guide this determination.

b. Replacement of existing public and private ~~roads,~~ streets and driveways. Public ~~roads,~~ streets and driveways shall be located in city right-of-way or public easement.



- c. Installation or replacement of public and private drainage facilities, utilities, and irrigation pumps.
- d. Routine maintenance of existing drainage facilities and utilities that disturbs lands within the Wetland Protection Zone provided that the applicant complies with applicable ~~S~~state and ~~F~~federal permitting requirements.
- e. Replacement of legally established nonconforming structures within the original building footprint, provided replacement does not disturb additional surface area with the Wetland Protection Zone.

4. Routine Maintenance of Public Utilities - Routine maintenance of public utilities located within a Wetland Protection Area that do not disturb additional wetland surface area, provided the proposed maintenance complies with any applicable state and federal wetland permitting requirements.

C. Approval Standards for Limited Activities and Uses within Water Resource Protection Zones. All Limited Activities and Uses within Water Resource Protection Zones described in section 18.63.070 shall be reviewed and a decision made through a Type I land use procedure. The approval authority may approve or approve with conditions a request to conduct Limited Activities and Uses in a Water Resource Protection Zone based upon findings that the following standards have been satisfied.

~~1. The proposed activity shall be designed, located and constructed to minimize excavation, grading, the placement of structures and impervious surfaces, loss of native vegetation, erosion, and adverse hydrological impacts on Water Resources. All activities shall be located as far from streams and wetlands, designed to minimize intrusion into the Water Resources Protection Zone and use as little of the surface area of the Water Resource Protection Zone, as practicable.~~

~~2. The proposed activity shall be designed, located and constructed to minimize excavation, grading, the placement of structures and impervious surfaces, loss of native vegetation, erosion, and adverse hydrological impacts on Water Resources.~~

~~3. Excavation, grading and vegetation removal shall be avoided within the Stream Bank Protection Zone on stream beds or banks within the bank full stage, in wetlands, and on slopes of 25 percent or greater, except where no practicable alternative exists, or where necessary to construct public facilities or to ensure slope stability.~~

~~3. The following standards shall apply when construction activity is proposed in areas where vegetation is to be preserved within a Water Resources Protection Zone.~~

~~a. Work areas on the immediate site shall be carefully identified and marked to reduce potential damage to trees and vegetation. Temporary construction fencing shall be~~



~~placed at the drip line of trees bordering the work area. No equipment maneuvering, staging or stockpiling shall occur outside of designated work areas.~~

~~b. Trees shall not be used as anchors for stabilizing equipment.~~

~~c. Stockpiling of soil, or soil mixed with vegetation, shall not be permitted in Water Resource Protection Areas on a permanent basis. Temporary storage shall employ erosion control measures to ensure sediments are not transported to adjacent surface waters.~~

Comment [u27]: Moved to Section 18.63.120 Mitigation Requirements.

4. Erosion control measures shall be employed to ensure sediments are not transported to the Water Resource. Erosion control measures shall be installed prior to site preparation or ground-disturbing activities, where applicable. Access roads, staging areas, storage areas and other areas of temporary disturbance necessary to complete the proposed activity shall be restored as soon as possible, but not more than 90 days after authorized land disturbance. Erosion control measures shall be in place concurrently with construction or establishment of the proposed activity. Temporary measures used for initial erosion control shall not be left in place permanently. Guidance on appropriate erosion control measures is contained in the Department of Environmental Quality publication Best Management Practices for Storm Water Discharges Associated With Construction Activities (DEQ Northwest Region 2006, or current upgrade). A copy of this document is available for review at the City of Ashland Planning Division.

5. Plans for stream channel repair and enhancement, riparian habitat restoration and enhancement plans and wetland restoration and enhancement are required and shall be submitted with the land use application. The plans shall be designed by a natural resource professional, comply with all federal and state and federal regulations and permitting requirements and conform to all local regulations and permit requirements related to flood areas.

~~6. The removal of vegetation in a Water Resource Protection Zone is limited to the minimum amount necessary to accommodate the activity. All applicable state and federal permits have been or will be obtained prior to commencement of the activity or use.~~

Comment [u28]: Repetitive – covered in Section 2 above.

Comment [u29]: Moved section . a - d were "Approval Criteria for Water Resource Protection Zone Reductions in previous draft

~~7. Disturbed areas shall be re-planted and an additional area restored and enhanced with local native plant species at a 1:1.5 ratio. Plans for mitigation in accordance with 18.63.120 are required and shall be submitted with the land use application. The plans shall be designed by a natural resource professional, unless expressly authorized, and comply with all federal and state regulations and permitting requirements and conform to all local regulations and permit requirements related to flood areas.~~

Comment [u30]: Moved to Section 18.63.120 Mitigation Requirements.

~~8. Re-planting activities shall follow these standards:~~

Comment [u31]: Moved to Section 18.63.120 Mitigation Requirements..



a. ~~Re-planting shall include ground cover, under story and tree canopy layers unless the site soils or substrate do not typically support the growth of one or more vegetation layers.~~

b. ~~Re-planting shall be with local native plant species.~~

c. ~~Planting densities and species composition shall be consistent with native riparian area plant communities in the immediate vicinity. Use of a reference site (a nearby site with an intact native riparian plant community) as guidance for developing a re-vegetation plan is recommended.~~

d. ~~Erosion control material shall be applied (e.g. mulch, hay, jute netting, or comparable) to disturbed, re-planted areas.~~

e. ~~Temporary irrigation facilities shall be installed.~~

f. ~~A re-planting project shall include a planting plan map and description of the proposed plant species, size of plant materials, number of plants, spacing and installation methods.~~

g. ~~Native plant species that do not survive the first two years after planting shall be replaced.~~

h. ~~Re-planting shall occur within 90 days of removal.~~

98. Water, drainage and sewer systems shall be designed, located and constructed to avoid the infiltration of floodwaters into the system, and to avoid accidental discharges to rivers, streams and wetlands.

109. Bridges or similar, bottomless crossing structures located in Stream Bank Protection Zones for the purpose of constructing a public or private street, bicycle or pedestrian crossings shall employ the least invasive installation methods possible and conform to all local regulations and permit requirements related to flood areas.

110. Public streets, bridges, utilities, pedestrian and multi-use path connections shall be located in Wetland Protection Zones only based upon a finding that no other reasonable, alternate location outside the Wetland Protection Zone exists.

18.63.080 Water Resource Protection Zones Reductions

~~A. Water Resource Protection Zone Reductions. A Water Resource Protection Zone may be reduced by up to 50 percent by the approval authority through a Type I land use procedure to allow alteration within the Water Resource Protection Zone where it is demonstrated that equal or better protection for identified resources will be ensured through restoration, enhancement and~~



mitigation measures. ~~The approval authority may approve or approve with conditions a request for a Water Resource Protection Zone Reduction based upon findings that the approval criteria in 18.63.100.C and the following standards have been satisfied.~~

~~1. **Pre-existing Lots** For pre-existing lots, legally created prior to the implementation of this ordinance, a Water Resource Protection Zone may be reduced by up to 50 percent when the applicant demonstrates that equal or better protection for identified resources will be ensured through restoration, enhancement and mitigation measures, and that the approval criteria in 18.63.100.C and the following standards have been satisfied.~~

Comment [u32]: Section 1 for pre-existing lots and Section 2 (below) for lots proposed for creation combined for simplicity. Distinction is not necessary under OAR and separate standards were repetitive.

~~A.a. The application of the full Water Resource Protection Zone to the lot or parcel renders it not buildable. The application demonstrates that equal or better protection for identified resources will be ensured through restoration, enhancement and mitigation measures.~~

Comment [u33]: Standard is similar to criteria for hardship variance, and is too high of a threshold for a reduction.

~~Bb. The alteration of the Water Resource Protection Zone is the minimum necessary to efficiently perform the proposed activity and/or use. The proposed development shall minimize disturbance to the Water Resource Protection Zone by utilizing the following design options to minimize or reduce impacts of development.~~

- ~~1i. Multi-story construction shall be used.~~
- ~~2ii. Parking spaces shall be minimized to no more than that required as a minimum for the use.~~
- ~~3iii. Pavement shall be minimized, and all pavement used shall be installed and maintained in a pervious paving material.~~
- ~~4iv. Engineering solutions shall be used to minimize additional grading and/or fill.~~

~~Cc. The proposed use or activity is designed to minimize intrusion into the Water Resource Protection Zone through the use of up to a 50 percent reduction of any dimensional standards (e.g. required front, side and rear yard setbacks; required distance between buildings; or maximum building height) to permit development as far outside or upland of the Water Resource Protection Zone as possible. Such adjustment to any applicable dimensional standards shall be reviewed as part of the requested reduction, and shall not be subject to a separate Variance application under Chapter 18.100. Reductions to dimensional standards may not be used to reduce required Solar Access setbacks without evidence of agreement by the effected property owner(s) to the north through a concurrent Solar Access Variance application as described in section 18.70.060.~~

~~2. **Lots Proposed for Creation** Lots proposed for creation through a land division must demonstrate the existence of a sufficient buildable area outside the Water Resource Protection Zone. A Water Resource Protection Zone Reduction may be proposed for newly~~



created lots only when it can be demonstrated that the alterations proposed are to be offset by appropriate mitigation; that superior protection for the Water Resource will be ensured through restoration, enhancement and mitigation measures; and that the approval criteria in 18.63.100.C and the following standards have been satisfied.

~~a. The extent and nature of the proposed alteration or development will not create site disturbances to an extent greater than the minimum required for the use.~~

Comment [u34]: Repetitive of Standard 2 above.

~~b. The proposal will result in no loss in area or function of the Water Resource:~~

~~i. Any alteration permitted through a Water Resource Protection Zone Reduction shall be mitigated to ensure that there is no net loss of functions and no reduction in the area or spatial extent of Stream Bank or Wetland Protection Zones within the City of Ashland.~~

Comment [u35]: Repetitive of Standard 1 above.

D.ii. Any encroachment or change in on-site or off-site drainage characteristics which would adversely impact the Water Resource has been considered and mitigated.

E. Where natural vegetation has been removed due to alteration or development, erosion control provisions consistent with those described in the Land Use Ordinance and the Engineering Design Standards for Public Improvements shall be implemented. Erosion control measures shall be employed to ensure sediments are not transported to the Water Resource. Erosion control measures shall be installed prior to site preparation or ground-disturbing activities, where applicable. Access roads, staging areas, storage areas and other areas of temporary disturbance necessary to complete the proposed activity shall be restored as soon as possible, but not more than 90 days after authorized land disturbance. Erosion control measures shall be in place concurrently with construction or establishment of the proposed activity. Temporary measures used for initial erosion control shall not be left in place permanently. Guidance on appropriate erosion control measures is contained in the Department of Environmental Quality publication Best Management Practices for Storm Water Discharges Associated With Construction Activities (DEQ Northwest Region 2006, or current upgrade). A copy of this document is available for review at the City of Ashland Planning Division.

Comment [u36]: Use same requirement as used in limited land use section for consistency

3. For all Water Resource Protection Zone Reductions in Sections 1 and 2 above.

~~a. Required plans and information shall be the same as listed in section 18.63.100.A.~~

~~b. Copies of all state and federal permit applications shall be submitted with development applications requiring compliance with this chapter.~~

F. No significant adverse impacts to the structures, functions or values of the Water Resource, including but not limited to water quality, fish and wildlife habitat, flood control capacity, or slope stability will result from approval of the limited activity and/or use, and the application



demonstrates that equal or better protection for the identified Water Resource will be ensured through restoration of disturbed areas within the Water Resource Protection Zone, enhancement of the Water Resource Protection Zone, or similar measures.

G. The structures, functions and values of the Water Resource will be restored through the implementation of an enhancement and restoration strategy set forth in a mitigation plan prepared in accordance with the standards and requirements described in section 18.63.120.

H. All applicable state and federal permits have been or will be obtained prior to commencement of the activity or use.

Comment [u37]: Moved section . a - d were "Approval Criteria for Water Resource Protection Zone Reductions in previous draft

c. The applicant shall enter into a two-year contract for installation and maintenance of local native plant species with the city. Financial security in an amount not less than 110 percent of the cost estimate for installation shall be provided.

Comment [u38]: Repetitive – Included in Section 18.63.120 Mitigation Requirements.

d. Restoration and enhancement shall be on a 1:1.5 area basis or such greater ratios as specified in this chapter for the requested activity. Thus, at a minimum, for every 100 square feet of Water Resource Protection Zone that is altered or used for development purposes, at least 150 square feet of the available remaining Water Resource Protection Zone shall be enhanced or restored. Priority shall be given to removal of noxious vegetation and planting of local native plant species, including ground cover, under story and canopy, in non vegetated areas or areas where noxious plant species are removed. The number and type of plant materials shall be specified in the contract but shall at a minimum comply with the following requirements:

i. No noxious or invasive plants shall be installed and existing noxious or invasive plant materials shall be removed.

ii. Plant materials shall be located in such a manner to maximize enhancement and restoration of the Water Resource Protection Zone, with particular emphasis on temperature reduction of watercourses, erosion control, bank stabilization, and wildlife habitat enhancement.

iii. Installation standards within the required enhancement area are as follows:

- Ground cover shall be hydro-seeded or planted at two-foot intervals or such other interval established by the approval authority as sufficient to attain coverage of the required area within the two-year contract period.

- Under story shall be minimum one gallon materials planted at six-foot intervals or such other interval approved by the approval authority as sufficient to attain adequate coverage within the two-year contract period.



- ~~Canopy trees shall be planted at 20-foot intervals or such other interval as required to install all materials required for tree mitigation pursuant to the tree mitigation requirements of the Ashland Land Use Ordinance.~~
- ~~Additional materials or other habitat enhancements are encouraged.~~

Comment [u39]: Moved to Section 18.63.120 Mitigation Requirements.

~~le. A Water Resource Protection Zone reduction agreement shall be recorded in the public records to give notice of the restrictions and maintenance obligations and to ensure no further encroachment into the Water Resource Protection Zone occurs.~~

~~lf. The applicant may dedicate a conservation easement or equivalent protection instrument to the city, homeowners association or a conservation organization, provided the form of the instrument is approved by the City Attorney and accepted by the council, if offered. Applicants should consult with their legal counsel or tax professionals about the tax advantages of conservation easements.~~

~~g. The approval authority may impose such additional reasonable conditions to mitigate other identified impacts resulting from development on the site.~~

18.63.090 Hardship Variances

In cases where the limitations on activities within a Water Resource Protection Zone unduly restrict the development or use of a legally created lot or parcel of record ~~legally created before the effective date of this ordinance, and the proposal cannot meet the standards for a Water Resource Protection Zone Reduction found in sections 18.63.090.B and 18.63.100.C,~~ a property owner may request a Hardship Variance. ~~Hardship Variances to the provisions of this chapter shall be processed under a Type II land use procedure, shall meet the approval criteria in 18.63.100.D, and are not subject to the Variance requirements of Chapter 18.100.~~ Hardship Variances described shall be reviewed and a decision made through a Type II land use procedure. Hardship Variances are not subject to the Variance requirements of Chapter 18.100.

Comment [u40]: Moved to the approval criteria – new Criteria A.

~~**A. Approval Criteria for Hardship Variances.** All Hardship Variances described in section 18.63.090.C shall be reviewed and a decision made through a Type II land use procedure. Hardship Variances are not subject to the Variance requirements of Chapter 18.100. The approval authority may approve or approve with conditions a request for a Hardship Variance based upon findings that the following approval criteria have been satisfied.~~

~~**A. The proposal cannot meet the standards for a Water Resource Protection Zone Reduction found in sections 18.63.080.**~~

~~**B1. Strict adherence to the provisions described in this chapter would effectively preclude use of the property that could reasonably be expected to occur on similarly zoned parcels, and the property owner would be precluded a substantial property right enjoyed by the majority of landowners in the vicinity.**~~



C2. The proposed activity or use of land would have been permitted prior to the effective date of this ordinance.

D3. The applicant has explored all other reasonable options available under this chapter and throughout the Land Use Ordinance to relieve the hardship.

E4. The Variance is the minimum necessary to permit use of the property in a manner that could reasonably be expected to occur on similarly zoned parcels in the vicinity.

F5. Adverse impacts on the structures, functions or values of the resource including water quality, erosion, or slope stability that would result from approval of this hardship variance have been minimized and will be mitigated to the greatest extent possible through restoration and enhancement of the Water Resource Protection Zone in accordance with an approved mitigation plan.

G6. The applicant has agreed to implement a mitigation and management plan prepared in accordance with the standards and requirements described in section 18.63.120.

H7. All applicable state and federal permit approvals have been or will be obtained prior to commencement of the activity or use.

18.63.08100 Additional Requirements Approval Standards for Land Divisions and Property Line Adjustments Within Water Resource Protection Zones

Planning applications and procedures containing Water Resource Protection Zones and involving the division of land or lot line adjustments shall comply with the following provisions.

A. Building Envelope Established. Each lot shall contain a building envelope outside the Water Resource Protection Zone of sufficient size to permit the establishment of the use and associated accessory uses.

B. Conservation Area. Performance Standards Option, Subdivision and Partition applications shall include the Water Resource Protection Zone within a conservation easement or recorded development restriction, which stipulates that the use or activity within the Water Resource Protection Zone shall be consistent with the provisions of this chapter. The approval authority may require that the Water Resource Protection Zone be included in a separate tract of land managed by a homeowners' association or other common ownership entity responsible for preservation.

C. Density Transfer. Density calculated from the land area contained within the Water Resource Protection Zone may be transferred to lands outside the Water Resource Protection Zone provided the following standards are met.

1. Partitions and subdivisions involving density transfer shall be processed under the Performance Standards Options Chapter 18.88 of the Ashland Municipal Code.



2. A map shall be submitted showing the land area not within the Water Resource Protection Zone to which the density will be transferred.
3. The Water Resource Protection Zone shall be included in a separate preservation tract to be managed by a homeowner's association or other common ownership entity responsible for management of the area.
4. Density may only be transferred within the subject property or to a lot or lots contiguous to the subject property and within the same ownership.
5. The density transferred to lands not within the Water Resource Protection Zone may not be increased to more than one and a half (1.5) times the base density of the underlying zoning district. Fractional units are to be rounded down to the nearest whole number.

D. Management Plan. Long term conservation, management and maintenance of the Water Resource Protection Zone consistent with the requirements of this chapter shall be ensured through preparation and recordation of a management plan as described in 18.63.1420.B.2.ef.

E. Mitigation Requirements. The approval authority may require a mitigation plan in accordance with the requirements of 18.63.120 to mitigate impacts resulting from land divisions.

EE. Exemptions for a Public Purpose. An exemption to the requirements described above shall be granted for lots created for public park purposes, or privately-owned tracts created for the sole purpose of conserving in perpetuity the natural functions and values of the lands contained within the Water Resource Protection Zone.

18.63.090 Map Errors and Adjustments, Water Resource Protection Zone Reductions, and Hardship Variances

A. Map Errors and Adjustments. The Staff Advisor may authorize a correction to a wetland on the Ashland Water Resources Map when the applicant has shown that a mapping error has occurred and the error has been verified by the Oregon Department of State Lands (DSL). Delineations verified by DSL shall be used to automatically update the Ashland Water Resources Map and record the wetland delineation document. No formal variance application or plan amendment is required for map corrections where an approved delineation with a DSL letter of concurrence is provided. Approved delineations shall be subject to the terms of expiration set forth in the DSL approval.

Comment [u41]: Moved to new separate section - Section 18.63.130 Map Errors and Adjustments.

B. Water Resource Protection Zone Reductions. A Water Resource Protection Zone may be reduced by the approval authority through a Type I land use procedure to allow alteration within the Water Resource Protection Zone where it is demonstrated that equal or better protection for identified resources will be ensured through restoration, enhancement and mitigation measures.

Comment [u42]: Moved to Section 18.63.080 Water Resource Protection Zone Reductions.



The approval authority may approve or approve with conditions a request for a Water Resource Protection Zone Reduction based upon findings that the approval criteria in 18.63.100.C and the following standards have been satisfied.

1. Pre-existing Undeveloped Lots—For pre-existing undeveloped lots, legally created prior to the implementation of this ordinance, a Water Resource Protection Zone may be reduced by up to 50 percent when the applicant demonstrates that equal or better protection for identified resources will be ensured through restoration, enhancement and mitigation measures, and that the approval criteria in 18.63.100.C and the following standards have been satisfied.

a. The application of the full Water Resource Protection Zone to the lot or parcel renders it not buildable.

b. The proposed development shall minimize disturbance to the Water Resource Protection Zone by utilizing design options to minimize or reduce impacts of development.

i. Multi-story construction shall be used.

ii. Parking spaces shall be minimized to no more than that required as a minimum for the use.

iii. Pavement shall be minimized, and all pavement used shall be installed and maintained in a pervious paving material.

iv. Engineering solutions shall be used to minimize additional grading and/or fill.

c. The proposed use or activity is designed to minimize intrusion into the Water Resource Protection Zone through the use of up to a 50 percent reduction of any dimensional standards (e.g. required front, side and rear yard setbacks; required distance between buildings; or maximum building height) to permit development as far outside or upland of the Water Resource Protection Zone as possible. Such adjustment to any applicable dimensional standards shall be reviewed as part of the requested reduction, and shall not be subject to a separate Variance application under Chapter 18.100. Reductions to dimensional standards may not be used to reduce required Solar Access setbacks without evidence of agreement by the effected property owner(s) to the north through a concurrent Solar Access Variance application as described in section 18.70.060.

2. Lots Proposed for Creation—Lots proposed for creation through a land division must demonstrate the existence of a sufficient buildable area outside the Water Resource Protection Zone. A Water Resource Protection Zone Reduction may be proposed for newly created lots only when it can be demonstrated that the alterations proposed are to be offset by appropriate mitigation; that superior protection for the Water Resource will be ensured through



restoration, enhancement and mitigation measures; and that the approval criteria in 18.63.100.C and the following standards have been satisfied.

a. The extent and nature of the proposed alteration or development will not create site disturbances to an extent greater than the minimum required for the use;

b. The proposal will result in no loss in area or function of the Water Resource:

i. Any alteration permitted through a Water Resource Protection Zone Reduction shall be mitigated to ensure that there is no net loss of functions and no reduction in the area or spatial extent of Stream Bank or Wetland Protection Zones within the City of Ashland.

ii. Any encroachment or change in on-site or off-site drainage characteristics which would adversely impact the Water Resource has been considered and mitigated.

c. Where natural vegetation has been removed due to alteration or development, erosion control provisions consistent with those described in the Land Use Ordinance and the Engineering Design Standards for Public Improvements shall be implemented;

3. For all Water Resource Protection Zone Reductions in Sections 1 and 2 above.

a. Required plans and information shall be the same as listed in section 18.63.100.A.

b. Copies of all state and federal permit applications shall be submitted with development applications requiring compliance with this chapter.

c. The applicant shall enter into a two-year contract for installation and maintenance of local native plant species with the city. Financial security in an amount not less than 110 percent of the cost estimate for installation shall be provided.

d. Restoration and enhancement shall be on a 1:1.5 area basis or such greater ratios as specified in this chapter for the requested activity. Thus, at a minimum, for every 100 square feet of Water Resource Protection Zone that is altered or used for development purposes, at least 150 square feet of the available remaining Water Resource Protection Zone shall be enhanced or restored. Priority shall be given to removal of noxious vegetation and planting of local native plant species, including ground cover, under story and canopy, in non vegetated areas or areas where noxious plant species are removed. The number and type of plant materials shall be specified in the contract but shall at a minimum comply with the following requirements:



~~i. No noxious or invasive plants shall be installed and existing noxious or invasive plant materials shall be removed.~~

~~ii. Plant materials shall be located in such a manner to maximize enhancement and restoration of the Water Resource Protection Zone, with particular emphasis on temperature reduction of watercourses, erosion control, bank stabilization, and wildlife habitat enhancement.~~

~~iii. Installation standards within the required enhancement area are as follows:~~

- ~~• Ground cover shall be hydro seeded or planted at two foot intervals or such other interval established by the approval authority as sufficient to attain coverage of the required area within the two year contract period.~~
- ~~• Under story shall be minimum one gallon materials planted at six foot intervals or such other interval approved by the approval authority as sufficient to attain adequate coverage within the two year contract period.~~
- ~~• Canopy trees shall be planted at 20 foot intervals or such other interval as required to install all materials required for tree mitigation pursuant to the tree mitigation requirements of the Ashland Land Use Ordinance.~~
- ~~• Additional materials or other habitat enhancements are encouraged.~~

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~~e. A Water Resource Protection Zone reduction agreement shall be recorded in the public records to give notice of the restrictions and maintenance obligations and to ensure no further encroachment into the Water Resource Protection Zone occurs.~~

~~f. The applicant may dedicate a conservation easement or equivalent protection instrument to the city, homeowners association or a conservation organization, provided the form of the instrument is approved by the City Attorney and accepted by the council, if offered. Applicants should consult with their legal counsel or tax professionals about the tax advantages of conservation easements.~~

~~g. The approval authority may impose such additional reasonable conditions to mitigate other identified impacts resulting from development on the site.~~

C. Hardship Variances. In cases where the limitations on activities within a Water Resource Protection Zone unduly restrict the development or use of a lot or parcel legally created before the effective date of this ordinance, and the proposal cannot meet the standards for a Water Resource Protection Zone Reduction found in sections 18.63.090.B and 18.63.100.C, a property owner may request a Hardship Variance. Hardship Variances to the provisions of this chapter shall be processed under a Type II land use procedure, shall meet the approval criteria in 18.63.100.D, and are not subject to the Variance requirements of Chapter 18.100.

18.63.1010 Approval Process—Determination of Compliance



A. Application – Required Plans and Information. The following plans and information shall be submitted with the application for activities and uses in a Water Resource Protection Zone which are required to be processed under a Type I or Type II land use procedure including Limited Activities and Uses, Water Resource Protection Zone Reductions and Hardship Variances.

1. A narrative description of all proposed activities and uses including the extent to which any Water Resource Protection Zone is proposed to be altered or affected as a result of the proposed development activity or use (in terms both of square footage of surface disturbance and cubic yards of overall disturbance).
2. Written findings of fact addressing all applicable approval-development standards and approval criteria.
3. Site development plan map, drawn to scale.

a. For Applications Involving Only a Single Family Residence on a Pre-existing Lot. For applications involving only a single family residence located on a legally created lot of record which was created prior to the effective date of this ordinance, the application shall include a site map of the subject property that includes the information described below. The Staff Advisor may require additional information based upon the character of the site or the specific nature of the proposal.

- i. All watercourses identified (including any drainage ways, ponds, etc).
- ii. Surveyed location of the Water Resource Protection Zone, as described in section 18.63.050. In lieu of a surveyed location, the Staff Advisor may approve a field determination of the Water Resource Protection Zone by the Staff Advisor or his/her designee—the applicant shall be required to stake the top of bank or the upland wetland edge and the boundary of the Water Resource Protection Zone.
- iii. For activities and use proposed within a Stream Bank Protection Zone: identification of the stream as being either fish bearing or non fish bearing; identification of the top of bank; and location of the stream's floodway and floodplain, if applicable. In lieu of a surveyed location, the Staff Advisor may approve a field determination of the top of bank location by the Staff Advisor or his/her designee—the applicant shall be required to stake the top of bank and the boundary of the Stream Bank Protection Zone.
- iv. For activities and uses proposed within a Wetland Protection Zone: a wetland delineation (with an accompanying site map) prepared by a natural resource professional and that has been concurred with by the Oregon Department of State Lands (DSL); and an aerial photo with the wetland boundaries identified.

Comment [u43]: Repetitive – combined with section below. Only difference was allowance for single-family residences on pre-existing lots to have a field determination of the protection zone.



v. Applications involving Wetland Protection Zone Reductions shall include a design and detailed plan prepared by a natural resource professional for the construction of a vegetated swale or comparable natural system within the buffer area for the purpose of treating storm water.

vi. Topographic information at 2-foot contour increments identifying both existing grades and proposed grade changes.

vii. Locations of all trees six inches in diameter at breast height (d.b.h.) or greater located on the property and upon adjacent properties within 15 feet of the property line, identified by edge of canopy, diameter at breast height and species;

viii. The outlines of non-tree vegetation, with a dominant species and any occurrence of non-native, invasive species identified.

ix. Location of existing and proposed development, including all existing and proposed structures, any areas of fill or excavation, stream or wetland crossings, alterations to vegetation, or other alterations to the site's natural state.

x. The location of natural features, structures, and other improvements associated with lands within 150 feet of the proposal.

xi. Land uses within 100 feet of the water resource's edge.

xii. The location of temporary fencing and erosion control measures installed to prevent encroachment and flow of material into the Water Resource Protection Zone, such as sediment fencing and hay bales, etc.

xiii. North arrow and scale.

xiv. Sources of information (federal, state and local).

b. For All Other Applications — For all other applications not covered in section a above, †The application shall include a site map of the subject property prepared by a licensed surveyor, civil engineer or other design professional that includes the information described below. The Staff Advisor may request additional information based upon the character of the site or the specific nature of the proposal.

ai. All watercourses identified (including any drainage ways, ponds, etc).

bii. Surveyed location of the Water Resource Protection Zone, as described in section 18.63.050. For applications involving only a single-family residence located on a legally created lot or parcel of record, in lieu of a surveyed location, the Staff Advisor



may approve a field determination of the Water Resource Protection Zone by the Staff Advisor or his/her designee in which the applicant shall be required to stake the top-of-bank or the upland-wetland edge and the boundary of the Water Resource Protection Zone.

ciii. For activities and use proposed within a Stream Bank Protection Zone: identification of the stream as being either fish-bearing or non-fish-bearing; identification of the top-of-bank or center line as required; and surveyed location of the stream's floodway and floodplain, if applicable.

dii. For activities and uses proposed within a Wetland Protection Zone: a wetland delineation (with an accompanying site map) prepared by a natural resource professional and that has been concurred with by the Oregon Department of State Lands (DSL); and an aerial photo with the wetland boundaries identified.

v. ~~Applications involving Wetland Protection Zone Reductions shall include a design and detailed plan prepared by a natural resource professional for the construction of a vegetated swale or comparable natural system within the buffer area for the purpose of treating storm water.~~

Comment [u44]: Repetitive – covered in Section d above.

evi. Topographic information at 2-foot contour increments identifying both existing grades and proposed grade changes.

fvii. Surveyed locations of all trees six-inches in diameter at breast height (d.b.h.) or greater located on the property and upon adjacent properties within 15-feet of the property line, identified by edge of canopy, diameter at breast height and species;

gviii. The outlines of non-tree vegetation, with a dominant species and any occurrence of non-native, invasive species identified.

hix. Location of existing and proposed development, including all existing and proposed structures, any areas of fill or excavation, stream or wetland crossings, alterations to vegetation, or other alterations to the site's natural state.

ix. The location of natural features, structures, and other improvements associated with lands within 150-feet of the proposal.

ixi. Land uses within 100-feet of the water resource's edge.

kxii. The location of temporary fencing and erosion control measures installed to prevent encroachment and flow of material into the Water Resource Protection Zone, such as sediment fencing and hay bales, etc.



lxiii. North arrow and scale.

lxiv. Sources of information (federal, state and local).

4. Mitigation Plan prepared in accordance with the requirements described in section 18.63.11-20.B.

~~B. Approval Standards for Limited Activities and Uses in Water Resource Protection Zones.~~

~~All Limited Activities and Uses within Water Resource Protection Zones described in section 18.63.070 shall be reviewed and a decision made through a Type I land use procedure. The approval authority may approve or approve with conditions a request to conduct Limited Activities and Uses in a Water Resource Protection Zone based upon findings that the following standards have been satisfied.~~

Comment [u45]: Moved to Section 18.63.070 Limited Activities and Uses.

~~1. The proposed activity shall be designed, located and constructed to minimize excavation, grading, the placement of structures and impervious surfaces, loss of native vegetation, erosion, and adverse hydrological impacts on Water Resources. All activities shall be located as far from streams and wetlands, designed to minimize intrusion into the Water Resources Protection Zone and use as little of the surface area of the Water Resource Protection Zone, as practicable.~~

~~2. Excavation, grading and vegetation removal shall be avoided within the Stream Bank Protection Zone on stream beds or banks within the bank full stage, in wetlands, and on slopes of 25 percent or greater, except where no practicable alternative exists, or where necessary to construct public facilities or to ensure slope stability.~~

~~3. The following standards shall apply when construction activity is proposed in areas where vegetation is to be preserved within a Water Resources Protection Zone.~~

~~a. Work areas on the immediate site shall be carefully identified and marked to reduce potential damage to trees and vegetation. Temporary construction fencing shall be placed at the drip line of trees bordering the work area. No equipment maneuvering, staging or stockpiling shall occur outside of designated work areas.~~

~~b. Trees shall not be used as anchors for stabilizing equipment.~~

~~c. Stockpiling of soil, or soil mixed with vegetation, shall not be permitted in Water Resource Protection Areas on a permanent basis. Temporary storage shall employ erosion control measures to ensure sediments are not transported to adjacent surface waters.~~

~~4. Erosion control measures shall be employed to ensure sediments are not transported to the Water Resource. Erosion control measures shall be installed prior to site preparation or~~



~~ground-disturbing activities, where applicable. Access roads, staging areas, storage areas and other areas of temporary disturbance necessary to complete the proposed activity shall be restored as soon as possible, but not more than 90 days after authorized land disturbance. Erosion control measures shall be in place concurrently with construction or establishment of the proposed activity. Temporary measures used for initial erosion control shall not be left in place permanently. Guidance on appropriate erosion control measures is contained in the Department of Environmental Quality publication Best Management Practices for Storm Water Discharges Associated With Construction Activities (DEQ Northwest Region 2006, or current upgrade). A copy of this document is available for review at the City of Ashland Planning Division.~~

~~5. Plans for stream channel repair and enhancement, riparian habitat restoration and enhancement plans and wetland restoration and enhancement are required and shall be submitted with the land use application. The plans shall be designed by a natural resource professional, comply with all federal and state regulations and permitting requirements and conform to all local regulations and permit requirements related to flood areas.~~

~~6. The removal of vegetation in a Water Resource Protection Zone is limited to the minimum amount necessary to accommodate the activity.~~

~~7. Disturbed areas shall be re-planted and an additional area restored and enhanced with local native plant species at a 1:1.5 ratio.~~

~~8. Re-planting activities shall follow these standards:~~

~~a. Re-planting shall include ground cover, under story and tree canopy layers unless the site soils or substrate do not typically support the growth of one or more vegetation layers.~~

~~b. Re-planting shall be with local native plant species.~~

~~c. Planting densities and species composition shall be consistent with native riparian area plant communities in the immediate vicinity. Use of a reference site (a nearby site with an intact native riparian plant community) as guidance for developing a re-vegetation plan is recommended.~~

~~d. Erosion control material shall be applied (e.g. mulch, hay, jute netting, or comparable) to disturbed, re-planted areas.~~

~~e. Temporary irrigation facilities shall be installed.~~



f. A re-planting project shall include a planting plan map and description of the proposed plant species, size of plant materials, number of plants, spacing and installation methods.

g. Native plant species that do not survive the first two years after planting shall be replaced.

h. Re-planting shall occur within 90 days of removal.

9. Water, drainage and sewer systems shall be designed, located and constructed to avoid the infiltration of floodwaters into the system, and to avoid accidental discharges to rivers, streams and wetlands.

10. Bridges or similar, bottomless crossing structures located in Stream Bank Protection Zones for the purpose of constructing a public street, bicycle or pedestrian crossings shall employ the least invasive installation methods possible and conform to all local regulations and permit requirements related to flood areas.

11. Public streets, bridges, utilities, pedestrian and multi-use path connections shall be located in Wetland Protection Zones only based upon a finding that no other reasonable, alternate location outside the Wetland Protection Zone exists.

C. Approval Criteria for Water Resource Protection Zone Reductions. All Water Resource Protection Zone Reductions described in 18.63.090.B shall be reviewed and a decision made through a Type I land use procedure. The approval authority may approve or approve with conditions a request for a Water Resource Protection Zone Reduction based upon findings that the standards in 18.63.090.B and the following approval criteria have been satisfied.

Comment [u46]: Moved to Section 18.63.080 Water Resource Protection Zones Reductions.

1. The alteration of the Water Resource Protection Zone is the minimum necessary to efficiently perform the proposed activity and/or use.

2. No significant adverse impacts to the structures, functions or values of the Water Resource, including but not limited to water quality, fish and wildlife habitat, flood control capacity, or slope stability will result from approval of the limited activity and/or use, and the application demonstrates that equal or better protection for the identified Water Resource will be ensured through restoration of disturbed areas within the Water Resource Protection Zone, enhancement of the Water Resource Protection Zone, or similar measures.

3. The structures, functions and values of the Water Resource will be restored through the implementation of an enhancement and restoration strategy set forth in a mitigation plan prepared in accordance with the standards and requirements described in section 18.63.110.B.



4. All applicable state and federal wetland permits have been obtained or will be obtained prior to commencement of the activity or use.

~~D. Approval Criteria for Hardship Variances. All Hardship Variances described in section 18.63.090.C shall be reviewed and a decision made through a Type II land use procedure. Hardship Variances are not subject to the Variance requirements of Chapter 18.100. The approval authority may approve or approve with conditions a request for a Hardship Variance based upon findings that the following approval criteria have been satisfied.~~

Comment [u47]: Moved to Section 18.63.090 Hardship Variances.

~~1. Strict adherence to the provisions described in this chapter would effectively preclude use of the property that could reasonably be expected to occur on similarly zoned parcels, and the property owner would be precluded a substantial property right enjoyed by the majority of landowners in the vicinity.~~

~~2. The proposed activity or use of land would have been permitted prior to the effective date of this ordinance.~~

~~3. The applicant has explored all other reasonable options available under this chapter and throughout the Land Use Ordinance to relieve the hardship.~~

~~4. The Variance is the minimum necessary to permit use of the property in a manner that could reasonably be expected to occur on similarly zoned parcels in the vicinity.~~

~~5. Adverse impacts on the structures, functions or values of the resource including water quality, erosion, or slope stability that would result from approval of this hardship variance have been minimized and will be mitigated to the greatest extent possible through restoration and enhancement of the Water Resource Protection Zone in accordance with an approved mitigation plan.~~

~~6. The applicant has agreed to implement a mitigation and management plan.~~

~~7. All applicable state and federal permit approvals have been or will be obtained.~~

BE. Building Permits and Development Activities. When approval of a planning application is not required, other permit applications for the construction of structures or other development activities on properties containing Water Resource Protection Zones shall be reviewed by the Staff Advisor, or his or her designee, to assure that Water Resource Protection Zones are accurately identified on a site plan and that Limited Activities and Uses or other site disturbances will not be conducted within the Water Resource Protection Zone.

1. Temporary Fencing and Erosion Control Measures - Temporary fencing and erosion control measures may be required to be installed to prevent encroachment and flow of material or other debris into the Water Resource Protection Zone and to otherwise prevent



impacts to the Water Resource Protection Zone by clearly identifying its boundaries. When required, these measures shall be installed and site-verified by the Staff Advisor before any permits are issued and prior to the commencement of excavation, grading, site clearing, construction or similar site work resulting in changes to the land.

CF. Required Information Waived – Determination. Applications for Limited Activities and Uses, building permit and other development activities under this chapter involving properties containing a Water Resource Protection Zone shall accurately indicate the locations of these features and all other information as described and required above. The Staff Advisor may waive one or more of the required submittals elements of the site development plan map in 18.63.110.A.3 if evidence is provided conclusively demonstrating that proposed excavation, grading, site clearing, construction or similar actions resulting in changes to the property are not located within the boundaries of the Water Resource Protection Zone.

Comment [u48]: Provides more specificity as to what application submittals can be waived. For example, if there are trees on a property 200 feet from the riparian corridor, the Staff Advisor could determine that these trees would not need to be surveyed.

18.63.1420 Mitigation Requirements

A. When a Mitigation Plan is Required. A mitigation plan is required for applications that involve: Limited Activities and Uses within a Water Resource Protection Zone, Water Resource Protection Zone Reductions, Hardship Variances, or as otherwise stipulated by the approval authority as a condition of approval.

B. Mitigation Plan Requirements.

1. For Applications Involving Only a Single-Family Residence on a Pre-existing Lot and Limited Activities and Uses For applications involving only a single-family residence located on a legally created lot or parcel of record which was created prior to the effective date of this ordinance or Limited Activities and Uses, the applicant may follow a prescriptive mitigation plan available separately from the City of Ashland Planning Division addressing the following standards, or meet the mitigation plan requirements in section 2 below.

Comment [u49]: Limited Activities and Uses are narrow in scope and probably should have the ability to do a more streamlined mitigation plan.

a. Vegetation Preservation and Construction Staging. The following standards shall apply when construction activity is proposed in areas where vegetation is to be preserved within a Water Resources Protection Zone.

i. Work areas on the immediate site shall be carefully identified and marked to reduce potential damage to trees and vegetation. Temporary construction fencing shall be placed at the drip line of trees bordering the work area. No equipment maneuvering, staging or stockpiling shall occur outside of designated work areas.

ii. Trees shall not be used as anchors for stabilizing equipment.



iii. Stockpiling of soil, or soil mixed with vegetation, shall not be permitted in Water Resource Protection Areas on a permanent basis. Temporary storage shall employ erosion control measures to ensure sediments are not transported to adjacent surface waters.

b. Restoration. Disturbed areas shall be re-planted and an additional area restored, re-planted and enhanced at a 1:1.5 ratio. Re-planting activities shall follow these standards:

i. Priority shall be given to removal of noxious and invasive vegetation and planting of local native plant species.

ii. Plant materials shall be located in such a manner to maximize enhancement and restoration of the Water Resource Protection Zone, with particular emphasis on temperature reduction of watercourses, erosion control, bank stabilization and wildlife habitat enhancement.

iii. Re-planting shall include ground cover, under story and tree canopy layers unless the site soils or substrate do not typically support the growth of one or more vegetation layers.

iv. Re-planting shall be with local native plant species. The use of noxious and invasive plants are prohibited.

v. Planting densities and species composition shall be consistent with native riparian area plant communities in the immediate vicinity. Use of a reference site (a nearby site with an intact native riparian plant community) as guidance for developing a re-vegetation plan is recommended.

vi. Ground cover shall be hydro-seeded or planted at two-foot intervals or such other interval established by the approval authority as sufficient to attain coverage of the required area within a two-year period.

vii. Under-story plantings shall be a minimum one-gallon materials planted at six-foot intervals or such other interval approved by the approval authority as sufficient to attain adequate coverage within a two-year period.

viii. Canopy trees shall be planted at 20-foot intervals or such other interval as required to install materials required for tree mitigation pursuant to the tree mitigation requirements of the Ashland Land Use Ordinance.

ix. Erosion control material shall be applied (e.g. mulch, hay, jute-netting, or comparable) to disturbed, re-planted areas.



x. Temporary irrigation facilities shall be installed.

xi. Native plant species that do not survive the first two years after planting shall be replaced.

xii. Re-planting shall occur within 90 days of authorized land disturbance.

xiii. A re-planting project shall include landscape and irrigation plans, with details addressing the proposed plant species, size of plant materials, number of plants, timing of plantings, plant spacing and installation methods. Plant sources and suppliers shall be identified

c. **Herbicides, Pesticides and Fertilizers.** Using herbicides, pesticides or chemical fertilizers in a Water Resources Protection Zone shall not be permitted unless in compliance with state and federal regulations and any necessary permits are obtained.

2. For All Other Applications – For all other applications not covered in section 1 above, the mitigation plan shall contain at a minimum the following components.

a. Objectives and Standards of Mitigation. A mitigation plan shall state specific plan objectives and establish clear and measurable standards for determining if stated objectives have been accomplished. For example, the objective might be to restore or enhance the shade canopy within a Stream Bank Protection Zone to benefit fish and reduce water temperature, while the standard might be a certain percentage of shade canopy coverage at the end of one year and 100 percent shade canopy coverage after three years.

b. Assessment of Water Resource Protection Zone Structures, Functions and Values. A mitigation plan shall include an assessment of the structures, functions and values (i.e. water quality, flood control, habitat, etc.) that will be adversely impacted by the proposed alterations of the Water Resource Protection Zone and a clear explanation of how these impacts are to be mitigated.

c. Mitigation Site/Grading Plan. A statement and detailed plan of the location, elevation, and hydrology of the mitigation area, including a grading plan at two-foot contour intervals. For applications involving Wetland Protection Zones, the application shall demonstrate that plants have adequate access to site hydrology. For applications involving Stream Bank Protection Zones, the grading plan shall identify newly planted areas and include slope stabilizing measures to prevent erosion, ensure vegetative coverage and limit plant mortality.



d. **Landscape Plan.** The landscape plan shall be size- and species-specific, with details addressing the timing of plantings, proposed plant placement and plant spacing. Priority shall be given local native plant species. Plant sources and suppliers shall be identified. Plants identified as noxious, invasive, or non-native are prohibited.

e. **Herbicides, Pesticides and Fertilizers.** Using herbicides, pesticides or chemical fertilizers in a Water Resources Protection Zone shall not be permitted unless in compliance with state and federal regulations and any necessary permits are obtained.

Comment [u50]: Previously, similar language included under exempt section, but was not addressed for land use applications.

f. **Management Plan.** As a condition of approval, except in the case of an existing lot containing only a single family home, the applicant shall implement a management plan for the Water Resource Protection Zone and resource areas under the applicant's ownership or control, including the areas restored and enhanced to assure long term conservation and maintenance. The management plan shall detail proposed monitoring and maintenance, and shall include a schedule delineating how completed projects will be monitored and reported to the Staff Advisor. The management plan shall contain the following requirements.

- i. The approved mitigation plan.
- ii. Identification of Water Resources and Water Resource Protection Zone management practices to be conducted and proposed intervals.
- iii. Provisions for the ongoing removal and management of noxious or invasive vegetation and debris.
- iv. Provisions for the protection of protected plant and animal species in accordance with recommendations from applicable state and federal agencies.
- v. Specific provisions for city enforcement of the management plan.
- vi. Any additional measures deemed necessary to protect and maintain the structures, functions and values of the Water Resource Protection Zone (e.g., signage delineating preservation boundaries).
- vii. Provisions for the perpetual protection and maintenance of the Water Resource and Water Resource Protection Zone including but not limited to the following.



viii. Recordation of a conservation easement or Conditions, Covenants, and Restrictions (CC&Rs) which prescribe the conditions and restrictions set forth in the approved land use application, development permit, building permit, or proposed public facilities plans, and any imposed by state or federal permits.

ix. Transfer of the ownership and maintenance responsibilities for the area to a willing public agency, non-profit association or private conservation organization with a recorded conservation easement prescribing the conditions and restrictions set forth in the approved land use application, development permit, building permit, or proposed public facilities plans, and any imposed by state or federal permits.

x. Other mechanisms addressing long-term protection, maintenance and mitigation consistent with the purposes and requirements of this ordinance as deemed appropriate and acceptable by the approval authority.

xi. The following statements.

- "There shall be no alteration of the Water Resource Protection Zones as delineated and shown on the attached plan" (attach reduced plan).
- "There shall be no alteration of the size, shape or design of an approved Water Resource Protection Zone without prior approval by the City of Ashland".
- "There shall be no amendment or change to this Management Plan without prior approval of the City of Ashland".

gf. A Contingency Plan. Restored and enhanced Water Resource Protection Zones generally require periodic adjustments, especially during the first year. The contingency plan shall specify what procedures will be followed should stated plan objectives and established standards not be met, and include a timeline for addressing any deficiencies through actions of additional restoration and enhancement.

hg. A Performance Guarantee. In general, mitigation shall be implemented prior to or concurrently with the project. The approval authority may require a performance bond or similar monetary insurance of up to 110 percent of the proposal's cost to guarantee that the mitigation proposal will be carried out as approved, and to ensure that the objectives are met through demonstration of compliance with measurable standards and that the site will be maintained to keep the Water Resource functioning properly.



18.63.130 Map Errors and Adjustments

A. Map Errors and Adjustments. The Staff Advisor may authorize a correction to a wetland on the Water Resources Map when the applicant has shown that a mapping error has occurred and the error has been verified by the Oregon Department of State Lands (DSL). Delineations verified by DSL shall be used to automatically update the Water Resources Map and record the wetland delineation document. No formal variance application or plan amendment is required for map corrections where an approved delineation with a DSL letter of concurrence is provided. Approved delineations shall be subject to the terms of expiration set forth in the DSL approval.

DRAFT



ATTACHMENT B

AMC 18.63 with Changes Copy

Draft Chapter 18.63 Water Resource Protection Zones
(Changes shown in Copy A are integrated with notes explaining changes)



Chapter 18.63
WATER RESOURCE PROTECTION ZONES

SECTIONS:

- 18.63.010 Purpose and Intent
- 18.63.020 Applicability
- 18.63.030 Definitions
- 18.63.040 Inventory of Ashland's Water Resources
- 18.63.050 Establishment of Water Resource Protection Zones
- 18.63.060 Exempt Activities and Uses within Water Resource Protection Zones
- 18.63.070 Limited Activities and Uses within Water Resource Protection Zones
- 18.63.080 Water Resource Protection Zones Reductions
- 18.63.090 Hardship Variances
- 18.63.100 Approval Standards for Land Divisions and Property Line Adjustments Within Water Resource Protection Zones Reductions
- 18.63.110 Approval Process
- 18.63.120 Mitigation Requirements
- 18.63.130 Map Errors and Adjustments

18.63.010 Purpose and Intent

The purpose and intent of this chapter are:

- A. To implement state and federal law with respect to the protection of clean water, pollution control and preservation of endangered species.
- B. To protect Ashland's Goal 5 significant wetlands and riparian areas, thereby protecting and restoring the hydrologic, ecologic and land conservation functions these areas provide for the community.
- C. To implement the provisions of Statewide Planning Goals 6 and 7, which require the buffering and separation of those land uses and activities that lead to or may create impacts on water quality, as well as to reduce the risk to people and property resulting from the inappropriate management of wetland and riparian areas.
- D. To implement the goals and policies of the Environmental Resources chapter of Ashland's Comprehensive Plan with respect to water resources, wetlands, floodplains and stream flooding.
- E. To reduce flood damage and potential loss of life in areas subject to periodic flooding.



F. To better manage storm water drainage, minimize maintenance costs, protect properties adjacent to drainage ways, improve water quality, protect riparian and aquatic fish and wildlife habitat and provide opportunities for trail connections.

G. To protect water associated with Ashland's hydrology for human uses, fish and wildlife and their habitats.

H. To control erosion and limit sedimentation.

I. To protect the amenity values and educational opportunities of Ashland's wetlands, water bodies and associated riparian areas as community assets.

J. To improve public appreciation and understanding of wetlands and riparian areas for their unique ecosystem structures and functions and for the human-nature interactions they provide.

K. To improve and promote coordination among local, state, and federal agencies regarding development activities near Ashland's wetlands, water bodies and associated riparian areas.

L. In cases of hardship, to provide a procedure to alter wetlands and riparian areas only when offset by appropriate mitigation, as stipulated in the ordinance and other applicable state and federal requirements.

18.63.020 Applicability

A. The provisions of this Chapter apply to all lands containing Water Resources and Water Resource Protection Zones. Water Resources include all streams and wetlands. Water Resource Protection Zones are buffer areas of varying widths surrounding Water Resources and include Stream Bank Protection Zones and Wetland Protection Zones. Water Resources and Water Resource Protection Zones are defined, established and protected in this Chapter.

B. State and federal wetland and riparian regulations will continue to apply within the City of Ashland, regardless of whether or not these areas are mapped on Ashland's Water Resources Map. Nothing in this chapter shall be interpreted as superseding or nullifying state or federal requirements. Additionally, the City of Ashland shall provide notification to the Oregon Department of State Lands (DSL), as required by Division 23 Administrative Rules, for all applications concerning development permits or other land use decisions affecting wetlands on the inventory.

C. The burden is on the property owner to demonstrate that the requirements of this Chapter are met or are not applicable to development activity or other proposed use or alteration of land. The Staff Advisor may make a determination based on the Water Resources Map, field check, and any other relevant maps, site plans and information that a Water Resource or Water Resource Protection Zone is not located on a particular site or is not impacted by proposed development, activities or uses. In cases where the location of the Water Resource or Water Resource



Protection Zone is unclear or disputed, the Staff Advisor may require a survey, delineation prepared by a natural resource professional, or a sworn statement from a natural resource professional that no Water Resources or Water Resource Protection Zones exist on the site.

D. All Water Resources and Water Resource Protection Zones shall be protected from alteration and development, except as specifically provided in this Chapter. No person or entity shall alter or allow, or permit or cause to be altered any real property designated as a Water Resource or Water Resource Protection Zone, except as set forth in an exemption, planning action or permit authorized in this Chapter. No person or entity shall use or allow, or permit or cause to be used, property designated as a Water Resource or Water Resource Protection Zone, except as set forth in an exemption, planning action or permit authorized in this Chapter.

18.63.030 Definitions

Alter or Alteration - means any human-induced physical change to the existing condition of land or improvements thereon including but not limited to clearing, grubbing, draining, removal of vegetation (chemical or otherwise), excavation, grading, placement of fill material, placement of structures or impervious surfaces or other construction. **"Permit to be altered"** means allowing or failing to prevent the alteration.

Approval Authority – The Staff Advisor, Planning Commission or its Hearings Board, Hearings Officer, or City Council as determined by the applicable procedural requirements.

Bank Full Stage - means the two-year recurrence interval flood elevation.

Clearing - means the removal, redistribution or disturbance of vegetation, soil or substrate that may include trees, brush, grass, ground cover, or other vegetative matter from a site.

Drainage Ditch or Channels" include:

1. Roadside ditches that carry only storm water runoff from the adjacent road and the immediate surrounding area. (Drainage ditches do not include historically altered streams or channels that convey surface water flows. These features are still classified as streams for the purpose of this ordinance.)
2. Constructed channels designed as part of the storm water infrastructure and drain directly from storm water facilities or storm pipe systems.

Enhancement - means actions performed to improve the condition or functions and values of a Water Resource and its associated Protection Zone. Enhancement actions include but are not limited to increasing plant diversity, increasing fish and wildlife habitat, installing environmentally compatible erosion controls, and removing invasive plant species.



Fill Material - means a deposit of earth or other natural or manmade material placed by artificial means.

Filling - means the act of placing fill material in any amount, including the temporary stockpiling of fill material.

Fish Bearing or Fish Habitat - means inhabited at any time of the year by anadromous or game fish species or fish that are listed as threatened or endangered species under the state or federal endangered species acts. Fish use is determined from Oregon Department of Forestry Stream Classification, Oregon Department of Fish and Wildlife and Oregon Department of State Lands maps for salmonid fish distribution.

Comment [u1]: Section 18.63050, Establishment of Water Resource Zones refers to fish-bearing. Fish use is not referenced in the chapter.

Hand-Held Equipment or Machinery - means equipment or machinery held in and operated by hand. Hand-held equipment or machinery includes but is not limited to manual tools, weed eaters, chainsaws, and equipment or machinery with wheels and a weight of 100 pounds or less (e.g. push lawn mowers, brush mowers). For the purposes of this ordinance, equipment or machinery with wheels and a weight in excess of 100 pounds are not considered hand-held equipment.

Impervious Surface – means surface materials which prevent the normal infiltration of storm water into the ground.

Lawn - means grass or similar materials maintained as a ground cover of less than 6 inches in height. For purposes of this ordinance, lawn is not considered native vegetation regardless of the species used.

Legally Created Lot or Parcel of Record - for purposes of this chapter includes a lot or parcel that was legally created and recorded prior to the adoption of land division ordinances or a lot or parcel shown on a final plat approved and recorded prior to the effective date of the ordinance codified in this chapter. A “legally created lot or parcel of record” also includes a lot or parcel recorded after the effective date of the ordinance codified in this chapter, but only if the lot or parcel was approved on a preliminary plat approved prior to the effective date of the ordinance codified in this chapter and the final plat recordation is in compliance with the original approved timetable of development.

Legally Established Nonconforming Activities, Uses and Structures - Nonconforming activities, uses and structures that were legally established prior to the effective date of this ordinance.

Local Native Plant Species – means those plant species appropriate to planting in or adjacent to a Water Resource that are native species indigenous to Jackson County. Local native plant species are adapted to the elevation, weather, soils and hydrology of the area; will support the desired structures, functions, and values of the water resource; and once established require significantly less maintenance than non-native species. The City of Ashland Planning Division



maintains a list of recognized site-appropriate native plant species for both wetland and stream bank water resource applications, along with a list of known local suppliers.

Mitigation - means taking one or more of the following actions listed in order of priority:

1. Avoiding the impact altogether by not taking a certain development action or parts of that action.
2. Minimizing impacts by limiting the degree or magnitude of the development action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the development action by monitoring and taking appropriate corrective measures.
5. Compensating for the impact by replacing or providing comparable substitute resources or environments.

Mitigation Plan - means a plan that outlines the activities that will be undertaken to alleviate project impacts to sensitive areas.

Natural Resources Professional – A “natural resources professional” includes individuals who have a Bachelors degree, or the equivalent or greater, in the field of natural resources, biology, ecology, or related fields, and at least four (4) years of relevant post graduate experience.

Non-native Species - means a plant species which is not indigenous to the local area.

Noxious, Invasive and/or Non-native Vegetation – means plant species which are recognized as having a significant potential to disrupt the functions and values of local Water Resource ecosystems. The City of Ashland Planning Division maintains a list of recognized noxious, invasive and non-native plants.

Other Possible Wetland – means an area that appears to meet wetland criteria but is too small (less than 0.5 acre according to Oregon Department of State Lands (DSL) rules) to require its inclusion in the Local Wetland Inventory. The Water Resources Map notes areas that are in the Other Possible Wetland designation. However, there may be additional existing areas that meet the Other Possible Wetland designation, but are not included on the Water Resources Map.

Power Assisted Equipment or Machinery - means equipment or machinery other than hand-held equipment. For the purposes of this ordinance, equipment or machinery with wheels is considered power assisted equipment.

Primary Structure – A building in which the principal use of the zoning district in which it is located is conducted.



Protection Zone – An area subject to the provisions of this chapter which includes a Water Resource and an associated buffer area of varying width, as established herein, located adjacent to the Water Resource and in which certain human activities are regulated in order to protect the structures and functions of the resource.

Restoration - means efforts performed to re-establish the functional values and characteristics of a critical area that have been destroyed or degraded by past alterations (e.g., filling, grading or draining).

Riparian Area – means the area adjacent to a Stream Bank Water Resource, consisting of the area of transition from an aquatic ecosystem to a terrestrial ecosystem, which affects or is directly affected by the Water Resource.

Riparian Buffer – An area adjacent to the riparian area that preserves and protects the riparian area and its environmental functions.

Riparian Corridor - “Riparian corridor” is a Goal 5 resource that includes the water areas, fish habitat, adjacent riparian areas, and wetlands within the riparian area boundary. A Riparian Corridor is a type of Stream Bank Protection Zone.

Stream – A stream means a channel such as a river or creek that carries flowing surface water, including perennial, intermittent and ephemeral streams with defined channels, and excluding man-made irrigation and drainage channels. Drainage channels do not include historically altered streams or channels that convey surface water flows. A stream is a type of Water Resource.

Stream, Ephemeral - An ephemeral stream generally flows only during and following a rain event. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow. Intermittent and Ephemeral Streams is a type of Stream Bank Protection Zone.

Stream, Intermittent - An intermittent stream generally flows only during part of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow. Intermittent and Ephemeral Streams is a type of Stream Bank Protection Zone.

Stream, Perennial - A perennial stream has flowing water year-round during a typical year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Stream, Local – Local Streams is a type of Stream Bank Protection Zone.

Stream Bank Protection Zone – An area subject to the provisions of this chapter which includes a stream and an associated buffer area of varying width, as established herein, located adjacent



to the stream, and in which certain human activities are regulated in order to protect the structures and functions of the stream. A Stream Bank Protection Zone is a type of Water Resource Protection Zone. There are three types of Stream Bank Protection Zones defined, established and protected in this Chapter – Riparian Corridor, Local Streams and Intermittent and Ephemeral Streams.

Stream Bank Protection Zone Boundary - An imaginary line that is a standard distance upland from the top of bank.

Stream Corridor Functions - include providing shade for the stream, stream bank and channel stability, woody debris for the stream, sediment retention, litter for aquatic organisms in the stream, water filtration, aquatic and riparian fish and wildlife habitat.

Top of Bank - means the elevation at which water overflows the natural banks of streams or other waters of the state and begins to inundate upland areas. Physical characteristics that indicate the elevation include a clear, natural line impressed on the shore, a change from bare soil to upland vegetation (e.g. oak, fir, pine), a change in vegetation from riparian vegetation (e.g. willows, big leaf maple, alders) to upland vegetation (e.g. oak, fir, pine), a textural change of depositional sediment or changes in the character of the soil (e.g. from sand, sand and cobble, cobble and gravel to upland soils), absence of fine debris (needles, leaves, cones and seeds), and the presence of water-borne litter or debris, water-stained leaves or water lines on tree trunks. In the absence of physical evidence or where the top of each bank is not clearly defined, the two-year recurrence interval flood elevation may be used to approximate the top of bank.

Comment [u2]: Provides specific factors to determine the top of bank. Based on Oregon Division of State Lands definition.

Upland – Land not characterized by the presence of riparian area, water bodies or wetlands.

Water Resource - means a riparian, local, intermittent, or ephemeral stream corridor or a wetland, as distinguished from a Protection Zone, which extends upland from the Water Resource.

Water Resources Map – The adopted City of Ashland map which identifies the approximate locations of Water Resources in Ashland including officially recognized streams and wetlands identified on Ashland's Local Wetland Inventory.

Water Resource Protection Zone - An area subject to the provisions of this chapter which includes a Water Resource and an associated buffer area of varying width, as established herein, located adjacent to the Water Resource and in which certain human activities are regulated in order to protect the structures, functions and values of the resource. Water Resource Protection Zone is a category including Stream Bank Protection Zones and Wetland Protection Zones, and is used throughout this title to refer to Stream Bank Protection Zones and Wetland Protection Zones.

Wetlands - means those areas that are inundated or saturated by surface or ground water at a frequency or duration sufficient to support, and that under normal circumstances do support, a



prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are a type of Water Resource.

Wetlands, Locally Significant – means those wetlands identified on the Water Resources Map and determined “significant wetlands” using the criteria adopted the Oregon Department of State Lands (DSL). Locally Significant Wetlands is a type of Wetland Protection Zone.

Wetlands, Other Possible – Other Possible Wetlands is a type of Wetland Protection Zone.

Wetland Boundary - means a line marked on a map or flagged in the field that identifies the approximate wetland/non-wetland boundary.

Wetland Buffer – means an area extending away from the outer delineated wetland boundary or upland edge that is preserved for the purpose of protecting the functions and values of the wetland by serving to reduce the adverse effects of adjacent land uses on water quality and habitat functions of the wetland.

Wetland Delineation - means a determination of wetland presence that includes marking the wetland boundaries on the ground and/or on a detailed map prepared by professional land survey or similar accurate methods.

Wetland Functions – include wildlife habitat, fish habitat, water quality and hydrological control.

Wetland Protection Zone – An area subject to the provisions of this chapter that includes all wetlands determined to be locally significant and other possible wetlands with confirmed jurisdictional wetland presence, and an associated buffer area of varying width, as established herein, located adjacent to the wetland, and in which certain human activities are regulated in order to protect the structures and functions of the wetland. A Wetland Protection Zone is a type of Water Resource Protection Zone. There are two types of Wetland Protection Zones defined, established and protected in this Chapter – Locally Significant Wetlands and Other Possible Wetlands.

Wetland Specialist – means an individual who has the appropriate credentials verifying proven expertise and vocational experience conducting wetland delineations.

18.63.040 Inventory of Ashland’s Water Resources

The approximate locations of Ashland’s Water Resources are identified on official maps adopted by the City of Ashland and added to the Comprehensive Plan through ordinance 2419 (May 1987), ordinance 2528 (July 1989) and ordinance _____ (June 2008). Because the Comprehensive Plan maps are acknowledged to be approximate, the more precise wetland boundaries can be mapped, staked and used for development review purposes without a modification of the Comprehensive Plan maps.



18.63.050 Establishment of Water Resource Protection Zones

A Water Resource Protection Zone is hereby established adjacent to all Water Resources to protect their integrity, function and value. The boundaries of the following Water Resource Protection Zones shall be established by an on-site survey based upon the following standards.

A. Stream Bank Protection Zones. The following types of Water Resource Protection Zones are hereby established to protect streams and their associated riparian resources. The approximate locations of streams are identified on the Water Resources Map.

1. **Riparian Corridor** - The required protection zone for Riparian Corridor fish-bearing streams with an annual average stream flow less than 1,000 cubic feet per second shall extend 50-feet upland from the top of bank.
2. **Local Streams** - The required protection zone for non-fish-bearing Local Streams shall extend 40-feet from the centerline of the stream.
3. **Intermittent and Ephemeral Streams** - The required protection zone for intermittent and ephemeral streams shall extend 30-feet from the centerline of the stream.
4. **Significant Wetland Presence** - Where a Stream Bank Protection Zone includes all or part of a significant wetland as identified on official maps adopted by the City of Ashland, the distance to the Stream Bank Protection Zone boundary shall be measured from, and include, the upland edge of the wetland.
5. **Determination of Protection Zone** - The measurement of the Stream Bank Protection Zones shall be a horizontal distance. In areas where the top of each bank is not clearly defined, the boundary of the Stream Bank Protection Zone shall be determined by measuring from the ordinary high water level based upon a two-year flood interval occurrence, or the line of non-aquatic vegetation (edge of riparian area boundary), whichever is most landward.

Comment [u3]: Protection zone measured from center line of stream per Planning Commission direction from 7.22.08 meeting

Comment [u4]: Protection zone measured from center line of stream per Planning Commission direction from 7.22.08 meeting

B. Wetland Protection Zones. The following types of Water Resource Protection Zones are hereby established to protect wetland resources. The approximate locations of Locally Significant Wetlands and Other Wetlands are identified on the Water Resources Map. The precise boundary of a Wetland Protection Zone shall be established through conducting an on-site wetland delineation and survey based upon the following standards.

1. **Locally Significant Wetlands** – For wetlands classified as locally significant on the Water Resources Map, the Wetland Protection Zone shall consist of all lands identified to have a wetland presence on the wetland delineation, plus a wetland buffer consisting of all lands within 50-feet of the upland-wetland edge. The measurement shall be a horizontal distance. A wetland delineation prepared by a qualified wetland specialist shall be submitted to the City of Ashland that graphically represents the location of wetlands on a site plan map in accordance with section 18.63.110.A.3. An average buffer width of 50-feet may be utilized around the



perimeter of a significant wetland upon submission of evidence and a detailed plan by a natural resources professional demonstrating that equal or better protection of the functions and values of the resource will be ensured, and that there will be an enhanced buffer treatment through the implementation and maintenance of a restoration and enhancement plan within the buffer area.

2. Other Possible Wetlands – For wetlands not classified as locally significant on the Water Resources Map, the Wetland Protection Zone shall consist of all lands identified to have a wetland presence on the wetland delineation, plus all lands within 20-feet of the upland-wetland edge. Other Possible Wetlands includes all areas designated as such on the Water Resources Map and any unmapped wetlands discovered on site. The measurement shall be a horizontal distance. A wetland delineation prepared by a qualified wetland specialist shall be submitted to the City of Ashland that graphically represents the location of wetlands on a site plan map in accordance with section 18.63.110.A.3. An average buffer width of 20-feet may be utilized around the perimeter of a possible wetland upon submission of evidence and a detailed plan by a natural resources professional demonstrating that equal or better protection of the functions and values of the resource will be ensured.

18.63.060 Exempt Activities and Uses within Water Resource Protection Zones

Comment [u5]: For consistency with “Sections” at beginning of chapter and for consistency throughout document.

A. Exempt Activities Within Stream Bank Protection Zones. The following activities and uses do not require a permit or authorization from the City to be conducted in a Stream Bank Protection Zone, provided the following requirements are met. All disturbed soil surface area shall be re-planted using local native plant species, erosion control material shall be applied (e.g. mulch, hay, jute-netting, or comparable) and temporary irrigation facilities shall be installed. Re-planting, erosion control and temporary irrigation shall be installed within 90 days of authorized soil surface area disturbances. Soil disturbance shall not result in permanent changes to the topography of the Stream Bank Protection Zone. Using herbicides, pesticides or chemical fertilizers in the Stream Bank Protection Zone shall not be permitted as part of the exempt activities. All applicable state and federal permits have been or will be obtained prior to commencement of the activity or use.

Comment [u6]: This applies to all exempt activities. To delete repetition, similar language was removed from individual exempt activities.

1. Non-native, Noxious and Invasive Vegetation Removal - Removal of non-native vegetation, and noxious and invasive vegetation listed on the City of Ashland’s Noxious and Invasive Plant List with hand-held equipment. The act of removing non-native, noxious and invasive vegetation shall not result in the removal of native vegetation including native trees of all sizes (e.g. tree saplings, mature trees) or the removal of non-native trees greater than six inches diameter at breast height.

2. Routine Planting - The planting of local native plant species or the replacement of non-native plants with local native plant species with hand-held equipment.



3. **Fuel Reduction** - Cutting or thinning of vegetation with hand-held equipment or machinery, consistent with City standards for Wildfire Lands described in the Physical and Environmental Constraints Chapter 18.62 and determined to be necessary as part of an approved fire hazard prevention/fuel reduction plan, provided that the cutting/thinning is the minimum necessary to alleviate the potential hazard.

4. **Testing** – Site investigative work with minimal surface area disturbance conducted by or required by a city, county, state, or federal agency, such as but not limited to surveys, percolation tests, soil borings or other similar tests.

5. **Landscaping, Lawn and Tree Maintenance** - The limitations imposed by this chapter do not include the routine maintenance of existing vegetation within a Stream Bank Protection Zone, provided that the following requirements are met.

a. Existing lawn within the riparian corridor may be maintained, but not expanded within the Stream Bank Protection Zone.

b. Maintenance pruning of existing trees shall be kept to a minimum and shall be in accordance with the Tree Preservation and Protection Chapter 18.61 and with the American National Standards Institute (ANSI) standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, or resource functions (i.e. shade, soil stability, erosion control, etc.)

6. **Outdoor Uses** – The establishment of outdoor uses such as yards and gardens where the outdoor use area meets all of the following.

a. The total outdoor use area in the Stream Bank Protection Zone, including existing and new outdoor use areas in the Stream Bank Protection Zone, does not exceed 150 square feet per lot.

b. The outdoor use area is located upland of the top of bank of a stream.

c. Porous solid surfaces, with the exception of decks, may be installed in the outdoor use area.

d. No trees six inches diameter at breast height (dbh) are removed.

e. Plantings do not include plants on the City of Ashland's Noxious and Invasive Plant List. Non-native vegetation may be used in the exempt outdoor use areas except new lawn is not permitted within the Stream Bank Protection Zone .

Comment [u7]: Permits the use of pervious materials for a patio in the outdoor area.



7. **Trails** - The establishment of trails where all of the following are met.

- a. Trails shall be confined to a single ownership or be with a public trail easement.
- b. The trail installation shall retain the general topography of the Stream Bank Protection Zone.
- c. Trail width shall not exceed thirty (30) inches, stair width shall not exceed fifty (50) inches, and trail grade shall not exceed twenty (20) percent except for the portion of the trail containing stairs.
- d. Plant trimming shall not exceed a height of eight (8) feet and a width of six (6) feet.
- e. Native trees larger than six (6) inches in diameter and breast height and native shrubs or conifers larger than five (5) feet tall shall not be removed. Tree removal shall be in accordance with the Tree Preservation and Protection Chapter 18.61.
- f. Trails shall not be paved with concrete, asphalt or comparable surfacing such as pervious concrete and asphalt.
- g. Trails shall be at least fifteen (15) feet from the top of bank from Riparian Corridors, and at least ten (10) feet from the top of bank from Local Streams and Intermittent and Ephemeral Streams.

Comment [u8]: Allows installation of unpaved trails in Stream Bank Protection Zones for private and public open spaces. Paved trails would be required to get a Type I land use approval.

8. **City Emergency Activities** - Emergency repair authorized by the City Administrator or his/her designee which must be undertaken immediately, or for which there is insufficient time for full compliance with this chapter, in order to address at least one of the following.

- a. Prevent an imminent threat to public health or safety.
- b. Prevent imminent danger to public or private property.
- c. Prevent an imminent threat of serious environment degradation.

9. **Drainage Facility Maintenance** - Maintenance of wetlands, approved storm water quality facilities or streams to maintain natural flow in accordance with agency-approved management plans.

Comment [u9]: To provide clarity as to when silt or vegetation can be removed from natural and man-made drainage facilities such as wetlands and streams.

10. **Legally Established Nonconforming Activities, Uses and Structures** - Legally established nonconforming activities, uses and structures may continue subject to the following provisions.



a. **Structure Maintenance and Expansion.** Existing legally established nonconforming structures within or partially within a Stream Bank Protection Zone may be used and maintained, but shall not have the existing building footprint or impervious surface expanded or enlarged unless the expansion or enlargement occurs outside the Stream Bank Protection Zone. Additional stories may be added to existing structures in the Stream Bank Protection Zone if the existing building footprint does not change in size or shape and additional surface area in the Stream Bank Protection Zone is not disturbed.

Comment [u10]: Language applies to nonconforming activities and uses, not to structures.

b. **Fire and Natural Hazards.** A primary structure that is legally established nonconforming may be rebuilt if damaged or destroyed by a fire or a natural hazard (e.g. flood). Repair and reconstruction of a nonconforming structure under this section shall be in accordance with the requirements of the Flood Damage Prevention Regulations Chapter 15.10. In non-residential zoning districts, legally established nonconforming structures may be rebuilt if damaged or destroyed by a fire or a natural hazard.

Comment [u11]: Provide cross reference to Ashland Code requirements.

Comment [u12]: Would exempt legally established nonconforming structures such as decks in C-1, E-1 and M-1 zoning districts.

c. **Previously Approved Building Envelopes.** A previously approved building envelope within or partially within a Stream Bank Protection Zone, which would be prohibited by this chapter or subject to the limitations and controls imposed by this Chapter, may be built upon as originally approved and does not have to meet the requirements of this Chapter if the following conditions are met:

- i. The building envelope was established and received City of Ashland Planning Division approval prior to the effective date of this ordinance.
- ii. The building envelope is located on a vacant lot.
- iii. The building envelope is located on a legally created lot or parcel of record which was created prior to the effective date of this ordinance.
- iv. Building permits are approved and construction is commenced there under within thirty-six (36) months from the effective date of this ordinance.

Comment [u13]: Provides a time limit for nonconforming building envelopes.

d. **Previously Approved Driveways.** An approved driveway within or partially within a Stream Bank Protection Zone, which would be prohibited by this chapter or subject to the limitations and controls imposed by this Chapter, may be built as originally approved and does not have to meet the requirements of this Chapter if the following conditions are met.

- i. The driveway location was established and received City of Ashland Planning Division approval prior to the effective date of this ordinance.
- ii. The driveway will provide access to a legally created lot or parcel of record which was created prior to the effective date of this ordinance.
- iii. Building permits are approved and construction is commenced there under within thirty-six (36) months from the effective date of this ordinance.

Comment [u14]: Provides a time limit for nonconforming driveways.



e. **Activities and Uses.** Existing legally established nonconforming activities or uses within or partially within a Stream Bank Protection Zone may be continued but shall not have the activity or use increased, expanded, enlarged or intensified, unless the increase, expansion, enlargement or intensification occurs outside of the Stream Bank Protection Zone.

f. **Public Facility Maintenance.** Routine maintenance of public piped drainage facilities, utilities and irrigation pumps, which were created or developed as part of a drainage or utility system, and which does not disturb additional riparian surface area.

g. **Private Facility Maintenance.** Routine maintenance of existing private drainage facilities, utilities and irrigation pumps that do not disturb additional riparian surface area.

h. **Access Maintenance.** Maintenance of existing public and private streets, driveways and utility lines when located in city right-of-way or public easement, and which does not disturb additional riparian surface area.

i. **Access Paving, Repaving or Reconstruction.** Paving, repaving or reconstruction of existing public and private streets and driveways if work disturbs no more than five percent (5%) additional surface area within the Stream Bank Protection Zone. Public streets and driveways shall be located in city right-of-way or public easement.

Comment [u15]: Allows existing streets and driveways to be repaved and rebuilt.

j. **Discontinuance.** Discontinued nonconforming activities or uses are deemed abandoned after six months and may not be resumed except in full conformity with this Chapter. Discontinued nonconforming activities or uses may be resumed within six months from such discontinuance, but not thereafter, when demonstrating clear evidence of non-abandonment. No change or resumption of a nonconforming activity or use of land shall be permitted that will result in a greater adverse impact as measured against impacts associated with the former nonconforming activity or use of land. Impacts on the Water Resource's values and functions such as water quality, fish and wildlife habitat, flood control capacity, and slope stability shall be considered when evaluating a request to change or resume a former nonconforming use.

B. Exempt Activities Within Wetland Protection Zones. The following activities and uses do not require a permit or authorization from the City to be conducted in a Wetland Protection Zone, provided the following requirements are met. All disturbed soil surface area shall be replanted using local native plant species, erosion control material shall be applied (e.g. mulch, hay, jute-netting, or comparable) and temporary irrigation facilities shall be installed. Re-



planting, erosion control and temporary irrigation shall be installed within 90 days of authorized soil surface area disturbances. Soil disturbance shall not result in permanent changes to the topography of the Wetland Protection Zone. Using herbicides, pesticides or chemical fertilizers in the Wetland Protection Zone shall not be permitted as part of the exempt activities. All applicable state and federal permits have been or will be obtained prior to commencement of the activity or use. 1. **Routine Planting** - The planting of local native plant species or the replacement of non-native plants with local native plant species with hand-held equipment.

2. **Landscaping and Tree Maintenance** - The limitations imposed by this chapter do not include the routine maintenance of existing vegetation within a Wetland Protection Zone, provided that the following requirements are met.

a. Maintenance pruning of existing trees shall be kept to a minimum and shall be in accordance with the Tree Preservation and Protection Chapter 18.61 and with the American National Standards Institute (ANSI) standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, or resource functions (i.e. shade, soil stability, erosion control, etc.)

3. **Trails** - The establishment of trails where all of the following are met.

a. Trails shall be confined to a single ownership or be with a public trail easement.

b. The trail installation shall retain the general topography of the Wetland Protection Zone.

c. Trail width shall not exceed thirty (30) inches, stair width shall not exceed fifty (50) inches, and trail grade shall not exceed twenty (20) percent except for the portion of the trail containing stairs.

d. Plant trimming shall not exceed a height of eight (8) feet and a width of six (6) feet.

e. Native trees larger than six (6) inches in diameter and breast height and native shrubs or conifers larger than five (5) feet tall shall not be removed. Tree removal shall be in accordance with the Tree Preservation and Protection Chapter 18.61.

f. Trails shall not be paved with concrete, asphalt or comparable surfacing such as pervious concrete and asphalt.

g. Trails construction shall be permitted within a wetland if approved by state and federal agencies.

Comment [u16]: Allows installation of unpaved trails in Wetland Protection Zones for private and public open spaces. Paved trails would be required to get a Type I land use approval.



4. **City Emergency Activities** - Emergency repair authorized by the City Administrator or his/her designee which must be undertaken immediately, or for which there is insufficient time for full compliance with this chapter, in order to address at least one of the following.

- a. Prevent an imminent threat to public health or safety.
- b. Prevent imminent danger to public or private property.
- c. Prevent an imminent threat of serious environment degradation.

5. **Legally Established Nonconforming Activities, Uses and Structures** – Legally established nonconforming activities, uses and structures may continue subject to the following provisions.

a. **Structure Maintenance and Expansion.** Existing legally established nonconforming structures within or partially within a Wetland Protection Zone may be used and maintained, but shall not have the existing building footprint or impervious surface expanded or enlarged unless the expansion or enlargement occurs outside the Wetland Protection Zone. Additional stories may be added to existing structures in the Wetland Protection Zone if the existing building footprint does not change in size or shape and additional surface area in the Wetland Protection Zone is not disturbed.

Comment [u17]: Language applies to nonconforming activities and uses, not to structures.

b. **Activities and Uses.** Existing legally established nonconforming activities or uses within or partially within a Wetland Protection Zone may be continued but shall not have the activity or use increased, expanded, enlarged or intensified, unless the increase, expansion, enlargement or intensification occurs outside of the Wetland Protection Zone.

c. **Discontinuance.** Discontinued nonconforming activities or uses are deemed abandoned after six (6) months and may not be resumed except in full conformity with this Chapter. Discontinued nonconforming activities or uses may be resumed within six months (6) from such discontinuance, but not thereafter, when demonstrating clear evidence of non-abandonment. No change or resumption of a nonconforming activity or use of land shall be permitted that will result in a greater adverse impact as measured against impacts associated with the former nonconforming activity or use of land. Impacts on the Water Resource's values and functions such as water quality, fish and wildlife habitat, flood control capacity, and slope stability shall be considered when evaluating a request to change or resume a former nonconforming use.



18.63.070 Limited Activities and Uses within Water Resource Protection Zones

The following activities and uses **within** Water Resource Protection Zones are allowed under a Type I land use procedure provided the activities or uses comply with the standards set forth in section **18.63.070.C**.

A. Limited Activities and Uses within Stream Bank Protection Zones.

1. **Channel and Riparian Enhancement Activities** – Stream channel repair and enhancement as well as riparian habitat restoration and enhancement resulting in a net gain in ecological function. Channel and riparian enhancement activities not otherwise associated with development involving building, grading or paving are encouraged, and planning action application fees associated with reviewing these activities for compliance with applicable land use standards may be waived, at the discretion of the Staff Advisor.

2. **Removal of Vegetation** – Removal of vegetation from within a Stream Bank Protection Zone is prohibited, except when authorized with the following limited activities and uses.

a. Removal of non-native, invasive and/or noxious vegetation with power-assisted machinery or equipment.

b. Removal of emergent in-channel vegetation that is likely to cause flooding using non-invasive methods such as mowing or weed-whacking that do not disturb the underlying substrate. Mechanized removal of emergent in-channel vegetation that would involve associated removal of soil below the ordinary high water line is not allowed and would otherwise be subject to state and federal wetland permitting requirements. [Note: The removal of any material from streams mapped as Essential Salmon Habitat by the Oregon Department of State Lands requires a wetland permit. Bear Creek, Ashland Creek, Neil Creek and Emigrant Creek are mapped as Essential Salmon Habitat.]

c. Hazardous Tree Removal. A hazard tree is a tree that is physically damaged to the degree that it is likely to fall and injure persons or property. In addition to the standards described in 18.63.070.C, the application shall also address the standards for a Tree Removal Permit for hazard trees found in the Tree Preservation & Protection Chapter 18.61.080.A.

3. **Building, Paving, and Grading Activities** - The permanent alteration of the Stream Bank Protection Zone by grading or by the placement of structures, fill or impervious surfaces is prohibited, except when authorized with the following limited activities and uses.

a. The location and construction of public streets, bridges, utilities, pedestrian and multi-use path connections deemed necessary to maintain a functional system. This title, the Comprehensive Plan, Transportation System Plan, Utility Master Plans and other adopted documents shall guide this determination.



- b. Paving, repaving or reconstruction of existing public and private streets and driveways if work disturbs more than five percent (5%) additional surface area within the Stream Bank Protection Zone. Public streets and driveways shall be located in city right-of-way or public easement.
- c. Installation or replacement of public and private drainage facilities, utilities, and irrigation pumps.
- d. Replacement of legally established nonconforming structures located within the original building footprint, except those legally established nonconforming primary structures exempted in 18.63.060.A.9.b, provided replacement does not disturb additional surface area within the Stream Bank Protection Zone.
- e. Erosion control and stream bank stabilization measures that have been approved by the Oregon Department of State Lands (DSL), the U.S. Army Corps of Engineers, or other state or federal regulatory agencies, and that utilize non-structural bio-engineering methods.
- f. Construction of a storm water outfall discharging treated storm water from an adjacent developed area provided that the discharge meets local, state and federal water quality regulations.
- g. The installation of a bridge or similar, bottomless crossing structure for the purpose of constructing a public or private street, bicycle or pedestrian crossing, as well as to provide a means of access to an otherwise inaccessible or landlocked property.
- h. Installation or expansion of structural flood control measures, including but not limited to concrete retaining walls, gabions, gravity blocks, etc., shall generally be prohibited, but approved only if demonstrated that less-invasive, non-structural methods will not adequately meet the stabilization or flood control needs.

4. Routine Maintenance of Public Utilities - Routine maintenance of public utilities located within a Stream Bank Protection Zone that disturbs additional surface area within the Protection Zone, provided the proposed maintenance complies with any applicable state and federal permitting requirements.

Comment [u18]: Maintenance of public utilities is exempt in Section 18.63.060 Exempt Activities and Uses if additional surface area is not disturbed.

B. Limited Activities and Uses Within Wetland Protection Zones.

1. Wetland Restoration and Enhancement Activities - Wetland restoration and enhancement activities resulting in a net gain in ecological function. Wetland restoration and enhancement activities not otherwise associated with development involving building, grading or paving are encouraged, and planning action application fees associated with reviewing these activities for compliance with applicable land use standards may be waived, at the discretion of the Staff Advisor.



2. Removal of Vegetation – Removal of vegetation from within a Wetland Protection Zone is prohibited, except when authorized with the following limited activities and uses.

a. Removal of non-native, invasive and/or noxious vegetation with power-assisted machinery or equipment.

b. Perimeter mowing and other cutting necessary for hazard prevention.

c. Hazardous Tree Removal. A hazard tree is a tree that is physically damaged to the degree that it is likely to fall and injure persons or property, and such hazard or danger cannot reasonably be alleviated by treatment or pruning. In addition to the standards described in 18.63.070.C, the application shall also address the standards for a Tree Removal Permit for hazard trees found in the Tree Preservation & Protection Chapter 18.61.080.A.

3. Building, Paving and Grading Activities – The erection of structures, installation of impervious surfaces, grading, excavation, and placement fill within Wetland Protection Zones is prohibited, except when authorized with the following limited activities and uses.

a. The location and construction of public streets, bridges, utilities, pedestrian and multi-use path connections deemed necessary to maintain a functional system and upon finding that no other another reasonable, alternate location outside the Wetland Protection Zone exists. This chapter, the Comprehensive Plan, Transportation System Plan (TSP), adopted utility master plans and other adopted documents shall guide this determination.

b. Replacement of existing public and private streets and driveways. Public streets shall be located in city right-of-way or public easement.

c. Installation or replacement of public and private drainage facilities, utilities, and irrigation pumps.

d. Routine maintenance of existing drainage facilities and utilities that disturbs lands within the Wetland Protection Zone provided that the applicant complies with applicable state and federal permitting requirements.

e. Replacement of legally established nonconforming structures within the original building footprint, provided replacement does not disturb additional surface area with the Wetland Protection Zone.

4. Routine Maintenance of Public Utilities - Routine maintenance of public utilities located within a Wetland Protection Area that do not disturb additional wetland surface area, provided the proposed maintenance complies with any applicable state and federal wetland permitting requirements.



C. Approval Standards for Limited Activities and Uses within Water Resource Protection

Zones. All Limited Activities and Uses within Water Resource Protection Zones described in section 18.63.070 shall be reviewed and a decision made through a Type I land use procedure. The approval authority may approve or approve with conditions a request to conduct Limited Activities and Uses in a Water Resource Protection Zone based upon findings that the following standards have been satisfied.

1. All activities shall be located as far from streams and wetlands, designed to minimize intrusion into the Water Resources Protection Zone and use as little of the surface area of the Water Resource Protection Zone, as practicable.
2. The proposed activity shall be designed, located and constructed to minimize excavation, grading, the placement of structures and impervious surfaces, loss of native vegetation, erosion, and adverse hydrological impacts on Water Resources.
3. Excavation, grading and vegetation removal shall be avoided within the Stream Bank Protection Zone on stream beds or banks within the bank full stage, in wetlands, and on slopes of 25 percent or greater, except where no practicable alternative exists, or where necessary to construct public facilities or to ensure slope stability.
4. Erosion control measures shall be employed to ensure sediments are not transported to the Water Resource. Erosion control measures shall be installed prior to site preparation or ground-disturbing activities, where applicable. Access roads, staging areas, storage areas and other areas of temporary disturbance necessary to complete the proposed activity shall be restored as soon as possible, but not more than 90 days after authorized land disturbance. Erosion control measures shall be in place concurrently with construction or establishment of the proposed activity. Temporary measures used for initial erosion control shall not be left in place permanently. Guidance on appropriate erosion control measures is contained in the Department of Environmental Quality publication Best Management Practices for Storm Water Discharges Associated With Construction Activities (DEQ Northwest Region 2006, or current upgrade). A copy of this document is available for review at the City of Ashland Planning Division.
5. Plans for stream channel repair and enhancement, riparian habitat restoration and enhancement plans and wetland restoration and enhancement are required and shall be submitted with the land use application. The plans shall be designed by a natural resource professional, comply with all state and federal regulations and permitting requirements and conform to all local regulations and permit requirements related to flood areas.
6. All applicable state and federal permits have been or will be obtained prior to commencement of the activity or use.



7. Plans for mitigation in accordance with 18.63.120 are required and shall be submitted with the land use application. The plans shall be designed by a natural resource professional, unless expressly authorized, and comply with all federal and state regulations and permitting requirements and conform to all local regulations and permit requirements related to flood areas.

8. Water, drainage and sewer systems shall be designed, located and constructed to avoid the infiltration of floodwaters into the system, and to avoid accidental discharges to rivers, streams and wetlands.

9. Bridges or similar, bottomless crossing structures located in Stream Bank Protection Zones for the purpose of constructing a public or private street, bicycle or pedestrian crossings shall employ the least invasive installation methods possible and conform to all local regulations and permit requirements related to flood areas.

10. Public streets, bridges, utilities, pedestrian and multi-use path connections shall be located in Wetland Protection Zones only based upon a finding that no other reasonable, alternate location outside the Wetland Protection Zone exists. 18.63.080 Water Resource Protection Zones Reductions.

18.63.080 Water Resource Protection Zone Reductions

A Water Resource Protection Zone may be reduced by up to 50 percent by the approval authority through a Type I land use procedure to allow alteration within the Water Resource Protection Zone based upon findings that the following standards have been satisfied.

A. The application demonstrates that equal or better protection for identified resources will be ensured through restoration, enhancement and mitigation measures.

B. The alteration of the Water Resource Protection Zone is the minimum necessary to efficiently perform the proposed activity and/or use. The proposed development shall minimize disturbance to the Water Resource Protection Zone by utilizing the following design options to minimize or reduce impacts of development.

1. Multi-story construction shall be used.
2. Parking spaces shall be minimized to no more than that required as a minimum for the use.
3. Pavement shall be minimized, and all pavement used shall be installed and maintained in a pervious paving material.
4. Engineering solutions shall be used to minimize additional grading and/or fill.



C. The proposed use or activity is designed to minimize intrusion into the Water Resource Protection Zone through the use of up to a 50 percent reduction of any dimensional standards (e.g. required front, side and rear yard setbacks; required distance between buildings; or maximum building height) to permit development as far outside or upland of the Water Resource Protection Zone as possible. Such adjustment to any applicable dimensional standards shall be reviewed as part of the requested reduction, and shall not be subject to a separate Variance application under Chapter 18.100. Reductions to dimensional standards may not be used to reduce required Solar Access setbacks without evidence of agreement by the effected property owner(s) to the north through a concurrent Solar Access Variance application as described in section 18.70.060.

D. Any encroachment or change in on-site or off-site drainage characteristics which would adversely impact the Water Resource has been considered and mitigated.

E. Erosion control measures shall be employed to ensure sediments are not transported to the Water Resource. Erosion control measures shall be installed prior to site preparation or ground-disturbing activities, where applicable. Access roads, staging areas, storage areas and other areas of temporary disturbance necessary to complete the proposed activity shall be restored as soon as possible, but not more than 90 days after authorized land disturbance. Erosion control measures shall be in place concurrently with construction or establishment of the proposed activity. Temporary measures used for initial erosion control shall not be left in place permanently. Guidance on appropriate erosion control measures is contained in the Department of Environmental Quality publication Best Management Practices for Storm Water Discharges Associated With Construction Activities (DEQ Northwest Region 2006, or current upgrade). A copy of this document is available for review at the City of Ashland Planning Division.

Comment [u19]: Use same requirement as used in limited land use section for consistency

F. No significant adverse impacts to the structures, functions or values of the Water Resource, including but not limited to water quality, fish and wildlife habitat, flood control capacity, or slope stability will result from approval of the limited activity and/or use, and the application demonstrates that equal or better protection for the identified Water Resource will be ensured through restoration of disturbed areas within the Water Resource Protection Zone, enhancement of the Water Resource Protection Zone, or similar measures.

G. The structures, functions and values of the Water Resource will be restored through the implementation of an enhancement and restoration strategy set forth in a mitigation plan prepared in accordance with the standards and requirements described in section 18.63.120.

H. All applicable state and federal permits have been or will be obtained prior to commencement of the activity or use.

Comment [u20]: Moved section . F-H were "Approval Criteria for Water Resource Protection Zone Reductions in previous draft



I. A Water Resource Protection Zone reduction agreement shall be recorded in the public records to give notice of the restrictions and maintenance obligations and to ensure no further encroachment into the Water Resource Protection Zone occurs.

J. The applicant may dedicate a conservation easement or equivalent protection instrument to the city, homeowners association or a conservation organization, provided the form of the instrument is approved by the City Attorney and accepted by the council, if offered.

18.63.090 Hardship Variances

In cases where the limitations on activities within a Water Resource Protection Zone unduly restrict the development or use of a legally created lot or parcel of record, a property owner may request a Hardship Variance. Hardship Variances described shall be reviewed and a decision made through a Type II land use procedure. Hardship Variances are not subject to the Variance requirements of Chapter 18.100. The approval authority may approve or approve with conditions a request for a Hardship Variance based upon findings that the following approval criteria have been satisfied.

A. The proposal cannot meet the standards for a Water Resource Protection Zone Reduction found in sections 18.63.080.

B. Strict adherence to the provisions described in this chapter would effectively preclude use of the property that could reasonably be expected to occur on similarly zoned parcels, and the property owner would be precluded a substantial property right enjoyed by the majority of landowners in the vicinity.

C. The proposed activity or use of land would have been permitted prior to the effective date of this ordinance.

D. The applicant has explored all other reasonable options available under this chapter and throughout the Land Use Ordinance to relieve the hardship.

E. The Variance is the minimum necessary to permit use of the property in a manner that could reasonably be expected to occur on similarly zoned parcels in the vicinity.

F. Adverse impacts on the structures, functions or values of the resource including water quality, erosion, or slope stability that would result from approval of this hardship variance have been minimized and will be mitigated to the greatest extent possible through restoration and enhancement of the Water Resource Protection Zone in accordance with an approved mitigation plan.

G. The applicant has agreed to implement a mitigation and management plan prepared in accordance with the standards and requirements described in section 18.63.120.



H. All applicable state and federal permit approvals have been or will be obtained prior to commencement of the activity or use.

18.63.100 Approval Standards for Land Divisions and Property Line Adjustments Within Water Resource Protection Zones

Planning applications and procedures containing Water Resource Protection Zones and involving the division of land or lot line adjustments shall comply with the following provisions.

A. Building Envelope Established. Each lot shall contain a building envelope outside the Water Resource Protection Zone of sufficient size to permit the establishment of the use and associated accessory uses.

B. Conservation Area. Performance Standards Option, Subdivision and Partition applications shall include the Water Resource Protection Zone within a conservation easement or recorded development restriction, which stipulates that the use or activity within the Water Resource Protection Zone shall be consistent with the provisions of this chapter. The approval authority may require that the Water Resource Protection Zone be included in a separate tract of land managed by a homeowners' association or other common ownership entity responsible for preservation.

C. Density Transfer. Density calculated from the land area contained within the Water Resource Protection Zone may be transferred to lands outside the Water Resource Protection Zone provided the following standards are met.

1. Partitions and subdivisions involving density transfer shall be processed under the Performance Standards Options Chapter 18.88 of the Ashland Municipal Code.
2. A map shall be submitted showing the land area not within the Water Resource Protection Zone to which the density will be transferred.
3. The Water Resource Protection Zone shall be included in a separate preservation tract to be managed by a homeowner's association or other common ownership entity responsible for management of the area.
4. Density may only be transferred within the subject property or to a lot or lots contiguous to the subject property and within the same ownership.
5. The density transferred to lands not within the Water Resource Protection Zone may not be increased to more than one and a half (1.5) times the base density of the underlying zoning district. Fractional units are to be rounded down to the nearest whole number.

D. Management Plan. Long term conservation, management and maintenance of the Water Resource Protection Zone consistent with the requirements of this chapter shall be ensured through preparation and recordation of a management plan as described in [18.63.120.B.2.f.](#)



E. Mitigation Requirements. The approval authority may require a mitigation plan in accordance with the requirements of 18.63.120 to mitigate impacts resulting from land divisions.

F. Exemptions for a Public Purpose. An exemption to the requirements described above shall be granted for lots created for public park purposes, or privately-owned tracts created for the sole purpose of conserving in perpetuity the natural functions and values of the lands contained within the Water Resource Protection Zone.

18.63.110 Approval Process

A. Application – Required Plans and Information. The following plans and information shall be submitted with the application for activities and uses in a Water Resource Protection Zone which are required to be processed under a Type I or Type II land use procedure including Limited Activities and Uses, Water Resource Protection Zone Reductions and Hardship Variances.

1. A narrative description of all proposed activities and uses including the extent to which any Water Resource Protection Zone is proposed to be altered or affected as a result of the proposed development activity or use (in terms both of square footage of surface disturbance and cubic yards of overall disturbance).

2. Written findings of fact addressing all applicable development standards and approval criteria.

3. Site development plan map, drawn to scale - The application shall include a site map of the subject property prepared by a licensed surveyor, civil engineer or other design professional that includes the information described below. The Staff Advisor may request additional information based upon the character of the site or the specific nature of the proposal.

a. All watercourses identified (including any drainage ways, ponds, etc).

b. Surveyed location of the Water Resource Protection Zone, as described in section 18.63.050. For applications involving only a single-family residence located on a legally created lot or parcel of record, in lieu of a surveyed location, the Staff Advisor may approve a field determination of the Water Resource Protection Zone by the Staff Advisor or his/her designee in which the applicant shall be required to stake the top-of-bank or the upland-wetland edge and the boundary of the Water Resource Protection Zone.

c. For activities and use proposed within a Stream Bank Protection Zone:
identification of the stream as being either fish-bearing or non-fish-bearing;
identification of the top-of-bank or center line as required; and surveyed location of the stream's floodway and floodplain, if applicable.



d. For activities and uses proposed within a Wetland Protection Zone: a wetland delineation (with an accompanying site map) prepared by a natural resource professional and that has been concurred with by the Oregon Department of State Lands (DSL); and an aerial photo with the wetland boundaries identified.

e. Topographic information at 2-foot contour increments identifying both existing grades and proposed grade changes.

f. Surveyed locations of all trees six-inches in diameter at breast height (d.b.h.) or greater located on the property and upon adjacent properties within 15-feet of the property line, identified by edge of canopy, diameter at breast height and species;

g. The outlines of non-tree vegetation, with a dominant species and any occurrence of non-native, invasive species identified.

h. Location of existing and proposed development, including all existing and proposed structures, any areas of fill or excavation, stream or wetland crossings, alterations to vegetation, or other alterations to the site's natural state.

i. The location of natural features, structures, and other improvements associated with lands within 150-feet of the proposal.

j. Land uses within 100-feet of the water resource's edge.

k. The location of temporary fencing and erosion control measures installed to prevent encroachment and flow of material into the Water Resource Protection Zone, such as sediment fencing and hay bales, etc.

l. North arrow and scale.

m. Sources of information (federal, state and local).

4. Mitigation Plan prepared in accordance with the requirements described in section 18.63.120.

B. Building Permits and Development Activities. When approval of a planning application is not required, other permit applications for the construction of structures or other development activities on properties containing Water Resource Protection Zones shall be reviewed by the Staff Advisor, or his or her designee, to assure that Water Resource Protection Zones are accurately identified on a site plan and that Limited Activities and Uses or other site disturbances will not be conducted within the Water Resource Protection Zone.



1. **Temporary Fencing and Erosion Control Measures** - Temporary fencing and erosion control measures may be required to be installed to prevent encroachment and flow of material or other debris into the Water Resource Protection Zone and to otherwise prevent impacts to the Water Resource Protection Zone by clearly identifying its boundaries. When required, these measures shall be installed and site-verified by the Staff Advisor before any permits are issued and prior to the commencement of excavation, grading, site clearing, construction or similar site work resulting in changes to the land.

C. **Required Information Waived – Determination.** Applications under this chapter involving properties containing a Water Resource Protection Zone shall accurately indicate the locations of these features and all other information as described and required above. The Staff Advisor may waive one or more of the required elements of the site development plan map in 18.63.110.A.3 if evidence is provided conclusively demonstrating that proposed excavation, grading, site clearing, construction or similar actions resulting in changes to the property are not located within the boundaries of the Water Resource Protection Zone.

Comment [u21]: Provides more specificity as to what application submittals can be waived. For example, if there are trees on a property 200 feet from the riparian corridor, the Staff Advisor could determine that these trees would not need to be surveyed.

18.63.120 Mitigation Requirements

A. **When a Mitigation Plan is Required.** A mitigation plan is required for applications that involve: Limited Activities and Uses, Water Resource Protection Zone Reductions, Hardship Variances, or as otherwise stipulated by the approval authority as a condition of approval.

B. **Mitigation Plan Requirements.**

1. **For Applications Involving a Single-Family Residence on a Pre-existing Lot and Limited Activities and Uses** - For applications involving a single-family residence located on a legally created lot or parcel of record or Limited Activities and Uses, the applicant may follow a prescriptive mitigation plan available separately from the City of Ashland Planning Division addressing the following standards, or meet the mitigation plan requirements in section 2 below.

Comment [u22]: Limited Activities and Uses are narrow in scope and probably should have the ability to do a more streamlined mitigation plan.

a. **Vegetation Preservation and Construction Staging.** The following standards shall apply when construction activity is proposed in areas where vegetation is to be preserved within a Water Resources Protection Zone.

i. Work areas on the immediate site shall be carefully identified and marked to reduce potential damage to trees and vegetation. Temporary construction fencing shall be placed at the drip line of trees bordering the work area. No equipment maneuvering, staging or stockpiling shall occur outside of designated work areas.

ii. Trees shall not be used as anchors for stabilizing equipment.



iii. Stockpiling of soil, or soil mixed with vegetation, shall not be permitted in Water Resource Protection Areas on a permanent basis. Temporary storage shall employ erosion control measures to ensure sediments are not transported to adjacent surface waters.

b. **Restoration.** Disturbed areas shall be re-planted and an additional area restored, re-planted and enhanced at a 1:1.5 ratio. Re-planting activities shall follow these standards:

i. Priority shall be given to removal of noxious and invasive vegetation and planting of local native plant species.

ii. Plant materials shall be located in such a manner to maximize enhancement and restoration of the Water Resource Protection Zone, with particular emphasis on temperature reduction of watercourses, erosion control, bank stabilization and wildlife habitat enhancement.

iii. Re-planting shall include ground cover, under story and tree canopy layers unless the site soils or substrate do not typically support the growth of one or more vegetation layers.

iv. Re-planting shall be with local native plant species. The use of noxious and invasive plants are prohibited.

v. Planting densities and species composition shall be consistent with native riparian area plant communities in the immediate vicinity. Use of a reference site (a nearby site with an intact native riparian plant community) as guidance for developing a re-vegetation plan is recommended.

vi. Ground cover shall be hydro-seeded or planted at two-foot intervals or such other interval established by the approval authority as sufficient to attain coverage of the required area within a two-year period.

vii. Under-story plantings shall be a minimum one-gallon materials planted at six-foot intervals or such other interval approved by the approval authority as sufficient to attain adequate coverage within a two-year period.

viii. Canopy trees shall be planted at 20-foot intervals or such other interval as required to install materials required for tree mitigation pursuant to the tree mitigation requirements of the Ashland Land Use Ordinance.

ix. Erosion control material shall be applied (e.g. mulch, hay, jute-netting, or comparable) to disturbed, re-planted areas.



- x. Temporary irrigation facilities shall be installed.
- xi. Native plant species that do not survive the first two years after planting shall be replaced.
- xii. Re-planting shall occur within 90 days of authorized land disturbance.
- xiii. A re-planting project shall include landscape and irrigation plans, with details addressing the proposed plant species, size of plant materials, number of plants, timing of plantings, plant spacing and installation methods. Plant sources and suppliers shall be identified

c. **Herbicides, Pesticides and Fertilizers.** Using herbicides, pesticides or chemical fertilizers in a Water Resources Protection Zone shall not be permitted unless in compliance with state and federal regulations and any necessary permits are obtained.

2. **For All Other Applications** – For all other applications not covered in section 1 above, the mitigation plan shall contain at a minimum the following components.

a. **Objectives and Standards of Mitigation.** A mitigation plan shall state specific plan objectives and establish clear and measurable standards for determining if stated objectives have been accomplished. For example, the objective might be to restore or enhance the shade canopy within a Stream Bank Protection Zone to benefit fish and reduce water temperature, while the standard might be a certain percentage of shade canopy coverage at the end of one year and 100 percent shade canopy coverage after three years.

b. **Assessment of Water Resource Protection Zone Structures, Functions and Values.** A mitigation plan shall include an assessment of the structures, functions and values (i.e. water quality, flood control, habitat, etc.) that will be adversely impacted by the proposed alterations of the Water Resource Protection Zone and a clear explanation of how these impacts are to be mitigated.

c. **Mitigation Site/Grading Plan.** A statement and detailed plan of the location, elevation, and hydrology of the mitigation area, including a grading plan at two-foot contour intervals. For applications involving Wetland Protection Zones, the application shall demonstrate that plants have adequate access to site hydrology. For applications involving Stream Bank Protection Zones, the grading plan shall identify newly planted areas and include slope stabilizing measures to prevent erosion, ensure vegetative coverage and limit plant mortality.



d. **Landscape Plan.** The landscape plan shall be size- and species-specific, with details addressing the timing of plantings, proposed plant placement and plant spacing. Priority shall be given local native plant species. Plant sources and suppliers shall be identified. Plants identified as noxious, invasive, or non-native are prohibited.

e. **Herbicides, Pesticides and Fertilizers.** Using herbicides, pesticides or chemical fertilizers in a Water Resources Protection Zone shall not be permitted unless in compliance with state and federal regulations and any necessary permits are obtained.

Comment [u23]: Previously, similar language included under exempt section, but was not addressed for land use applications.

f. **Management Plan.** As a condition of approval, except in the case of an existing lot containing only a single family home, the applicant shall implement a management plan for the Water Resource Protection Zone and resource areas under the applicant's ownership or control, including the areas restored and enhanced to assure long term conservation and maintenance. The management plan shall detail proposed monitoring and maintenance, and shall include a schedule delineating how completed projects will be monitored and reported to the Staff Advisor. The management plan shall contain the following requirements.

- i. The approved mitigation plan.
- ii. Identification of Water Resources and Water Resource Protection Zone management practices to be conducted and proposed intervals.
- iii. Provisions for the ongoing removal and management of noxious or invasive vegetation and debris.
- iv. Provisions for the protection of protected plant and animal species in accordance with recommendations from applicable state and federal agencies.
- v. Specific provisions for city enforcement of the management plan.
- vi. Any additional measures deemed necessary to protect and maintain the structures, functions and values of the Water Resource Protection Zone (e.g., signage delineating preservation boundaries).
- vii. Provisions for the perpetual protection and maintenance of the Water Resource and Water Resource Protection Zone including but not limited to the following.



viii. Recordation of a conservation easement or Conditions, Covenants, and Restrictions (CC&Rs) which prescribe the conditions and restrictions set forth in the approved land use application, development permit, building permit, or proposed public facilities plans, and any imposed by state or federal permits.

ix. Transfer of the ownership and maintenance responsibilities for the area to a willing public agency, non-profit association or private conservation organization with a recorded conservation easement prescribing the conditions and restrictions set forth in the approved land use application, development permit, building permit, or proposed public facilities plans, and any imposed by state or federal permits.

x. Other mechanisms addressing long-term protection, maintenance and mitigation consistent with the purposes and requirements of this ordinance as deemed appropriate and acceptable by the approval authority.

xi. The following statements.

- "There shall be no alteration of the Water Resource Protection Zones as delineated and shown on the attached plan" (attach reduced plan).
- "There shall be no alteration of the size, shape or design of an approved Water Resource Protection Zone without prior approval by the City of Ashland".
- "There shall be no amendment or change to this Management Plan without prior approval of the City of Ashland".

g. A Contingency Plan. Restored and enhanced Water Resource Protection Zones generally require periodic adjustments, especially during the first year. The contingency plan shall specify what procedures will be followed should stated plan objectives and established standards not be met, and include a timeline for addressing any deficiencies through actions of additional restoration and enhancement.

h. A Performance Guarantee. In general, mitigation shall be implemented prior to or concurrently with the project. The approval authority may require a performance bond or similar monetary insurance of up to 110 percent of the proposal's cost to guarantee that the mitigation proposal will be carried out as approved, and to ensure that the objectives are met through demonstration of compliance with measurable standards and that the site will be maintained to keep the Water Resource functioning properly.



18.63.130 Map Errors and Adjustments

A. Map Errors and Adjustments. The Staff Advisor may authorize a correction to a wetland on the Water Resources Map when the applicant has shown that a mapping error has occurred and the error has been verified by the Oregon Department of State Lands (DSL). Delineations verified by DSL shall be used to automatically update the Water Resources Map and record the wetland delineation document. No formal variance application or plan amendment is required for map corrections where an approved delineation with a DSL letter of concurrence is provided. Approved delineations shall be subject to the terms of expiration set forth in the DSL approval.

DRAFT



ATTACHMENT C

AMC 18.62 Strikeout/Underline Copy

Draft Revised Chapter 18.62
Physical & Environmental Constraints

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CHAPTER 18.62

PHYSICAL & ENVIRONMENTAL CONSTRAINTS

Attachment C:
18.62 Strikeout &
Underline Copy

SECTIONS:

- 18.62.010 Purpose and Intent.
- 18.62.020 Regulations.
- 18.62.030 Definitions.
- 18.62.040 Approval and Permit Required.
- 18.62.050 Land Classifications.
- 18.62.060 Official Maps.
- 18.62.070 Development Standards for Flood plain Corridor Lands.
- ~~18.62.075 Development Standards for Riparian Preservation Lands.~~
- 18.62.080 Development Standards for Hillside Lands.
- 18.62.090 Development Standards for Wildfire Lands.
- 18.62.100 Development Standards for Severe Constraint Lands.
- 18.62.110 Density Transfer.
- 18.62.130 Penalties.

SECTION 18.62.010 Purpose and Intent.

The purpose of this Chapter is to provide for safe, orderly and beneficial development of districts characterized by diversity of physiographic conditions and significant natural features; to limit alteration of topography and reduce encroachment upon, or alteration of, any natural environment and; to provide for sensitive development in areas that are constrained by various natural features. Physiographic conditions and significant natural features can be considered to include, but are not limited to: slope of the land, natural drainage ways, wetlands, soil characteristics, potential landslide areas, natural and wildlife habitats, forested areas, significant trees, and significant natural vegetation.

(Ord 2808, Added, 12/02/1997)

SECTION 18.62.020 Regulations.

The type of regulation applicable to the land depends upon the classification in which the land is placed, as provided in Section 18.62.050. If those regulations conflict with other regulations of the City of Ashland's Municipal Code, the more stringent of the two regulations shall govern.

(Ord 2808, Added, 12/02/1997)

A. **Water Resource Protection Zone Regulations** - Development proposals regulated under this chapter shall be found in conformance with the regulations of Chapter 18.63 Water Resource Protection Zones. If the regulations of this chapter and Chapter 18.63 Water Resource Protection Zones conflict, the more stringent of the two regulations shall govern.

SECTION 18.62.030 Definitions.

The following terms are hereby defined as they apply to this Chapter:

A. **Architect** - An architect licensed by the State of Oregon.

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- B. **Average slope** - average slope for a parcel of land or for an entire project, for the purposes of determining the area to remain in a natural state shall be calculated before grading using the following formula:

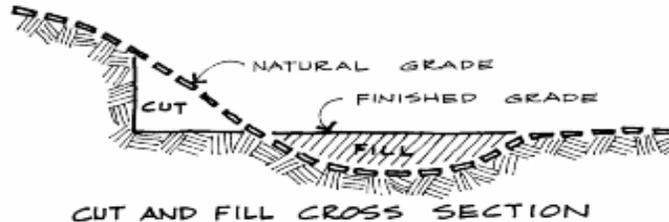
$$S = \frac{.00229(I)(L)}{A}$$

where "S" is the average percent of slope; ".00229" is the conversion factor for square feet; "I" is the contour interval in feet; "L" is the summation of length of the contour lines in scale feet; and "A" is the area of the parcel or project in acres.

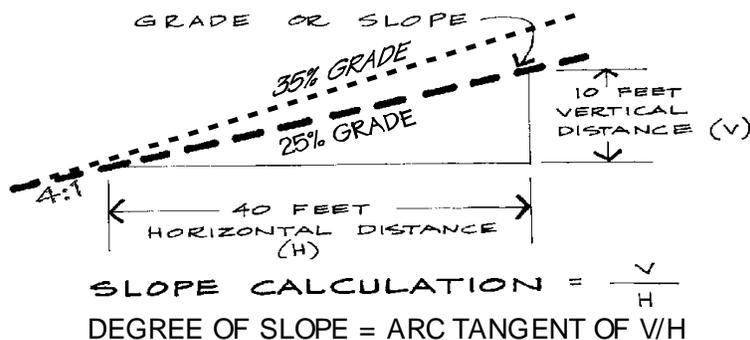
- C. **Buildable area** - That portion of an existing or proposed lot that is free of building restrictions. For the purpose of this ordinance, a buildable area cannot contain any setback areas, easements, and similar building restrictions, and cannot contain any land that is identified as Flood plain Corridor Lands, or any land that is greater than 35% slope.
- D. **Cohesive Soils** - Residual or transported soils, usually originating from parent rock which contains significant quantities of minerals which weather to clay. Cohesive soils have a Plasticity Index of ten or more, based on laboratory testing according to AASHTO methods, or a site-specific scientific analysis of a particular soil material.
- E. **Development** - Alteration of the land surface by:
1. Earth-moving activities such as grading, filling, stripping, or cutting involving more than 20 cubic yards on any lot, or earth-moving activity disturbing a surface area greater than 1000 sq. ft. on any lot;
 2. Construction of a building, road, driveway, parking area, or other structure; except that additions to existing buildings of less than 300 sq. ft. to the existing building footprint shall not be considered development for section 18.62.080.
 3. Culverting or diversion of any stream designated by this chapter.
- F. **Designer** - a person not registered as an architect or engineer, approved to plan and design single family homes and other buildings defined as exempt by the building code.
- G. **Engineer** - A registered professional engineer licensed by the State of Oregon.
- H. **Engineering Geologist** - A registered professional engineering geologist licensed by the State of Oregon.
- I. **Floodway Channel** - The floodway channel as defined by ordinance.
- J. **Geotechnical Expert** - An engineering geologist or an engineer with demonstrable expertise in geologic hazards evaluation and geotechnical engineering.
- K. **Gully** - A drainage incision, commonly caused by erosion, which does not experience regular or seasonal stream flow, but does act as a channel for runoff during periods of high rainfall.

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- L. **Landscape Professional** - arborist certified by the International Society of Arboriculture, landscape architect licensed by the State of Oregon, or other expert with demonstrable expertise in tree and erosion control vegetation maintenance, and erosion control vegetation methods.
- M. **Natural Grade** - the elevation of the ground level in its natural state, before construction, filling, or excavation. (see graphic)



- N. **Natural State** - all land and water that remains undeveloped and undisturbed. This means that grading, excavating, filling and/or the construction of roadways, driveways, parking areas, and structures are prohibited. Incidental minor grading for hiking trails, bicycle paths, picnic areas and planting and landscaping which is in addition to and enhances the natural environment is permitted. Incidental brush removal for lot maintenance and ecosystem health is permitted. Further, vegetation removal for the purposes of wildfire control in conjunction with an approved fire prevention and control plan shall also be permitted.
- O. **Non-cohesive Soils** - Residual or transported soils containing no or very little clay, usually from crystalline granitic parent rock. Non-cohesive soils have a Plasticity Index of less than ten, based on laboratory testing according to AASHTO methods, or a published scientific analysis of a particular soil type.
- P. **Professional Arborist** - arborist certified by the International Society of Arboriculture and licensed by the State of Oregon State Landscape Contractors Board or Construction Contractors Board, or landscape architect licensed by the State of Oregon.
- Q. **Riparian** - That area associated with a natural water course including its wildlife and vegetation.
- R. **Slope** - The deviation of a surface from the horizontal, usually expressed in percent. (see graphic)



- S. **Stripping** - Any activity which significantly disturbs vegetated or otherwise stabilized soil

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surface, including clearing and grubbing operations.

- T. **Tree Removal** - the following activities are defined as tree removal:
1. The removal of three or more living trees of over six inches diameter at breast height (d.b.h.), or the removal of five percent of the total number of living (or dead trees) over six inches d.b.h., whichever is greater, on any lot within five year period, or any form of commercial logging;
 2. The removal of one or more living conifers greater than two feet d.b.h., or living broadleaf trees greater than one foot d.b.h.;
- U. **Wildfire** - Fire caused by combustion of native vegetation, commonly referred to as forest fire or brush fire.
(Ord 2808, Added, 12/02/1997)

SECTION 18.62.040 Approval and Permit Required.

A Physical Constraints Review Permit is required for the following activities:

- A. Development, as defined in 18.62.030.D, in areas identified as Flood plain Corridor Land, ~~Riparian Preserve~~, Hillside Land, or Severe Constraint land.
- B. Tree removal, as defined in 18.62.030.RT., in areas identified as Flood plain Corridor Land and ~~Riparian Preserve~~.
- C. Commercial logging, in areas identified as Flood plain Corridor Land, ~~Riparian Preserve~~, Hillside Land, or Severe Constraint Land.
- D. Tree removal, in areas identified as Hillside Land and Severe Constraint Land, except that a permit need not be obtained for tree removal that is not associated with development, and done for the purposes of wildfire management and carried out in accord with a Fire Prevention and Control Plan approved by the Fire Chief.
- E. If a development is part of a Site Review, Performance Standards Development, Conditional Use Permit, Subdivision, Partition, or other Planning Action, then the Review shall be conducted simultaneously with the Planning Action.
- F. If a development is exclusive of any other Planning Action, as noted in Subsection B, then the Physical Constraints Review shall be processed as a Staff Permit.
- G. Where it appears that the proposal is part of a more extensive development that would require a master site plan, or other planning action, the Staff Advisor shall require that all necessary applications be filed simultaneously.
- H. Plans Required. The following plans shall be required for any development requiring a Physical Constraints Review:
 1. The plans shall contain the following:
 - a. Project name.
 - b. Vicinity map.
 - c. Scale (the scale shall be at least one inch equals 50 feet or larger) utilizing the largest scale that fits on 22" x 34" paper. Multiple plans or layers shall be prepared

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- at the same scale, excluding detail drawings. The Staff Advisor may authorize different scales and plan sheet sizes for projects, provided the plans provide sufficient information to clearly identify and evaluate the application request.
- d. North arrow.
 - e. Date.
 - f. Street names and locations of all existing and proposed streets within or on the boundary of the proposed development.
 - g. Lot layout with dimensions for all lot lines.
 - h. Location and use of all proposed and existing buildings, fences and structures within the proposed development. Indicate which buildings are to remain and which are to be removed.
 - i. Location and size of all public utilities affected by the proposed development.
 - j. Location of drainage ways or public utility easements in and adjacent to the proposed development. Location of all other easements.
 - k. topographic map of the site at a contour interval of not less than two feet nor greater than five feet. The topographic map shall also include a slope analysis, indicating buildable areas, as shown in the graphic.
 - l. Location of all parking areas and spaces, ingress and egress on the site, and on-site circulation.
 - m. Accurate locations of all existing natural features including, but not limited to, all trees as required in 18.62.080.D.1, including those of a caliper equal to or greater than six inches d.b.h., native shrub masses with a diameter of ten feet or greater, natural drainage, swales, wetlands, ponds, springs, or creeks on the site, and outcroppings of rocks, boulders, etc. Natural features on adjacent properties potentially impacted by the proposed development shall also be included, such as trees with driplines extending across property lines. In forested areas, it is necessary to identify only those trees which will be affected or removed by the proposed development. Indicate any contemplated modifications to a natural feature.
 - n. The proposed method of erosion control, water runoff control, and tree protection for the development as required by this chapter.
 - o. Building envelopes for all existing and proposed new parcels that contain only buildable area, as defined by this Chapter.
 - p. Location of all irrigation canals and major irrigation lines.
 - q. Location of all areas of land disturbance, including cuts, fills, driveways, building sites, and other construction areas. Indicate total area of disturbance, total percentage of project site proposed for disturbance, and maximum depths and heights of cuts and fill.
 - r. Location for storage or disposal of all excess materials resulting from cuts associated with the proposed development.
 - s. Applicant name, firm preparing plans, person responsible for plan preparation, and plan preparation dates shall be indicated on all plans.
 - t. Proposed timeline for development based on estimated date of approval, including completion dates for specific tasks.
2. Additional plans and studies as required in Sections 18.62.070, 18.62.080, 18.62.090 and 18.62.100 of this Chapter.
- I. Criteria for approval. A Physical Constraints Review Permit shall be issued by the Staff Advisor when the Applicant demonstrates the following:

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1. Through the application of the development standards of this chapter, the potential impacts to the property and nearby areas have been considered, and adverse impacts have been minimized.
2. That the applicant has considered the potential hazards that the development may create and implemented measures to mitigate the potential hazards caused by the development.
3. That the applicant has taken all reasonable steps to reduce the adverse impact on the environment. Irreversible actions shall be considered more seriously than reversible actions. The Staff Advisor or Planning Commission shall consider the existing development of the surrounding area, and the maximum permitted development permitted by the Land Use Ordinance.

(Ord 2834 S1, 1998)

(ORD 2951, amended, 07/01/2008; Ord. 2834, Amended, 11/03/1998, Section 18.62.040 J "deleted"; Ord 2808, Added, 12/02/1997)

SECTION 18.62.050 Land Classifications.

The following factors shall be used to determine the classifications of various lands and their constraints to building and development on them:

- A. Flood plain Corridor Lands - Lands with potential stream flow and flood hazard. The following lands are classified as Flood plain Corridor lands:
 1. All land contained within the 100 year Flood plain as defined by the Federal Flood Insurance Program, and in maps adopted by Chapter 15.10 of the Ashland Municipal Code.
 2. All land within the area defined as Flood plain Corridor land in maps adopted by the Council as provided for in section 18.62.060.
 3. All lands which have physical or historical evidence of flooding in the historical past.
 4. All areas within 20 feet (horizontal distance) of any creek designated for Riparian Preservation as a Local Stream in 18.62.050-B-18.63.050.A and depicted as such on maps the Water Resource Map adopted by the Council as ~~provided for in section 18.62.060.~~
 5. All areas within ten feet (horizontal distance) of any drainage channel creek designated as an Intermittent and Ephemeral Stream in 18.63.050.A.3 and depicted ~~on maps as such on the Water Resource Map~~ adopted by the Council ~~but not designated as Riparian Preservation.~~
- ~~B. Riparian Preservation - The following Flood plain Corridor Lands are also designated for Riparian Preservation for the purposes of this section and as listed on the Physical and Environmental Constraints Overlay Maps: Tolman, Hamilton, Clay, Bear, Kitchen, Ashland, Neil and Wrights Creeks.~~
- C. Hillside Lands - Hillside Lands are lands which are subject to damage from erosion and slope failure, and include areas which are highly visible from other portions of the city. The following lands are classified as Hillside Lands:
 1. All areas defined as Hillside Lands on the Physical Constraints Overlay map and which have a slope of 25 percent or greater.
- D. Wildfire Lands - Lands with potential of wildfire. The following lands are classified as Wildfire Lands:
 1. All areas defined as wildfire lands on the Physical Constraints Overlay map.

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- E. Severe Constraint Lands - lands with severe development characteristics which generally limit normal development. The following lands are classified as Severe Constraint Lands:
1. All areas which are within the floodway channels, as defined in Chapter 15.10.
 2. All lands with a slope greater than 35 percent.
- F. Classifications Cumulative. The above classifications are cumulative in their effect and, if a parcel of land falls under two or more classifications, it shall be subject to the regulations of each classification. Those restrictions applied shall pertain only to those portions of the land being developed and not necessarily to the whole parcel.
- (ORD 2951, amended, 07/01/2008; Ord 2808, Added, 12/02/1997)

SECTION 18.62.060 Official Maps.

- A. The City Council shall adopt official maps denoting the above identified areas. Substantial amendments of these maps shall be a Type 3 procedure.
- B. Minor amendments of the maps to correct mapping errors when the amendments are intended to more accurately reflect the mapping criteria contained in this chapter or in the findings of the Council in adopting an official map may be processed as a Type 1 procedure.
- (Ord 2808, Added, 12/02/1997)

SECTION 18.62.070 Development Standards for Flood plain Corridor Lands.

For all land use actions which could result in development of the Flood plain Corridor, the following is required in addition to any requirements of Chapter 15.10:

- A. Standards for fill in Flood plain Corridor lands:
1. Fill shall be designed as required by the International Building Code and International Residential Code, where applicable.
 2. The toe of the fill shall be kept at least ten feet outside of floodway channels, as defined in section 15.10, and the fill shall not exceed the angle of repose of the material used for fill.
 3. The amount of fill in the Flood plain Corridor shall be kept to a minimum. Fill and other material imported from off the lot that could displace floodwater shall be limited to the following:
 - a. Poured concrete and other materials necessary to build permitted structures on the lot.
 - b. Aggregate base and paving materials, and fill associated with approved public and private street and driveway construction.
 - c. Plants and other landscaping and agricultural material.
 - d. A total of 50 cubic yards of other imported fill material.
 - e. The above limits on fill shall be measured from April 1989, and shall not exceed the above amounts. These amounts are the maximum cumulative fill that can be imported onto the site, regardless of the number of permits issued.
 4. If additional fill is necessary beyond the permitted amounts in (3) above, then fill materials must be obtained on the lot from cutting or excavation only to the extent necessary to create an elevated site for permitted development. All additional fill material shall be obtained from the portion of the lot in the Flood plain Corridor.

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5. Adequate drainage shall be provided for the stability of the fill.
 6. Fill to raise elevations for a building site shall be located as close to the outside edge of the Flood plain Corridor as feasible.
- B. ~~Culverting or bridging~~ Stream crossing of any waterway or creek identified on the official maps adopted pursuant to section 18.62.060 must be designed by an engineer. Stream crossings shall be designed to the standards of Chapter 15.10, or where no floodway has been identified, to pass a one hundred (100) year flood without any increase in the upstream flood height elevation. The engineer shall consider in the design the probability that the culvert will be blocked by debris in a severe flood, and accommodate expected overflow. Fill for ~~culverting and bridging~~ stream crossings shall be kept to the minimum necessary to achieve property access, but is exempt from the limitations in section (A) above. ~~Culverting or bridging~~ Crossing of streams identified as ~~Riparian Preserve~~ Local Streams and Intermittent and Ephemeral Streams are subject to the requirements of 18.62.075.
- C. Non-residential structures shall be flood-proof to the standards in Chapter 15.10 to one foot above the elevation contained in the maps adopted by chapter 15.10, or up to the elevation contained in the official maps adopted by section 18.62.060, whichever height is greater. Where no specific elevations exist, then they must be floodproofed to an elevation of ten feet above the creek channel on Ashland, Bear or Neil Creek; to five feet above the creek channel on all other ~~Riparian Preserve creeks~~ streams identified as Riparian Corridor and all streams identified as Local Streams defined in section ~~18.62.050.B~~ 18.63.050.A and depicted as such on the Water Resources Map; and three feet above the stream channel on all other ~~drainage ways~~ streams identified as Intermittent and Ephemeral Streams defined in section 18.63.050.A.3 and depicted as such on the Water Resources Map ~~on the official maps~~.
- D. All residential structures shall be elevated so that the lowest habitable floor shall be raised to one foot above the elevation contained in the maps adopted in chapter 15.10, or to the elevation contained in the official maps adopted by section 18.62.060, whichever height is greater. Where no specific elevations exist, then they must be constructed at an elevation of ten feet above the creek channel on Ashland, Bear, or Neil Creek; to five feet above the creek channel on all other ~~Riparian Preserve creeks~~ streams identified as Riparian Corridor and all streams identified as Local Streams defined in section ~~18.62.050.B~~ 18.63.050.A; and three feet above the stream channel on all other ~~drainage ways~~ streams identified as Intermittent and Ephemeral Streams defined in section 18.63.050.A.3 and depicted as such ~~on the Water Resources Map~~ ~~on the official maps~~, or one foot above visible evidence of high flood water flow, whichever is greater. The elevation of the finished lowest habitable floor shall be certified to the city by an engineer or surveyor prior to issuance of a certificate of occupancy for the structure.
- E. To the maximum extent feasible, structures shall be placed on other than Flood plain Corridor Lands. In the case where development is permitted in the Flood plain corridor area, then development shall be limited to that area which would have the shallowest flooding.
- F. Existing lots with buildable land outside the Flood plain Corridor shall locate all residential structures outside the Corridor land, unless 50% or more of the lot is within the Flood plain Corridor. For residential uses proposed for existing lots that have more than 50% of the lot in Corridor land, structures may be located on that portion of the Flood plain corridor that is

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two feet or less below the flood elevations on the official maps, but in no case closer than 20 feet to the channel of a ~~Riparian Preservation Creek~~stream identified as a Riparian Corridor or a Local Stream defined in section 18.63.050 and depicted as such on the Water Resources Map. Construction shall be subject to the requirements in paragraph D above.

- G. New non-residential uses may be located on that portion of Flood plain Corridor lands that equal to or above the flood elevations on the official maps adopted in section 18.62.060. Second story construction may be cantilevered or supported by pillars that will have minimal impact on the flow of floodwaters over the Flood plain corridor for a distance of 20 feet if it does not impact riparian vegetation, and the clearance from finished grade is at least ten feet in height, ~~and have minimal impact on the flow of floodwaters.~~ The finished floor elevation may not be more than two feet below the flood corridor elevations.
- H. All lots modified by lot line adjustments, or new lots created from lots which contain Flood plain Corridor land must contain a building envelope on all lot(s) which contain(s) buildable area of a sufficient size to accommodate the uses permitted in the underlying zone, unless the action is for open space or conservation purposes. This section shall apply even if the effect is to prohibit further division of lots that are larger than the minimum size permitted in the zoning ordinance.
- I. Basements.
 - 1. Habitable basements are not permitted for new or existing structures or additions located within the Flood plain Corridor.
 - 2. Non-habitable basements, used for storage, parking, and similar uses are permitted for residential structures but must be flood-proofed to the standards of Chapter 15.10.
- J. Storage of petroleum products, pesticides, or other hazardous or toxic chemicals is not permitted in Flood plain Corridor lands.
- K. Fences constructed within 20 feet of any ~~Riparian Preservation Creek designated by this chapter~~stream identified as Riparian Corridor or Local Stream defined in section 18.63.050 and depicted as such on the Water Resources Map shall be limited to wire or electric fence, or similar fence that will not collect debris or obstruct flood waters, but not including wire mesh or chain link fencing. Fences shall not be constructed across any identified riparian drainage or riparian preservation creek. Fences shall not be constructed within any designated floodway.
- L. Decks and structures other than buildings, if constructed on Flood plain Corridor Lands and at or below the levels specified in section 18.62.070.C and D, shall be flood-proofed to the standards contained in Chapter 15.10.
- M. Local streets and utility connections to developments in and adjacent to the Flood plain Corridor shall be located outside of the Flood plain Corridor, except for crossing the Corridor, and except in the Bear Creek Flood plain corridor as outlined below:
 - 1. Public street construction may be allowed within the Bear Creek Flood plain corridor as part of development following the adopted North Mountain Neighborhood Plan. This exception shall only be permitted for that section of the Bear Creek Flood plain corridor between North Mountain Avenue and the Nevada Street right-of-way. The new street shall be constructed in the general location as indicated on the neighborhood plan map,

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and in the area generally described as having the shallowest potential for flooding within the corridor.

2. Proposed development that is not in accord with the North Mountain Neighborhood Plan shall not be permitted to utilize this exception.

(ORD 2951, amended, 07/01/2008; Ord 2808, Added, 12/02/1997)

SECTION 18.62.075 — Development Standards for Riparian Preservation lands.

~~A. All development in areas indicated for Riparian Preservation, as defined in section 18.62.050(B), shall comply with the following standards:~~

- ~~1. Development shall be subject to all Development Standards for Flood plain Corridor Lands (18.62.070)~~
- ~~2. Any tree over six inches d.b.h. shall be retained to the greatest extent feasible.~~
- ~~3. Fill and Culverting shall be permitted only for streets, access, or utilities. The crossing shall be at right angles to the creek channel to the greatest extent possible. Fill shall be kept to a minimum.~~
- ~~4. The general topography of Riparian Preservation lands shall be retained.~~

~~(Ord 2808, Added, 12/02/1997)~~

SECTION 18.62.080 Development Standards for Hillside Lands.

It is the purpose of the Development Standards for Hillside Lands to provide supplementary development regulations to underlying zones to ensure that development occurs in such a manner as to protect the natural and topographic character and identity of these areas, environmental resources, the aesthetic qualities and restorative value of lands, and the public health, safety, and general welfare by insuring that development does not create soil erosion, sedimentation of lower slopes, slide damage, flooding problems, and severe cutting or scarring. It is the intent of these development standards to encourage a sensitive form of development and to allow for a reasonable use that complements the natural and visual character of the city.

A. General Requirements. The following general requirements shall apply in Hillside Lands:

1. All development shall occur on lands defined as having buildable area. Slopes greater than 35% shall be considered unbuildable except as allowed below. Variances may be granted to this requirement only as provided in section 18.62.080.H.
 - a. Existing parcels without adequate buildable area less than or equal to 35% shall be considered buildable for one unit.
 - b. Existing parcels without adequate buildable area less than or equal to 35% cannot be subdivided or partitioned.
2. All newly created lots either by subdivision or partition shall contain a building envelope with a slope of 35% or less.
3. New streets, flag drives, and driveways shall be constructed on lands of less than or equal to 35% slope with the following exceptions:
 - a. The street is indicated on the City's Transportation Plan Map - Street Dedications.
 - b. The portion of the street, flag drive, or driveway on land greater than 35% slope does not exceed a length of 100 feet.
4. Geotechnical Studies. For all applications on Hillside Lands involving subdivisions or partitions, the following additional information is required:

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A geotechnical study prepared by a geotechnical expert indicating that the site is stable for the proposed use and development. The study shall include the following information:

- a. Index map.
- b. Project description to include location, topography, drainage, vegetation, discussion of previous work and discussion of field exploration methods.
- c. Site geology, based on a surficial survey, to include site geologic maps, description of bedrock and surficial materials, including artificial fill, locations of any faults, folds, etc..., and structural data including bedding, jointing and shear zones, soil depth and soil structure.
- d. Discussion of any off-site geologic conditions that may pose a potential hazard to the site, or that may be affected by on-site development.
- e. Suitability of site for proposed development from a geologic standpoint.
- f. Specific recommendations for cut and fill slope stability, seepage and drainage control or other design criteria to mitigate geologic hazards.
- g. If deemed necessary by the engineer or geologist to establish whether an area to be affected by the proposed development is stable, additional studies and supportive data shall include cross-sections showing subsurface structure, graphic logs with subsurface exploration, results of laboratory test and references.
- h. Signature and registration number of the engineer and/or geologist.
- i. Additional information or analyses as necessary to evaluate the site.
- j. Inspection schedule for the project as required in 18.62.080.B.9.
- k. Location of all irrigation canals and major irrigation pipelines.

B. Hillside Grading and Erosion Control. All development on lands classified as hillside shall provide plans conforming with the following items:

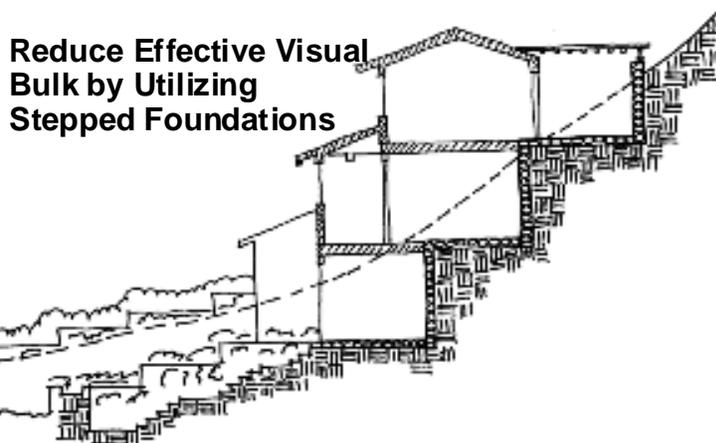
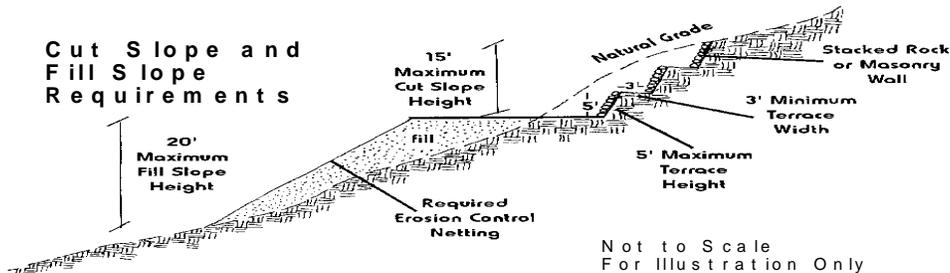
1. All grading, retaining wall design, drainage, and erosion control plans for development on Hillside Lands shall be designed by a geotechnical expert. All cuts, grading or fills shall conform to the International Building Code and be consistent with the provisions of this Title. Erosion control measures on the development site shall be required to minimize the solids in runoff from disturbed areas.
2. For development other than single family homes on individual lots, all grading, drainage improvements, or other land disturbances shall only occur from May 1 to October 31. Excavation shall not occur during the remaining wet months of the year. Erosion control measures shall be installed and functional by October 31. Up to 30 day modifications to the October 31 date, and 45 day modification to the May 1 date may be made by the Planning Director, based upon weather conditions and in consultation with the project geotechnical expert. The modification of dates shall be the minimum necessary, based upon evidence provided by the applicant, to accomplish the necessary project goals.
3. Retention in natural state. On all projects on Hillside Lands involving partitions and subdivisions, and existing lots with an area greater than one-half acre, an area equal to 25% of the total project area, plus the percentage figure of the average slope of the total project area, shall be retained in a natural state. Lands to be retained in a natural state shall be protected from damage through the use of temporary construction fencing or the functional equivalent.

For example, on a 25,000 sq. ft. lot with an average slope of 29%, $25\%+29\%=54\%$ of the total lot area shall be retained in a natural state.

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The retention in a natural state of areas greater than the minimum percentage required here is encouraged.

4. Grading - cuts. On all cut slopes on areas classified as Hillside lands, the following standards shall apply:
 - a. Cut slope angles shall be determined in relationship to the type of materials of which they are composed. Where the soil permits, limit the total area exposed to precipitation and erosion. Steep cut slopes shall be retained with stacked rock, retaining walls, or functional equivalent to control erosion and provide slope stability when necessary. Where cut slopes are required to be laid back (1:1 or less steep), the slope shall be protected with erosion control getting or structural equivalent installed per manufacturers specifications, and revegetated.
 - b. Exposed cut slopes, such as those for streets, driveway accesses, or yard areas, greater than seven feet in height shall be terraced. Cut faces on a terraced section shall not exceed a maximum height of five feet. Terrace widths shall be a minimum of three feet to allow for the introduction of vegetation for erosion control. Total cut slopes shall not exceed a maximum vertical height of 15 feet. (See Graphic)



The top of cut slopes not utilizing structural retaining walls shall be located a minimum setback of one-half the height of the cut slope from the nearest property line.

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- Cut slopes for structure foundations encouraging the reduction of effective visual bulk, such as split pad or stepped footings shall be exempted from the height limitations of this section. (See Graphic)
- c. Revegetation of cut slope terraces shall include the provision of a planting plan, introduction of top soil where necessary, and the use of irrigation if necessary. The vegetation used for these areas shall be native or species similar in resource value which will survive, help reduce the visual impact of the cut slope, and assist in providing long term slope stabilization. Trees, bush-type plantings and cascading vine-type plantings may be appropriate.
5. Grading - fills. On all fill slopes on lands classified as Hillside Lands, the following standards shall apply:
- a. Fill slopes shall not exceed a total vertical height of 20 feet. The toe of the fill slope area not utilizing structural retaining shall be a minimum of six feet from the nearest property line.
(Ord 2834 S6, 1998)
 - b. Fill slopes shall be protected with an erosion control netting, blanket or functional equivalent. Netting or blankets shall only be used in conjunction with an organic mulch such as straw or wood fiber. The blanket must be applied so that it is in complete contact with the soil so that erosion does not occur beneath it. Erosion netting or blankets shall be securely anchored to the slope in accordance with manufacturer's recommendations.
 - c. Utilities. Whenever possible, utilities shall not be located or installed on or in fill slopes. When determined that it necessary to install utilities on fill slopes, all plans shall be designed by a geotechnical expert.
 - d. Revegetation of fill slopes shall utilize native vegetation or vegetation similar in resource value and which will survive and stabilize the surface. Irrigation may be provided to ensure growth if necessary. Evidence shall be required indicating long-term viability of the proposed vegetation for the purposes of erosion control on disturbed areas.
6. Revegetation requirements. Where required by this chapter, all required revegetation of cut and fill slopes shall be installed prior to the issuance of a certificate of occupancy, signature of a required survey plat, or other time as determined by the hearing authority. Vegetation shall be installed in such a manner as to be substantially established within one year of installation.
7. Maintenance, Security, and Penalties for Erosion Control Measures.
- a. Maintenance. All measures installed for the purposes of long-term erosion control, including but not limited to vegetative cover, rock walls, and landscaping, shall be maintained in perpetuity on all areas which have been disturbed, including public rights-of-way. The applicant shall provide evidence indicating the mechanisms in place to ensure maintenance of measures.
 - b. Security. Except for individual lots existing prior to January 1, 1998, after an Erosion Control Plan is approved by the hearing authority and prior to construction, the applicant shall provide a performance bond or other financial guarantees in the amount of 120% of the value of the erosion control measures necessary to stabilize the site. Any financial guarantee instrument proposed other than a performance bond shall be approved by the City Attorney. The financial guarantee instrument shall be in effect for a period of at least one year, and shall be released when the Planning Director and Public Works Director determine, jointly, that the site has been stabilized. All or a portion of the security retained by the City may be withheld for a period up to five years beyond the one year maintenance period if it has been

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determined by the City that the site has not been sufficiently stabilized against erosion.

8. Site Grading. The grading of a site on Hillside Lands shall be reviewed considering the following factors:
 - a. No terracing shall be allowed except for the purposes of developing a level building pad and for providing vehicular access to the pad.
 - b. Avoid hazardous or unstable portions of the site.
(Ord 2834,S2 1998)
 - c. Avoid hazardous or unstable portions of the site.
 - d. Building pads should be of minimum size to accommodate the structure and a reasonable amount of yard space. Pads for tennis courts, swimming pools and large lawns are discouraged. As much of the remaining lot area as possible should be kept in the natural state of the original slope.
9. Inspections and Final Report. Prior to the acceptance of a subdivision by the City, signature of the final survey plat on partitions, or issuance of a certificate of occupancy for individual structures, the project geotechnical expert shall provide a final report indicating that the approved grading, drainage, and erosion control measures were installed as per the approved plans, and that all scheduled inspections, as per 18.62.080.A.4.j were conducted by the project geotechnical expert periodically throughout the project.

C. Surface and Groundwater Drainage. All development on Hillside Lands shall conform to the following standards:

1. All facilities for the collection of stormwater runoff shall be required to be constructed on the site and according to the following requirements:
 - a. Stormwater facilities shall include storm drain systems associated with street construction, facilities for accommodating drainage from driveways, parking areas and other impervious surfaces, and roof drainage systems.
 - b. Stormwater facilities, when part of the overall site improvements, shall be, to the greatest extent feasible, the first improvements constructed on the development site.
 - c. Stormwater facilities shall be designed to divert surface water away from cut faces or sloping surfaces of a fill.
 - d. Existing natural drainage systems shall be utilized, as much as possible, in their natural state, recognizing the erosion potential from increased storm drainage..
 - e. Flow-retarding devices, such as detention ponds and recharge berms, shall be used where practical to minimize increases in runoff volume and peak flow rate due to development. Each facility shall consider the needs for an emergency overflow system to safely carry any overflow water to an acceptable disposal point.
 - f. Stormwater facilities shall be designed, constructed and maintained in a manner that will avoid erosion on-site and to adjacent and downstream properties.
 - g. Alternate stormwater systems, such as dry well systems, detention ponds, and leach fields, shall be designed by a registered engineer or geotechnical expert and approved by the City' s Public Works Department or City Building Official.

D. Tree Conservation, Protection and Removal. All development on Hillside Lands shall conform to the following requirements:

1. Inventory of Existing Trees. A tree survey at the same scale as the project site plan shall be prepared, which locates all trees greater than six inches d.b.h., identified by d.b.h., species, approximate extent of tree canopy. In addition, for areas proposed to be disturbed, existing tree base elevations shall be provided. Dead or diseased trees shall

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be identified. Groups of trees in close proximity (i.e. those within five feet of each other) may be designated as a clump of trees, with the predominant species, estimated number and average diameter indicated. All tree surveys shall have an accuracy of plus or minus two feet. The name, signature, and address of the site surveyor responsible for the accuracy of the survey shall be provided on the tree survey.

Portions of the lot or project area not proposed to be disturbed by development need not be included in the inventory.

2. Evaluation of Suitability for Conservation. All trees indicated on the inventory of existing trees shall also be identified as to their suitability for conservation. When required by the hearing authority, the evaluation shall be conducted by a landscape professional. Factors included in this determination shall include:
 - a. Tree health. Healthy trees can better withstand the rigors of development than non-vigorous trees.
 - b. Tree Structure. Trees with severe decay or substantial defects are more likely to result in damage to people and property.
 - c. Species. Species vary in their ability to tolerate impacts and damage to their environment.
 - d. Potential longevity.
 - e. Variety. A variety of native tree species and ages.
 - f. Size. Large trees provide a greater protection for erosion and shade than smaller trees.
3. Tree Conservation in Project Design. Significant trees (2' d.b.h. or greater conifers and 1' d.b.h. or greater broadleaf) shall be protected and incorporated into the project design whenever possible.
 - a. Streets, driveways, buildings, utilities, parking areas, and other site disturbances shall be located such that the maximum number of existing trees on the site are preserved, while recognizing and following the standards for fuel reduction if the development is located in Wildfire Lands.



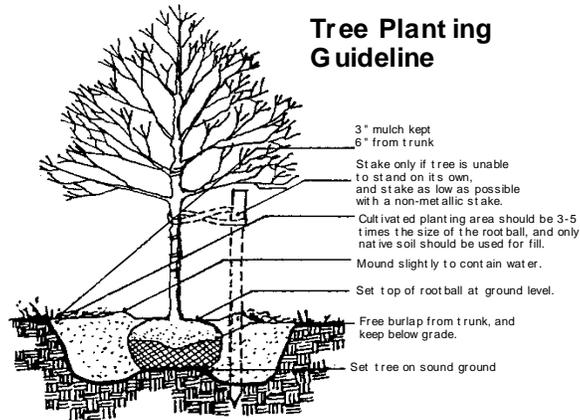
- b. Building envelopes shall be located and sized to preserve the maximum number of trees on site while recognizing and following the standards for fuel reduction if the development is located in Wildfire Lands.
 - c. Layout of the project site utility and grading plan shall avoid disturbance of tree protection areas.
4. Tree Protection. On all properties where trees are required to be preserved during the course of development, the developer shall follow the following tree protection standards:

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- a. All trees designated for conservation shall be clearly marked on the project site. Prior to the start of any clearing, stripping, stockpiling, trenching, grading, compaction, paving or change in ground elevation, the applicant shall install fencing at the drip line of all trees to be preserved adjacent to or in the area to be altered. Temporary fencing shall be established at the perimeter of the dripline. Prior to grading or issuance of any permits, the fences may be inspected and their location approved by the Staff Advisor. (see 18.61.200)
 - b. Construction site activities, including but not limited to parking, material storage, soil compaction and concrete washout, shall be arranged so as to prevent disturbances within tree protection areas.
 - c. No grading, stripping, compaction, or significant change in ground elevation shall be permitted within the drip line of trees designated for conservation unless indicated on the grading plans, as approved by the City, and landscape professional. If grading or construction is approved within the dripline, a landscape professional may be required to be present during grading operations, and shall have authority to require protective measures to protect the roots.
 - d. Changes in soil hydrology and site drainage within tree protection areas shall be minimized. Excessive site run-off shall be directed to appropriate storm drain facilities and away from trees designated for conservation.
 - e. Should encroachment into a tree protection area occur which causes irreparable damage, as determined by a landscape professional, to trees, the project plan shall be revised to compensate for the loss. Under no circumstances shall the developer be relieved of responsibility for compliance with the provisions of this chapter.
5. Tree Removal. Development shall be designed to preserve the maximum number of trees on a site. The development shall follow the standards for fuel reduction if the development is located in Wildfire Lands. When justified by findings of fact, the hearing authority may approve the removal of trees for one or more of the following conditions:
(Ord 2834 S3, 1998)
- a. The tree is located within the building envelope.
 - b. The tree is located within a proposed street, driveway, or parking area.
 - c. The tree is located within a water, sewer, or other public utility easement.
 - d. The tree is determined by a landscape professional to be dead or diseased, or it constitutes an unacceptable hazard to life or property when evaluated by the standards in 18.62.080.D.2.
 - e. The tree is located within or adjacent to areas of cuts or fills that are deemed threatening to the life of the tree, as determined by a landscape professional.
6. Tree Replacement. Trees approved for removal, with the exception of trees removed because they were determined to be diseased, dead, or a hazard, shall be replaced in compliance with the following standards:
- a. Replacement trees shall be indicated on a tree replanting plan. The replanting plan shall include all locations for replacement trees, and shall also indicate tree planting details.
(Ord 2834 S4, 1998)
 - b. Replacement trees shall be planted such that the trees will in time result in canopy equal to or greater than the tree canopy present prior to development of the property. The canopy shall be designed to mitigate of the impact of paved and developed areas, reduce surface erosion and increase slope stability. Replacement tree locations shall consider impact on the wildfire prevention and control plan. The

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hearing authority shall have the discretion to adjust the proposed replacement tree canopy based upon site-specific evidence and testimony.



- c. Maintenance of replacement trees shall be the responsibility of the property owner. Required replacement trees shall be continuously maintained in a healthy manner. Trees that die within the first five years after initial planting must be replaced in kind, after which a new five year replacement period shall begin. Replanting must occur within 30 days of notification unless otherwise noted.
(Ord 2834 S5, 1998)

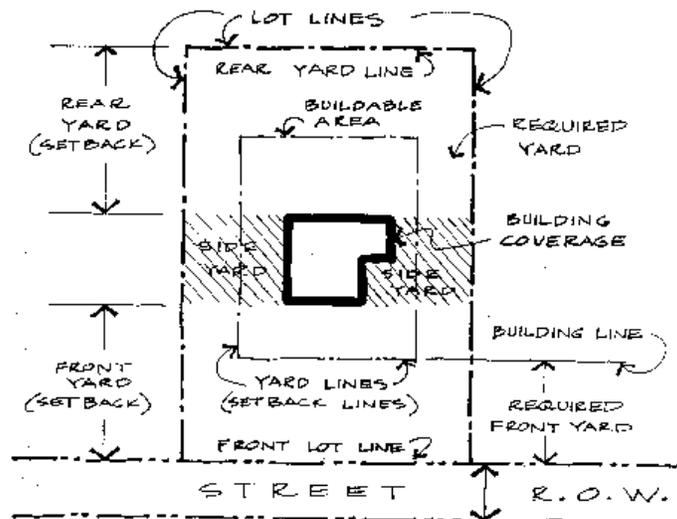
7. Enforcement.

- a. All tree removal shall be done in accord with the approved tree removal and replacement plan. No trees designated for conservation shall be removed without prior approval of the City of Ashland.
- b. Should the developer or developer's agent remove or destroy any tree that has been designated for conservation, the developer may be fined up to three times the current appraised value of the replacement trees and cost of replacement or up to three times the current market value, as established by a professional arborist, whichever is greater.
- c. Should the developer or developer's agent damage any tree that has been designated for protection and conservation, the developer shall be penalized \$50.00 per scar. If necessary, a professional arborist's report, prepared at the developer's expense, may be required to determine the extent of the damage. Should the damage result in loss of appraised value greater than determined above, the higher of the two values shall be used.

E. Building Location and Design Standards. All buildings and buildable areas proposed for Hillside Lands shall be designed and constructed in compliance with the following standards:

1. Building Envelopes. All newly created lots, either by subdivision or partition, shall contain building envelopes conforming to the following standards:
- a. The building envelope shall contain a buildable area with a slope of 35% or less.

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- b. Building envelopes and lot design shall address the retention of a percentage of the lot in a natural state as required in 18.62.080.B.3.
- c. Building envelopes shall be designed and located to maximize tree conservation as required in 18.62.080.D.3. while recognizing and following the standards for fuel reduction if the development is located in Wildfire Lands
- d. It is recommended that building envelope locations should be located to avoid ridgeline exposures, and designed such that the roofline of a building within the envelope does not project above the ridgeline.

Retention of hillside character and natural slope by avoiding ridgeline locations



- 2. Building Design. To reduce hillside disturbance through the use of slope responsive design techniques, buildings on Hillside Lands, excepting those lands within the designated Historic District, shall incorporate the following into the building design and indicate features on required building permits:
 - a. Hillside Building Height. The height of all structures shall be measured vertically from the natural grade to the uppermost point of the roof edge or peak, wall, parapet, mansard, or other feature perpendicular to that grade. Maximum Hillside Building Height shall be 35 feet. (graphics available on original ordinance)
 - b. Cut buildings into hillsides to reduce effective visual bulk.
 - (1). Split pad or stepped footings shall be incorporated into building design to allow the structure to more closely follow the slope.
 - (2). Reduce building mass by utilizing below grade rooms cut into the natural slope.
 - c. A building setback shall be required on all downhill building walls greater than 20 feet in height, as measured above natural grade. Setbacks shall be a minimum of

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- six feet. No vertical walls on the downhill elevations of new buildings shall exceed a maximum height of 20 feet above natural grade. (see graphic)
- d. Continuous horizontal building planes shall not exceed a maximum length of 36 feet. Planes longer than 36 feet shall include a minimum offset of six feet. (graphic available on original ordinance)
 - e. It is recommended that roof forms and roof lines for new structures be broken into a series of smaller building components to reflect the irregular forms of the surrounding hillside. Long, linear unbroken roof lines are discouraged. Large gable ends on downhill elevations should be avoided, however smaller gables may be permitted. (graphic available on original ordinance)
 - f. It is recommended that roofs of lower floor levels be used to provide deck or outdoor space for upper floor levels. The use of overhanging decks with vertical supports in excess of 12 feet on downhill elevations should be avoided.
 - g. It is recommended that color selection for new structures be coordinated with the predominant colors of the surrounding landscape to minimize contrast between the structure and the natural environment
- F. All structures on Hillside Lands shall have foundations which have been designed by an engineer or architect with demonstrable geotechnical design experience. A designer, as defined, shall not complete working drawings without having foundations designed by an engineer.
- G. All newly created lots or lots modified by a lot line adjustment must include a building envelope on all lots that contains a buildable area less than 35% slope of sufficient size to accommodate the uses permitted in the underlying zone, unless the division or lot line adjustment is for open space or conservation purposes.
- H. Administrative Variance From Development Standards for Hillside Lands - 18.62.080. A variance under this section is not subject to the variance requirements of section 18.100 and may be granted with respect to the development standards for Hillside Lands if all of the following circumstances are found to exist:
- 1. There is demonstrable difficulty in meeting the specific requirements of this chapter due to a unique or unusual aspect of the site or proposed use of the site;
 - 2. The variance will result in equal or greater protection of the resources protected under this chapter;
 - 3. The variance is the minimum necessary to alleviate the difficulty; and
 - 4. The variance is consistent with the stated Purpose and Intent of the Physical and Environmental Constraints Chapter and section 18.62.080.

Appeals of decisions involving administrative variances shall be processed as outlined in 18.108.070.

(ORD 2951, amended, 07/01/2008; Ord 2808, Added, 12/02/1997)

SECTION 18.62.090 Development Standards for Wildfire Lands.

- A. Requirements for Subdivisions, Performance Standards Developments, or Partitions.
- 1. A Fire Prevention and Control Plan shall be required with the submission of any application for an outline plan approval of a Performance Standards Development, preliminary plat of a subdivision, or application to partition land which contained areas designated Wildfire Hazard areas.

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2. The Staff Advisor shall forward the Fire Prevention and Control Plan to the Fire Chief within 3 days of the receipt of a completed application. The Fire Chief shall review the Fire Prevention and Control Plan, and submit a written report to the Staff Advisor no less than 7 days before the scheduled hearing. The Fire Chief's report shall be a part of the record of the Planning Action.
3. The Fire Prevention and Control Plan, prepared at the same scale as the development plans, shall include the following items:
 - a. An analysis of the fire hazards on the site from wildfire, as influenced by existing vegetation and topography.
 - b. A map showing the areas that are to be cleared of dead, dying, or severely diseased vegetation.
 - c. A map of the areas that are to be thinned to reduce the interlocking canopy of trees.
 - d. A tree management plan showing the location of all trees that are to be preserved and removed on each lot. In the case of heavily forested parcels, only trees scheduled for removal shall be shown.
 - e. The areas of Primary and Secondary Fuel Breaks that are required to be installed around each structure, as required by 18.62.090 B.
 - f. Roads and driveways sufficient for emergency vehicle access and fire suppression activities, including the slope of all roads and driveways within the Wildfire Lands area.
4. Criterion for Approval. The hearing authority shall approve the Fire Prevention and Control Plan when, in addition to the findings required by this chapter, the additional finding is made that the wildfire hazards present on the property have been reduced to a reasonable degree, balanced with the need to preserve and/or plant a sufficient number of trees and plants for erosion prevention, wildlife habitat, and aesthetics.
5. The hearing authority may require, through the imposition of conditions attached to the approval, the following requirements as deemed appropriate for the development of the property:
 - a. Delineation of areas of heavy vegetation to be thinned and a formal plan for such thinning.
 - b. Clearing of sufficient vegetation to reduce fuel load.
 - c. Removal of all dead and dying trees.
 - d. Relocation of structures and roads to reduce the risks of wildfire and improve the chances of successful fire suppression.
6. The Fire Prevention and Control Plan shall be implemented during the public improvements required of a subdivision or Performance Standards Development, and shall be considered part of the subdivider's obligations for land development. The Plan shall be implemented prior to the issuance of any building permit for structures to be located on lots created by partitions and for subdivisions or Performance Standards developments not requiring public improvements. The Fire Chief, or designee, shall inspect and approve the implementation of the Fire Prevention and Control Plan, and the Plan shall not be considered fully implemented until the Fire Chief has given written notice to the Staff Advisor that the Plan was completed as approved by the hearing authority.
7. In subdivisions or Performance Standards Developments, provisions for the maintenance of the Fire Prevention and Control Plan shall be included in the covenants, conditions and restrictions for the development, and the City of Ashland shall be named as a beneficiary of such covenants, restrictions, and conditions.
8. On lots created by partitions, the property owner shall be responsible for maintaining the

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property in accord with the requirements of the Fire Prevention and Control Plan approved by the hearing authority.

- B. Requirements for construction of all structures.
1. All new construction and any construction expanding the size of an existing structure, shall have a "fuel break" as defined below.
 2. A "fuel break" is defined as an area which is free of dead or dying vegetation, and has native, fast-burning species sufficiently thinned so that there is no interlocking canopy of this type of vegetation. Where necessary for erosion control or aesthetic purposes, the fuel break may be planted in slow-burning species. Establishment of a fuel break does not involve stripping the ground of all native vegetation. "Fuel Breaks" may include structures, and shall not limit distance between structures and residences beyond that required by other sections of this title.
 3. Primary Fuel Break - A primary fuel break will be installed, maintained and shall extend a minimum of 30 feet, or to the property line, whichever is less, in all directions around structures, excluding fences, on the property. The goal within this area is to remove ground cover that will produce flame lengths in excess of one foot. Such a fuel break shall be increased by ten feet for each 10% increase in slope over 10%. Adjacent property owners are encouraged to cooperate on the development of primary fuel breaks.
 4. Secondary Fuel Break - A secondary fuel break will be installed, maintained and shall extend a minimum of 100 feet beyond the primary fuel break where surrounding landscape is owned and under the control of the property owner during construction. The goal of the secondary fuel break is to reduce fuels so that the overall intensity of any wildfire is reduced through fuels control.
 5. All structures shall be constructed or re-roofed with Class B or better non-wood roof coverings, as determined by the Oregon Structural Specialty Code. All re-roofing of existing structures in the Wildfire Lands area for which at least 50% of the roofing area requires re-roofing shall be done under approval of a zoning permit. No structure shall be constructed or re-roofed with wooden shingles, shakes, wood-product material or other combustible roofing material, as defined in the City's building code.
- C. Fuel breaks in areas which are also Erosive or Slope Failure Lands shall be included in the erosion control measures outlined in section 18.62.080.
- D. Implementation.
1. For land which have been subdivided and required to comply with A. (6) above, all requirements of the Plan shall be complied with prior to the commencement of construction with combustible materials.
 2. For all other structures, the vegetation control requirements of section (B) above shall be complied with before the commencement of construction with combustible materials on the _____ lot.
(Ord. 2657, 1991)
 3. As of November 1, 1994, existing residences in subdivisions developed outside of the Wildfire Lands Zone, but later included due to amendments to the zone boundaries shall be exempt from the requirements of this zone, with the exception of section 18.62.090 B.5. above. All new residences shall comply with all standards for new construction in section 18.62.090 B.
 4. Subdivisions developed outside of the wildfire lands zone prior to November 1, 1994, but later included as part of the zone boundary amendment, shall not be required to prepare

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or implement Fire Prevention and Control Plans outlined in section 18.62.090 A.
(Ord 2747, 1994)
(Ord 2808, Added, 12/02/1997)

SECTION 18.62.100 Development Standards for Severe Constraint Lands.

- A. Severe Constraint Lands are extremely sensitive to development, grading, filling, or vegetation removal and, whenever possible, alternative development should be considered.
- B. Development of floodways is not permitted except for bridges and road crossings. Such crossings shall be designed to pass the 100 year flood without raising the upstream flood height more than six inches.
- C. Development on lands greater than 35% slope shall meet all requirements of section 18.62.080 in addition to the requirements of this section.
- D. Development of land or approval for a planning action shall be allowed only when the following study has been accomplished. An engineering geologic study approved by the City's Public Works Director and Planning Director establishes that the site is stable for the proposed use and development. The study shall include the following:
 - 1. Index map.
 - 2. Project description to include location, topography, drainage, vegetation, discussion of previous work and discussion of field exploration methods.
 - 3. Site geology, based on a surficial survey, to include site geologic maps, description of bedrock and surficial materials, including artificial fill, locations of any faults, folds, etc., and structural data including bedding, jointing and shear zones, soil depth and soil structure.
 - 4. Discussion of any off-site geologic conditions that may pose a potential hazard to the site, or that may be affected by on-site development.
 - 5. Suitability of site for proposed development from a geologic standpoint.
 - 6. Specific recommendations for cut slope stability, seepage and drainage control or other design criteria to mitigate geologic hazards.
 - 7. If deemed necessary by the engineer or geologist to establish whether an area to be affected by the proposed development is stable, additional studies and supportive data shall include cross-sections showing subsurface structure, graphic logs with subsurface exploration, results of laboratory test and references.
 - 8. Signature and registration number of the engineer and/or geologist.
 - 9. Additional information or analyses as necessary to evaluate the site.

(Ord 2808, Added, 12/02/1997)

SECTION 18.62.110 Density Transfer.

Density may be transferred out of unbuildable areas to buildable areas of a lot provided the following standards are met:

- A. Partitions and subdivisions involving density transfer shall be processed under Performance Standards, Chapter 18.88 of the Ashland Municipal Code.
- B. A map shall be submitted showing the net buildable area to which the density will be transferred.
- C. A covenant shall be recorded limiting development on the area from which density is transferred.
- D. Density may not be transferred from one ownership to another but only within the lot(s) owned by the same person.
- E. Density may be transferred only on contiguous lots under common ownership.

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- F. The density of the buildable area may not be increased to more than two (2) times the permitted density of the underlying zone. Fractional units are to be rounded down to the next whole number.

(Ord. 2528, 1989)

(Ord 2808, Added, 12/02/1997)

SECTION 18.62.130 Penalties.

The following sections are in addition to the enforcement actions that may be taken and penalties which may be imposed in chapter 18.112 for a violation of this chapter:

- A. Whenever any work is being done contrary to the provisions of this chapter or whenever erosion control measures, tree protection measures, wildfire control measures, or Flood plain corridor development measures are not being properly maintained or are not functioning properly due to faulty installation or neglect, the director of community development or the director's designee, may order the work stopped by notice in writing served on any persons engaged in the doing or causing of such work to be done, and any such persons shall immediately stop work until authorized by the director or designee to proceed with the work.
- B. All development under this chapter and all work or construction for which a permit is required under this chapter shall be subject to inspection by the director of community development or the director's designee. When an inspection is made under this section or when it is necessary to make an inspection to enforce this code, or when the director or designee has reasonable cause to believe that there exists upon Hillside Lands a condition which is contrary to or in violation of this chapter which makes the premises unsafe, dangerous or hazardous, the director or designee may enter the premises at reasonable times to inspect or to perform the duties imposed by this chapter. The director or designee shall first make a reasonable effort to locate the owner or other person having charge of the premises and request entry.
- C. The City may refuse to accept any development permit application, may revoke or suspend any development or building permit, or may deny occupancy on the property until erosion control measures, tree protection measures, wildfire control measures, or Flood plain corridor development measures have been installed properly and are maintained in accordance with the requirements of this chapter.
- D. The owner of the property from which erosion occurs due to failure or neglect of erosion control measures, together with any person or parties who cause such erosion shall be responsible to mitigate the impacts of the erosion and prevent future erosion.

(Ord 2808, Added, 12/02/1997)

ATTACHMENT D

Draft Water Resources Map

Water Resource Protection Zones Requirements

Stream Bank Protection Zones

Riparian Corridors (Goal 5 Resource)

For all fish-bearing streams with average annual stream flow less than 1,000 cubic feet per second (cfs), the Stream Bank Protection Zone shall extend 50 feet upland from top of bank.

Other Local Streams

For non fish-bearing streams, the Stream Bank Protection Zone shall extend 30 feet upland from the top of bank or 40 feet from the centerline of the stream, whichever is greater.

Intermittent and Ephemeral Streams

For intermittent and ephemeral streams, the Stream Bank Protection Zone shall include the area 20 feet upland from the top of each bank or 30 feet from the centerline of the stream, whichever is greater.

Wetland Protection Zones

Locally Significant Wetlands

For wetlands classified as locally significant on Ashland's Local Wetland Inventory (LWI), the Wetland Protection Zone shall consist of lands identified to have a wetland presence on the wetland delineation, plus all lands within 50 feet of the upland-wetland edge.

Possible Wetlands (PW)

For wetlands not classified as locally significant on Ashland's Local Wetland Inventory (LWI), the Wetland Protection Zone shall consist of all lands identified to have a wetland presence on the wetland delineation, plus all lands within 20 feet of the upland-wetland edge.

Note: Where the stream bank protection zone includes all or portions of a locally significant wetland, the standard distance to the stream bank protection zone shall be measured from, and include, the upland edge of the wetland.

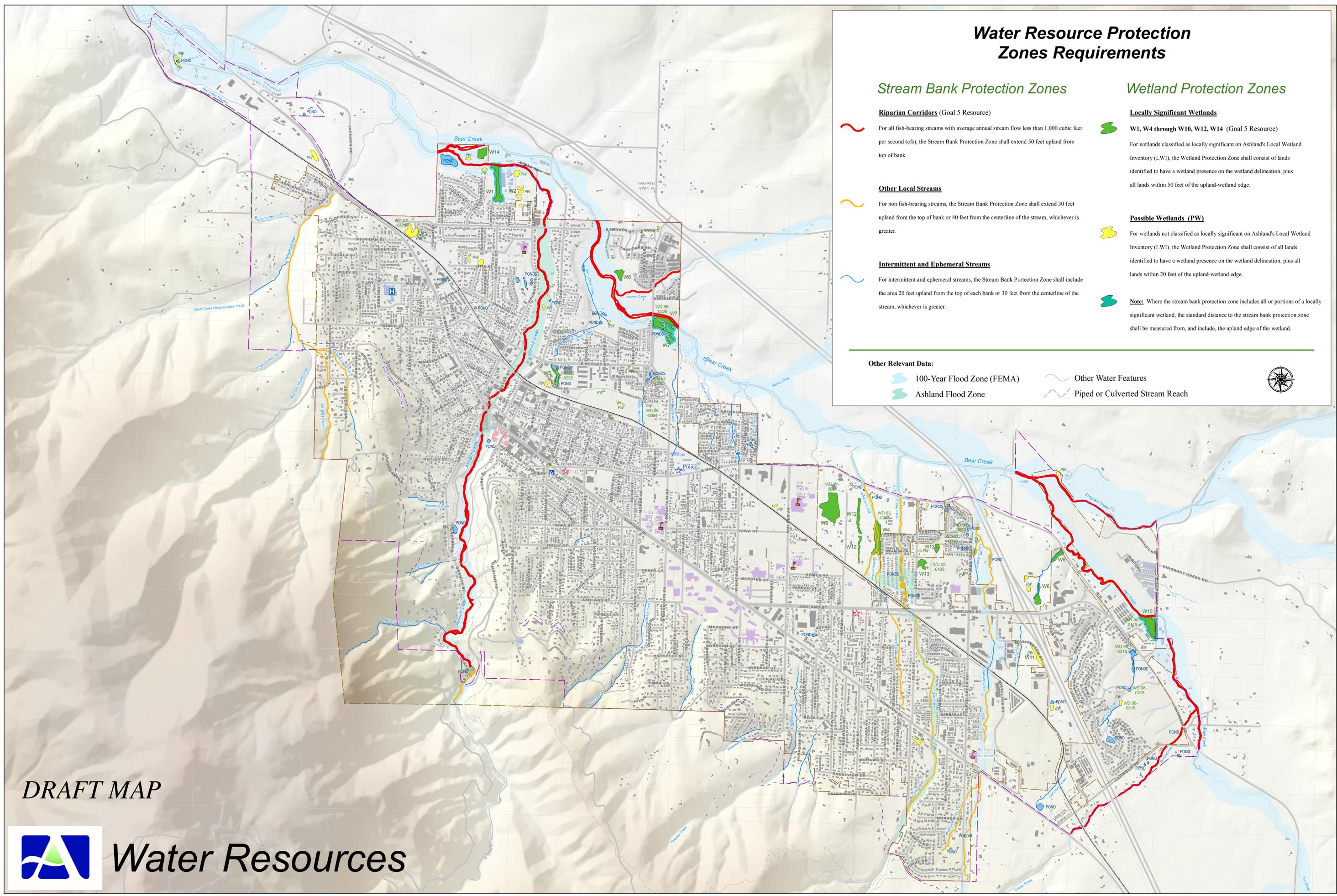
Other Relevant Data:

100-Year Flood Zone (FEMA)

Ashland Flood Zone

Other Water Features

Piped or Culverted Stream Reach



DRAFT MAP

ATTACHMENT E

Local Wetlands Inventory & Assessment

Riparian Corridor Inventory with Oregon
Division of State Lands Approval Letter



Oregon

Theodore R. Kulongoski, Governor

Department of State Lands

775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 378-3805
FAX (503) 378-4844
www.oregonstatelands.us

March 21, 2007

State Land Board

John Morrison, Mayor
City of Ashland
20 East Main Street
Ashland, OR 97520

Theodore R. Kulongoski
Governor

Bill Bradbury
Secretary of State

Randall Edwards
State Treasurer

Re: Approval of the City of Ashland Local Wetlands Inventory and Assessment

Dear Mayor Morrison:

I am pleased to notify you that the Department of State Lands (DSL) has approved your Local Wetlands Inventory (LWI) and assessment. We appreciate your planning staff and the wetland consultant working with our staff to ensure that the inventory meets state LWI requirements (OAR 141-86-180 to 240) and the city's needs. The final inventory requirement is for the city to notify property owners with wetlands mapped on their property within 120 days of this approval. Please provide us with a copy of the landowner notification, once completed, indicating the date of notification.

Approval by DSL means that the LWI becomes part of the Statewide Wetlands Inventory. The LWI must now be used by the city instead of the National Wetlands Inventory for the Wetland Land Use Notification Process (ORS 227.350). The LWI and functional assessment also form the foundation for your wetland planning under Statewide Planning Goal 5, and the LWI must be adopted by the city per the Goal 5 requirements. Please note when significant wetlands are designated by the city, "non-significant" wetlands may be coded to distinguish them from "significant wetlands," but must not be removed from the approved LWI maps. These wetlands are still subject to state and federal permit requirements.

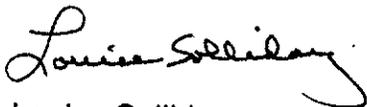
While considerable effort has been made to accurately identify most wetlands within the study area, DSL's approval does not guarantee that all regulated wetlands have been mapped. The mapped wetland boundaries are estimated boundaries, they have not been surveyed, and there are inherent limitations in mapping accuracy. DSL advises persons proposing land alteration on parcels containing mapped wetlands to contact DSL or obtain a wetland boundary delineation by a qualified consultant and submit it to DSL for approval prior to the land alteration.

John Morrison, Mayo.
March 21, 2007
Page 2

It will be important to annotate your map (and associated database, if any) as new wetland delineations are completed and approved by DSL in order to keep your LWI updated. Future wetland delineation report approvals will be provided to the planning department.

We are pleased that the City of Ashland has conducted a thorough wetlands inventory and has made wetland planning a high priority. We look forward to working with you and your staff as you continue on the Goal 5 wetland planning effort. Please feel free to contact Peter Ryan at extension 232, with any questions you may have about the LWI or its use.

Sincerely,



Louise Solliday
Director

cc: Bill Molnar, Planning Manager, City of Ashland
John Renz, DLCD
Stacy Benjamin, SWCA
Yvonne Vallette, EPA
Jim Goudzwaard & Benny Dean, Corps of Engineers (enclosure)
John Marshall, FWS, Portland Field Office
Patty Snow, ODFW
Bill Kirchner, FWS Regional Office
Bob Lobdell, DSL
Kevin Moynahan, DSL

CITY OF ASHLAND
LOCAL WETLANDS INVENTORY AND ASSESSMENT
& RIPARIAN CORRIDOR INVENTORY



Prepared for:

City of Ashland
Bill Molnar, Senior Planner
Community Development
20 E. Main Street
Ashland, Oregon 97520

Prepared by:

SWCA Environmental Consultants
434 NW 6th Avenue, Suite 304
Portland, Oregon 97209

July 2005
Revised February 2007

SWCA[®]
ENVIRONMENTAL CONSULTANTS

City of Ashland Local Wetlands Inventory & Riparian Corridor Inventory

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Summary

SWCA Environmental Consultants¹ (Fishman/SWCA), conducted a Local Wetlands Inventory and Assessment and Riparian Corridor Inventory for the City of Ashland. The study area included the Ashland city limits and urban growth boundary. Total study area boundary acreage is 4,959 acres or 7.75 square miles.

Fourteen wetland units (W1 – W14) were inventoried and assessed. Eight of these 13 units (W1, W4, W5, W6, W7, W11, W12 and W13) were not previously mapped in the National Wetlands Inventory or the City's GIS database. Eleven wetland units were associated with streams or were hydrologically connected to a stream via roadside or agricultural drainage ditches. Three (W2, W8 and W9) wetlands did not contain a surface water connection to a stream or other wetland and were therefore determined to be isolated. Total wetland acreage within the study area was calculated to be 28.31 acres.

Locally significant wetlands were identified using the Oregon Freshwater Wetland Assessment Method (OFWAM). Significance was determined based on a wetland's ability to provide high function in one or more of the following categories: wildlife habitat, fish habitat, water quality or hydrologic control, or the wetland's ability to provide medium water quality function if located within 0.25 mile of a DEQ water quality listed stream. Eleven wetland units were determined to be locally significant. The Ashland Demonstration Wetlands (W2) were not designated as locally significant due to their creation for the purpose of wastewater treatment per OAR 141-086-350(1). The Billings Ranch wetland (W3) and the Washington Street wetland (W11) were determined to be non-locally significant.

All riparian corridors were inventoried to evaluate general stream characteristics and hydrology, adjacent landform, and vegetation. Significant riparian corridors were determined using the Goal 5 Safe Harbor criteria. Riparian corridors along streams identified by the Oregon Department of Fish and Wildlife as being fish-bearing were determined to be significant according to the Safe Harbor criteria. Significant riparian corridors in the study area include Ashland Creek, Bear Creek, Emigrant Creek, Kitchen Creek, Neil Creek, and Tolman Creek.

Further information is included in the accompanying report, and the reader is referred to the appendices for wetland and riparian summary sheets, wetland sample plot data, OFWAM data sheets and other information.

¹ The Portland, Oregon office of SWCA Environmental Consultants was acquired from Fishman Environmental Services in 2004.

Project Purpose

The City of Ashland is required to update their Comprehensive Plan under periodic review for Goal 5 wetland resources. The Goal 5 rule requires the City to inventory its natural resources according to the general inventory process outlined in OAR 660-023-0030 as well as specific guidelines for wetlands (660-023-0100) and riparian corridors (OAR 660-023-0090). Fishman Environmental Services, a Division of SWCA Environmental Consultants (Fishman/SWCA), conducted a Local Wetlands Inventory (LWI) and Riparian Corridor Inventory (RCI) for the City of Ashland to meet statewide planning Goal 5 requirements. The LWI was prepared to meet the Department of State Lands (formerly the Division of State Lands) Local Wetlands Inventory Standards and Guidelines (OAR 141-086-0180 through 141-086-0240; effective July 1, 2001). Significant riparian corridors were mapped using the Safe Harbor criteria identified under OAR 660-023-0090(5). The LWI and RCI are required to be submitted to the Oregon Department of State Lands (DSL) and the Department of Land Conservation and Development (DLCD) for review and approval before they can be adopted by the City and used to develop a land use program to conserve and protect significant Goal 5 resources.

Background Information

Study Area

The study area for the Local Wetlands Inventory and Riparian Corridor Inventory includes the City of Ashland city limits and the urban growth boundary. Total study area boundary acreage is 4,959 acres or 7.75 square miles. The study area is located in Township 38 South, Range 1 East, Sections 31, 32, and 33 and Township 39 South, Range 1 East, Sections 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 22, and 23. An index map of the study area is included in Appendix 1. The study area is contained on 12 base maps.

Drainage Basin

The City of Ashland is located within the Rogue River basin. The study area is contained entirely within the Bear Creek watershed. The study area contains two major drainages: Bear Creek in the north and Ashland Creek in the west.

Topography

Topography of the study area consists of steeply sloped foothills in the south, a relatively flat central portion that is highly developed, and the Bear Creek floodplain in the north. Streams in the higher elevation areas are confined within steep V-shaped drainages, and streams in lower elevation areas are typically confined within a well-defined stream channel. Therefore, stream-associated wetlands are generally either not present or are limited to a narrow fringe along the stream channel. Fishman/SWCA obtained two-foot contours of the study area from the City of Ashland. Two-foot contours were not available for the northwest portion of the study area in Sections 31 and 32.

Vegetation

Wetland indicator status is according to the U.S. Fish and Wildlife Service National List of Plant Species that Occur in Wetlands: Northwest (Region 9).

Soils

Soils were mapped in the Soil Survey of Jackson County Area, Oregon (USDA SCS 1993). The vast majority of the study area is mapped as containing hydric soil inclusions. The only area of mapped hydric soils in the study area is located along Kitchen Creek.

National Wetlands Inventory & Previous Wetland Inventory

Approximately fifty wetlands were mapped in the National Wetlands Inventory (NWI) on the Ashland, Oregon NWI quadrangle. A few mapped wetlands are associated with streams, but the majority of wetlands appear to be isolated. A field survey of Ashland's wetlands was conducted by two Southern Oregon University students in 1990. The 1990 study area generally coincided with the study area of the present inventory, with the exception of that the previous inventory did not include the area located outside the City limits and inside the UGB in Sections 5, 31, and 32. The 1990 inventory focused almost exclusively on field verifying the presence of NWI-mapped wetlands, collecting sample plot data, and photodocumenting the wetlands.

Floodplain

The floodplain was mapped by the Federal Emergency Management Agency on the Flood Insurance Rate Map for the City of Ashland, Oregon. A 100-year floodplain is mapped along Ashland, Bear, Clay, Emigrant, Hamilton, and Neil creeks. The City of Ashland modified the FEMA floodplain boundaries following the 1997 flood, including mapping the 100-year floodplain adjacent to Cemetery Creek.

Department of State Lands Files

Fishman/SWCA obtained copies of wetland determinations, delineations, and permit applications within the study area from the Department of State Lands. A list of the DSL files obtained along with their approximate locations and current status of these wetlands is included in Appendix 2. Wetland delineation boundaries from maps included in DSL files were hand mapped onto aerial photograph base maps and were field verified where permission to access was granted.

Aerial Photographs & GIS Data

Fishman/SWCA obtained black and white aerial photographs dated April 16, 1998, which showed spring hydrology, and color aerial photographs dated July 2001 from the City of Ashland. The 1998 aerial photos were previously used by the City of Ashland Geographic Information Department to prepare a Geographic Information System (GIS) layer of streams, ditches and ponds in the study area.

Scope of Work

Local Wetlands Inventory

A Local Wetlands Inventory has been prepared in accordance with the Department of State Lands Local Wetlands Inventory Standards and Guidelines (OAR 141-086-0180 through 141-086-0240; effective July 1, 2001). Fishman/SWCA mapped all wetlands greater than 0.5 acre according to the LWI rules. The approximate locations of many wetlands less than 0.5 acre in size were also mapped. These small wetlands are identified as "possible wetlands" on the LWI maps. Many isolated man-made ponds are present in the study area, most of which are less than 0.5 acre. Man-made ponds were also included on the LWI maps. Mapping protocol follows the DSL LWI rules and wetland boundaries have been digitized in an ESRI-compatible format for use by the City and DSL.

Wetland Assessment and Determination of Locally Significant Wetlands

Wetlands greater than 0.5 acre in size have been assessed using the Oregon Freshwater Wetland Assessment Method (OFWAM) as required by the LWI rules. The OFWAM assessment consisted of evaluating Wildlife Habitat, Fish Habitat, Water Quality, and Hydrologic Control functions. Per the Department of State Lands Administrative Rules for Identifying Significant Wetlands (OAR 141-86-300 through 141-86-350), if the assessed wetland unit provided diverse wildlife habitat, intact fish habitat, intact water quality function, or intact hydrologic control function, then the wetland was determined to be significant.

Wetlands not meeting the significance criterion based upon the OFWAM assessment were also evaluated according to the other criteria for determining Locally Significant Wetlands established by DSL. These criteria include (but are not limited to): the wetland or a portion of the wetland is within a horizontal distance less than one-fourth mile from a water quality limited water body (DEQ's 303(d) list) and its water quality function is intact or impacted or degraded; the wetland contains one or more rare plant communities; the wetland is inhabited by any species listed by the federal government as threatened or endangered or listed by the state as sensitive, threatened or endangered; or the wetland has a direct surface water connection to a stream segment mapped by ODFW as habitat for indigenous anadromous salmonids and the wetland is determined to have intact or impacted or degraded fish habitat function.

Riparian Corridor Inventory

Although the Goal 5 Rule is very specific regarding Local Wetlands Inventory methodology, the Goal 5 Rule does not include a prescribed method for the preparation of a Riparian Corridor Inventory. Discretion provided to local communities through the Goal 5 rule allows for inventory methods which are created by the City, reviewed by its' citizens, and implemented in a manner that best fits with the local natural resources.

The process of determining an exact location of a riparian corridor requires an on-site resource delineation. Even among the experts, the definition of "riparian" and the position of the boundary is often debated.

Determination of Significant Riparian Corridors

Goal 5 provides a Safe Harbor optional course of action rather than following the standard Goal 5 process, including the ESEE decision process. The Safe Harbor criteria identified under OAR 660-023-0090(5) establish a standard setback distance from all fish-bearing lakes and streams as follows:

- (a) Along all streams with average annual stream flow greater than 1,000 cubic feet per second (cfs) the riparian corridor boundary shall be 75 feet upland from the top of each bank.
- (b) Along all lakes, and fish-bearing streams with average annual stream flow less than 1,000 cfs, the riparian corridor boundary shall be 50 feet from the top of bank.
- (c) Where the riparian corridor includes all or portions of a significant wetland as set out in OAR 660-023-0100, the standard distance to the riparian corridor boundary shall be measured from, and include, the upland edge of the wetland.
- (d) In areas where the top of each bank is not clearly defined, or where the predominant terrain consists of steep cliffs, local governments shall apply OAR 660-023-0030 rather than apply the safe harbor provisions of this section.

Public Involvement Process

A newspaper article was published in the Ashland Daily Tidings on May 23, 2003 notifying the public of the onset of the Local Wetlands Inventory and Riparian Corridor Inventory. A second newspaper article appeared in the Medford Mail Tribune on July 23, 2003 describing the status of the inventory process.

Fishman/SWCA conducted two public open house meetings for the project. The first meeting was held on June 4, 2003 to present the Goal 5 requirements and inventory process. The second meeting was held on November 20, 2003 to present the draft inventory results and maps and to receive public comments on the draft maps. Approximately two dozen citizens attended the second meeting. A third public meeting will occur to present the final inventory and maps to the City planning commission.

Local Wetlands Inventory and Assessment (OAR 660-023-0090)

Wetland Definition

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

City of Ashland Local Wetlands & Riparian Corridor Inventory & Assessment, July 2005, revised February 2007
Fishman/SWCA

during the growing season. According to the Jackson County soil survey, the growing season in Medford is April 7th through November 3rd (the growing season may vary annually).

Wetland Methodology

The Goal 5 rule is very specific in the method required for wetland inventories. The wetland inventory must be prepared using OAR 141-086-0210 through 0240. The product of the wetland inventory is a Local Wetlands Inventory (LWI). The Oregon Department of State Lands (DSL) must approve the LWI.

Prior to conducting field work, background information was reviewed in the office to identify possible wetland areas and to prioritize sites for field verification. Background information included USGS topographic map, national wetlands inventory map, Jackson County soil survey, and FEMA floodplain maps; DSL wetland determination/delineation and permit files; two-foot contour mapping from the City; and 1998 and 2001 aerial photos from the City. Field work included verification of the presence or absence of NWI mapped wetlands and wetlands previously identified in DSL files; identification of previously unmapped wetlands areas greater than 0.5 acre; and identification of possible wetlands less than 0.5 acre, even though these areas are not required to be mapped according to LWI standards. Identification of new (i.e. previously unmapped) wetland areas was facilitated by field visits of sites which contained either a topographic drainage on the 2-foot contour maps or a wetland hydrology signature visible on the aerial photographs.

Letters requesting permission to access were mailed to 1,513 property owners. The City sent out letters to the property owners requesting written permission to access these parcels. The list of parcels for which permission to access was requested was generated primarily based upon a GIS query identifying parcels containing either NWI or City mapped streams, wetlands or ponds, parcels mapped within the 100-year floodplain, and parcels located within 50 feet of any one of these mapped resource boundaries. In addition, several parcels which contained either a topographic drainage based upon 2-foot contours or a wetland hydrology signature on the aerial photographs were also included on the list. Of the approximately 1,500 letters, the City received 589 yes responses and 104 no responses. Field work was conducted on June 3, 4, 5, 24, 25, and 26, 2003.

Properties for which on-site data collection was allowed were identified on a tax lot base map which was color coded to identify publicly-owned parcels as well as properties for which permission to access was either granted or granted with conditions (i.e. call to notify property owner prior to site visit). On-site data collection consisted of either preparation of wetland determination sample plot data sheets documenting vegetation, soils, hydrology, and topography (included in Appendix 3) or field notes recording our visual observations of one or more of these parameters. No on-site data was collected on parcels for which permission to access was not granted or for which no response to the public notice requesting permission to access was received by the City. For areas where permission to access was not granted, off-site data was collected where possible by viewing the site with the use of binoculars from adjacent roads, parking lots or public

properties. Base maps used for field work and mapping consisted of 2001 color aerial photographs plotted at a scale of 1 inch to 300 feet. The City's stream, ditches and ponds GIS layer, which was created based on interpretation of 1998 aerial photographs, and the NWI mapping were overlaid onto the aerial photographs. Wetland and riparian boundaries, sample plots, and off-site observation points were hand mapped on the aerial photograph base maps in the field.

Wetlands were identified based on the methodology contained in the 1987 Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), used by the Department of State Lands. Wetlands generally include swamps, marshes, bogs, and similar areas, but also include seasonally wet meadows, farmed wetlands and other areas that may not appear "wet" at all times throughout the year. Aerial photograph signatures of wetland habitat types were groundtruthed at the start of the inventory at publicly owned sites including the Ashland Demonstration Wetlands and adjacent BMX park and at the North Mountain Nature Park. Wetland habitat types were labeled according to Cowardin class. Wetland habitat types present in the study area include: palustrine scrub-shrub (PSS), palustrine emergent (PEM), and palustrine open water (POW).

Wetland boundaries, sample plot locations, and field observation points were mapped by hand on the color aerial photo base maps. Wetland boundaries and other data were then digitized onto digital aerial photographs in a Geographic Information System. The GIS attribute tables contain data for each wetland polygon including unique polygon ID number, wetland unit number, habitat type, wetland acreage, and DSL file number (if any).

The locations of several isolated wetlands that were too small to be inventoried according to DSL rules (<0.5 acre) were mapped approximately as "possible wetlands". In addition, several other areas that appeared to be wetland from off-site, but for which the presence of wetland could not be field verified since permission to access these properties was not granted, were also mapped as possible wetlands. Many isolated man-made ponds are present in the study area, most of which are less than 0.5 acre. Man-made ponds were mapped separately from possible wetlands and wetlands greater than 0.5 acre.

Wetland summary sheets have been prepared for each wetland unit. Wetland summary sheets include the site name, site code, general location, Township, Range, and Section location, DSL file number (if any), acreage, Cowardin (NWI) classification, hydrogeomorphic classification, hydrologic basin, mapped soils, sample plot numbers (if any), date(s) of field work, dominant vegetation, primary hydrology source, OFWAM summary, significance determination, and general wetland description including basis for wetland boundary determination. Wetland summary sheets are included in Appendix 4.

The approximate locations of potential wetland mitigation/restoration sites are also required to be identified according to DSL's local wetlands inventory standards and guidelines. According to OAR 141-086-210 (19), "Vacant, former wetlands, consisting mostly of relict (dewatered) hydric soils, which are five (5) acres or larger in size shall be identified and mapped as potential wetland mitigation or restoration sites...." No sites

within the study area meeting these criteria were identified; therefore, a map of potential wetland mitigation/restoration sites is not included in the LWI.

Wetland Assessment Criteria

Wetlands were assessed using the Oregon Freshwater Wetland Assessment Methodology (OFWAM; Roth et al. 1996), which evaluates wetland functions and values relative to other wetlands within the study area. The four functions listed below were assessed for each OFWAM unit, and each function was rated high, medium or low based on how many of the criteria listed below for each function were met. OFWAM evaluation sheets are included in Appendix 5. OFWAM wetlands of special interest for protection and wetland characterization evaluation sheets which evaluate general watershed characteristics are included in Appendix 6.

Wildlife Habitat - The following criteria contribute to wetlands having high wildlife habitat function: two or more Cowardin wetland classes (i.e. forested, scrub-shrub, emergent) are present; woody vegetation is the dominant wetland vegetation cover type; there is high interspersion among Cowardin classes; more than one acre of open water is present; the wetland is connected to other wetlands or bodies of water by surface water (stream, lake, pond, ditch, or culvert); no upstream or adjacent stream reaches are listed as water quality limited; the dominant existing land use within 500 feet of the wetland's edge is exclusive forest use or open space; and greater than 40 percent of the wetland's edge is bordered by a vegetated buffer at least 25 feet wide.

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

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

Hydrologic Control - The following criteria contribute to wetlands having high hydrologic control function: the wetland is located within the 100-year floodplain or within an enclosed basin; there is evidence of flooding or ponding during a portion of the

growing season; the wetland is greater than 5 acres in size; waterflow out of the wetland is restricted (beaver dam, concrete structure, undersized culvert) or the wetland has no outlet; woody vegetation is the dominant wetland vegetation cover type; the dominant existing land use within 500 feet of the wetland on the downstream or downslope edge of the wetland is developed uses; and the dominant land use in the watershed upstream from the assessment area is urban or urbanizing.

OFWAM Units

Fourteen wetland units (W1 – W14) were inventoried and assessed. Wetland units are listed below along with their Township, Range and Section, general location, Cowardin wetland habitat classification, and wetland acreage. Wetland units may contain one or more wetland areas. Wetlands along the same stream reach with the same hydrology source and adjacent land use are grouped into the same OFWAM unit for assessment purposes. Similarly, if a wetland is bisected by a road crossing and each wetland area contains similar characteristics, they are grouped into the same wetland unit. Eleven wetland units were associated with streams or were hydrologically connected to a stream via roadside or agricultural drainage ditches. Three (W2, W8 and W9) wetlands did not contain a surface water connection to a stream or other wetland and were therefore determined to be isolated. Narrow wetland fringes, ranging from 1 to 5 feet wide, were present along several streams within the study area. These wetland fringes were much smaller than 0.5 acre (the minimum wetland size required by DSL to be mapped) and are not included in the OFWAM units in the table below. It was not possible to map wetland fringes given the map scale of a wetland inventory. Wetland fringes were included within the riparian corridor mapping along streams in the study area, including forested wetland fringes along Ashland Creek and Bear Creek.

TABLE 1. OFWAM UNITS, WETLAND HABITAT TYPES & ACREAGES				
Wetland Unit	TRS	Location	Habitat Type*	Wetland Acreage
W1	T39S, R1E, S4	Ashland Creek/BMX Park	PEM	2.23
W2	T39S, R1E, S4	Ashland Demonstration Wetlands	POW/PEM	0.64
W3	T39S, R1E, S5	Billings Ranch	PEM	1.83
W4	T39S, R1E, S10	Cemetery Creek	PEM	3.86
W5	T39S, R1E, S4 & 9	Clear Creek Village	PEM/POW	1.29
W6	T39S, R1E, S11	Knoll Creek	PEM	1.71
W7	T39S, R1E, S4	North Mountain Nature Park	PEM/POW	3.25
W8	T39S, R1E, S4	NWI Wetland 4G	PSS	0.90
W9	T39S, R1E, S10	NWI Wetland 10B	PEM	5.38
W10	T39S, R1E, S13	NWI Wetland 13B & 13C	PEM	2.12

Wetland Unit	TRS	Location	Habitat Type*	Wetland Acreage
W11	T39S, R1E, S14	Washington Street	PEM	0.85
W12	T39S, R1E, S10	West of Cemetery Creek	PEM	1.68
W13	T39S, R1E, S11	West of Hamilton Creek	PEM	1.41
W14	T38S, R1E, S33	Ashland Creek, near sewage treatment plant	POW/PEM	1.16
Total Wetland Acreage				28.31

* PEM = palustrine, emergent; POW = palustrine, open water; PSS = palustrine, scrub-shrub

Determination of Significance for Wetland Areas

The 14 wetland units listed above were evaluated using the Oregon Freshwater Wetland Assessment Methodology (OFWAM) as required by the LWI rules. The OFWAM assessment consisted of evaluating Wildlife Habitat, Fish Habitat, Water Quality, and Hydrologic Control functions. Per the Department of State Lands Administrative Rules for Identifying Significant Wetlands (OAR 141-86-300 through 141-86-350), if the assessed wetland unit provided diverse wildlife habitat, intact fish habitat, intact water quality function, or intact hydrologic control function, then the wetland was determined to be locally significant. Wetlands W1, W4-W9 and W12-W14 were determined to be locally significant wetlands according to this methodology. Although Wetland W2 displays intact water quality function, it is excluded from the locally significant wetland criteria according to OAR 141-086-0350(1) "Exclusions. Regardless of their standing in relation to the criteria in OAR 141-086-0350(2) or (3) of these rules, wetlands shall not be designated as locally significant if they fall within any one of the following categories:...(E) Of any size and created for the purpose of wastewater treatment...."

Three wetlands (W3, W10 and W11) did not meet the significance criterion based upon the OFWAM assessment and were therefore evaluated according to the other criteria for determining Locally Significant Wetlands established by DSL. These criteria include: the wetland or a portion of the wetland is within a horizontal distance less than one-fourth mile from a water quality limited water body (DEQ's 303(d) list) and its water quality function is intact or impacted or degraded; the wetland contains one or more rare plant communities; the wetland is inhabited by any species listed by the federal government as threatened or endangered or listed by the state as sensitive, threatened or endangered; or the wetland has a direct surface water connection to a stream segment mapped by ODFW as habitat for indigenous anadromous salmonids and the wetland is determined to have intact or impacted or degraded fish habitat function.

Wetland W10 was determined to be locally significant based on rating medium for water quality function and occurring within ¼ mile of a water-quality limited stream listed by DEQ on the 303(d) list. Wetlands W3 and W11 did not meet any of these criteria and were therefore determined to be non-locally significant.

The table below summarizes the wetland function ratings and wetland significance for each OFWAM unit. OFWAM evaluation sheets for each unit are included in Appendix 5, and OFWAM wetlands of special interest for protection and wetland characterization evaluation sheets are included in Appendix 6. A complete list of all vegetation observed in wetlands and uplands in the study area is included in Appendix 7.

**TABLE 2. LOCAL WETLANDS INVENTORY
DETERMINATION OF LOCALLY SIGNIFICANT WETLANDS**

Wetland Unit	OFWAM FUNCTIONS ¹				SIGNIFICANT ²
	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	
1	M	L	H	M	Y
2	M	L	H	M	N ³
3	M	L	M	M	N
4	M	M	H	M	Y
5	M	M	H	H	Y
6	M	H	H	M	Y
7	H	M	H	H	Y
8	M	L	M	H	Y
9	M	L	H	H	Y
10	M	L	M	M	Y ⁴
11	M	L	M	M	N
12	M	L	H	M	Y
13	M	L	H	M	Y
14	H	M	M	H	Y

¹ Wildlife Habitat Function: H = Diverse wildlife habitat, M = Habitat for some species, L = Lost or not present. Fish Habitat, Water Quality and Hydrologic Control Functions: H = Intact, M = Impacted or degraded, L = lost or not present

² Wetlands which score high in at least one of the four functions evaluated are determined to be locally significant according to DSL rules, except as noted below.

³ Wetlands of any size that were created for the purpose of wastewater treatment shall not be designated as locally significant per OAR 141-086-350(1).

⁴ Wetland W10 was determined to be locally significant based on rating medium for water quality function and occurring within ¼ mile of a water-quality limited stream listed by DEQ on the 303(d) list.

Status of National Wetlands Inventory Mapped Wetlands

We attempted to field verify the presence or absence of all wetlands mapped on the NWI in the study area. Several of the larger NWI-mapped wetlands have been incorporated into the wetlands mapped in the local wetlands inventory, including units W3, W8, W9, W10 and W13. Many of the NWI-mapped wetlands were determined to be man-made ponds and are mapped as ponds on the local wetlands inventory maps. Several wetlands mapped as less than 0.5 acre in size on the NWI could not be field verified due to lack of permission to access the sites and are therefore identified as Possible Wetlands (PW) on the local wetlands inventory maps. The local wetlands inventory maps replace the national wetlands inventory maps and the City's stream, ditches and ponds GIS layer and

provide the most accurate inventory of wetlands inside the Ashland urban grown boundary.

Riparian Corridor Inventory (OAR 660-023-0090)

Riparian Corridor Definition

Goal 5 definitions:

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

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

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

Riparian Corridor Methodology

The method for conducting a riparian corridor inventory is not prescribed. The Goal 5 Rule permits the application of a “Safe Harbor” setback distance to all fish bearing lakes and streams. The standard setback is 50 feet for streams with more than 1000 cubic feet per second (cfs) stream flow and 50 feet for fish bearing lakes and streams with less than 1000 cfs. The rule also lists the following resources that must be consulted when completing the riparian corridor inventory:

- Oregon Department of Forestry stream classification maps
- USGS 7.5-minute quadrangle map
- National Wetland Inventory Maps
- Oregon Department of Wildlife (ODFW) maps indicating fish habitat
- Federal Emergency Management Agency (FEMA) flood maps
- Aerial photographs

Fishman/SWCA has prepared the riparian corridor inventory using a modified on-site method. Time and budget constraints typically make it unfeasible to conduct an on-site delineation of all riparian corridors in the City. Therefore, we conducted brief on-site field visits to document vegetation and topography adjacent to streams at several locations along each stream to determine the approximate location of the riparian corridor. The location of the riparian corridor was hand mapped on the aerial photo base map (photo date 2001, scale 1 inch to 300 feet). Two foot contour data and vegetation signatures on the aerial photos were used to approximate the location of the riparian corridor for areas that were not field verified. For areas where permission to access was not granted, off-site data was collected if possible by viewing the site with the use of binoculars from adjacent roads, parking lots or public properties. No field data was collected for Strawberry Creek or Twin Creek since permission to access the properties

containing these small sections of stream was not granted, and the streams were not visible from adjacent public roads. Field work was conducted on June 3, 4, 5, 24, 25, and 26, 2003.

Riparian summary sheets include the site name, Township, Range, and Section location, sample plot numbers (if any), dates(s) of field work, dominant vegetation, and general riparian corridor description. Riparian summary sheets are included in Appendix 8.

Riparian Corridor Units

Riparian corridors were mapped along all streams in the study area, which include:

- Ashland Creek
- Ashland Creek Tributary 1
- Beach Creek
- Bear Creek
- Bear Creek Tributary 1
- Cemetery Creek
- Clay Creek
- Clear Creek
- Emigrant Creek
- Fordyce Creek
- Golf Course Creek
- Hamilton Creek
- Hamilton Creek Tributaries 1 & 2
- Kitchen Creek
- Knoll Creek
- Mountain Creek
- Neil Creek
- Paradise Creek
- Paradise Creek East
- Pinecrest Creek
- Roca Creek
- Strawberry Creek
- Tolman Creek
- Twin Creek
- Wrights Creek
- Wrights Creek Tributaries 1 - 5

Determination of Significance for Riparian Corridor Areas

Significant riparian corridors mapped using the Safe Harbor criteria identified under OAR 660-023-0090(5). The Safe Harbor criteria establish a standard setback distance from all fish-bearing lakes and streams as follows:

- a) Along all streams with average annual stream flow greater than 1,000 cubic feet per second (cfs) the riparian corridor boundary shall be 75 feet upland from the top of each bank. (Top of bank is defined by the DSL as "bankfull stage," and in the absence of obvious tops of bank can be approximated by the two-year flood

elevation. Most streams in the City of Ashland have well-defined channels and the top of bank is in most cases easily observed in the field.)

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

c) Where the riparian corridor includes all or portions of a significant wetland, the standard distance to the riparian corridor boundary shall be measured from, and include, the upland edge of the wetland.

d) In areas where the top of each bank is not clearly defined, or where the predominant terrain consists of steep cliffs, local governments shall apply OAR 660-23-030 (the inventory process defined in the subject document) rather than apply the safe harbor provisions.

Fish-bearing streams were determined based upon ODFW StreamNet data and a map from the Oregon Department of Fish and Wildlife showing stream segments where fish presence was documented based upon ODFW observations during electroshocking and snorkel surveys conducted in 1997 through 2000. The ODFW map identifies Ashland Creek, Bear Creek, Emigrant Creek, Kitchen Creek, Neil Creek, and Tolman Creek as being fish-bearing within the study area. According to the Safe Harbor criteria, a 50 foot buffer is required adjacent to these streams.

Most of the streams in Ashland are not documented as fish-bearing, and therefore would not be protected under the safe harbor requirements. Short sections of Clay Creek, Hamilton Creek and Wrights Creek located downstream of the study area were mapped as fish-bearing; however, the streams are not documented as being fish-bearing within the study area, so a safe harbor has not been applied to these streams. The City currently requires 10 to 20 foot buffers adjacent to all streams within the Ashland urban growth boundary, including those that are not fish-bearing. The City of Ashland is currently discussing alternatives for additional inventory, assessment, and regulation of riparian corridors not addressed under the Safe Harbor.

Staff Qualifications

As required by LWI rules, technical staff qualifications are described below.

Project Manager: Daniel Stark, AICP, Natural Resource Planner / GIS Program Manager

Responsibilities: Dan provided project management and coordination with the City of Ashland Planning Staff, provided coordination of the GIS database development, and assisted in preparing the Goal 5 report.

Dan Stark is certified by the American Institute of Certified Planners and provides land use expertise and public service sector personal experience. Dan's specialties include natural resource planning, GIS, and land use planning. Dan had more than five years

experience as a Planner and GIS Analyst for Marion County, Oregon where he developed and maintained the County Planning Division GIS using ArcInfo, ArcView and Map Objects. Dan has developed tools using AML (Arc Macro Language) to analyze the county groundwater consumption rates and determine compliance with the county groundwater ordinance. His GIS database included tax lot-level analyses of soils, wetlands, floodplains, other natural resource features and urban infrastructure. Dan also participated in the long-range planning program at Marion County by providing support to the periodic review tasks including Goals 3, 4, 5, 7, 14 and others. Since joining Fishman/SWCA in November of 1999, Dan has managed several large inventory and assessment projects including the City of Hillsboro Local Wetlands, Riparian Corridor, and Wildlife Habitat Inventory and Assessment (Goal 5 project), Watersheds 2000 stream assessment for Clean Water Services (Washington County's stormwater management agency), and has also assisted with the City of Wilsonville's Goal 5 Inventory, Title 3 Compliance, and ESA Compliance project.

Field Inventory Staff: Stacy N. Benjamin, Wetland Ecologist

Responsibilities: Stacy managed the field inventory, prepared the wetland and riparian corridor maps, conducted OFWAM, prepared the resource site summary sheets and summary tables, and prepared the Goal 5 report. Stacy provided review and quality control of GIS map products.

Stacy Benjamin is experienced in wetland determination and delineation, wetland permitting, mitigation design, wetland monitoring, and natural resource assessment. Stacy's Goal 5 experience includes conducting local wetlands inventories for the Cities of Hillsboro and Lakeside; wetland, riparian and upland habitat function and value assessments; and updating the natural resource inventory (riparian and upland resources) for the Lane Council of Governments. Stacy is experienced in both on-site and off-site wetland inventory methodology, aerial photograph interpretation and mapping, and conducting function and value assessments for wetland, riparian, and upland areas. Stacy has completed training in the 1987 Wetlands Delineation Manual and has been conducting wetland determinations and delineations since she joined Fishman/SWCA in 1996.

Field Inventory Staff: C. Mirth Walker, PWS, CWD, Wetlands Program Manager

Responsibilities: Mirth assisted with the field inventory and provided review and quality assurance for all inventory and assessment products.

Mirth Walker is responsible for coordination of wetland work orders and provides wetland delineation QA/QC and project management. She is certified as a Professional Wetland Scientist (PWS) by the Society of Wetland Scientists and is a provisionally certified Wetland Delineator by the Seattle District U.S. Army Corps of Engineers. Mirth's specialties include wetland determinations and delineations, wetland mitigation and monitoring, permit coordination, aerial photograph interpretation, wetland training, and natural resource inventories. Mirth managed and conducted the City of Wilsonville LWI / RCI / Upland Wildlife Habitat Inventory and Assessment, the Lakeside LWI, the

La Grande LWI, and she assisted with the Cities of Hillsboro, Tualatin, Tigard, and Stayton wetland inventories and assessments.

Geographic Information System Management: Rafael Gutierrez, GIS Analyst

Responsibilities: Preparation of GIS maps and management of the GIS database

Rafael's specialties include ESRI's ArcView and ArcInfo software, Global Positioning Systems, database design and development, and cartographic design. He has a firm understanding of projection, datum, and coordinate system concepts. Rafael also has four years experience in web development and design including client/server administration, PHP and MySQL database construction and CGI programming. Many of Rafael's projects include digitizing, editing and topological operations, area calculations, transforming datasets to and from various projections and coordinate systems, and spatial analysis using raster datasets. Other project experience includes using dynamic segmentation for linear surveys, multiple criteria analyses, and integrating large relational database management systems with GIS.

Project / Contract Oversight: Paul A. Fishman, CEP, Principal Ecologist

Responsibilities: Paul provided contract management oversight and assistance as necessary in this project, and assisted with public involvement

Paul is a Certified Environmental Professional by the Academy of Board Certified Environmental Professionals. Paul has over 34 years management experience in natural resource assessment and planning. He has managed small and large, individual consultant and multi-discipline team efforts for dozens of clients in the western U.S. Paul has organized and/or participated in community-based processes to guide and implement these efforts. He has developed an extensive network in the environmental community, including resource and regulatory agencies, local jurisdictions, consultants, and public groups. He has developed his company as a key consultant to local jurisdictions for natural resource inventory and planning projects. Paul has a history of providing training and educational seminars to a variety of audiences: in 1996, he conducted a half-day wetland training to help attendees understand the basic requirements for wetland issues; in 1999, Paul provided an educational program for recognizing wetlands, Goal 5 criteria and conducting assessments for the Endangered Species Act.

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- Enclosures:
City of Ashland Local Wetlands Inventory Maps

APPENDICES

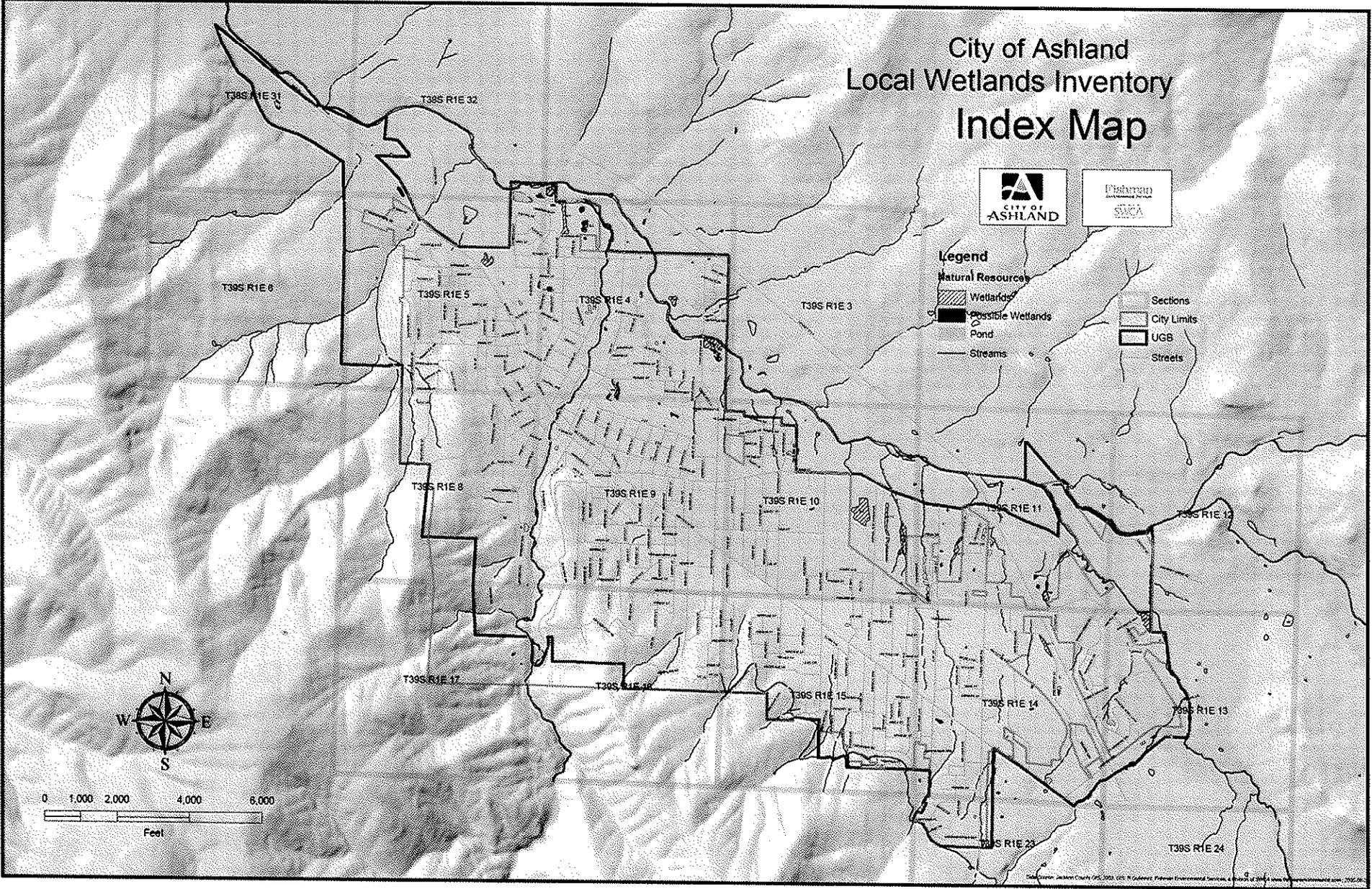
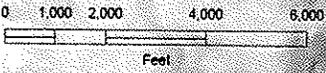
- Appendix 1: Local Wetlands Inventory Index Map & Detail Maps
- Appendix 2: List of DSL Wetland Determination and Permit Files
- Appendix 3: Wetland Determination Sample Plot Data Sheets
- Appendix 4: Wetland Summary Sheets
- Appendix 5: OFWAM Evaluation Sheets
- Appendix 6: OFWAM Wetlands of Special Interest for Protection
& Wetland Characterization Sheets
- Appendix 7: Vegetation List
- Appendix 8: Riparian Corridor Summary Sheets

City of Ashland Local Wetlands Inventory Index Map



Legend

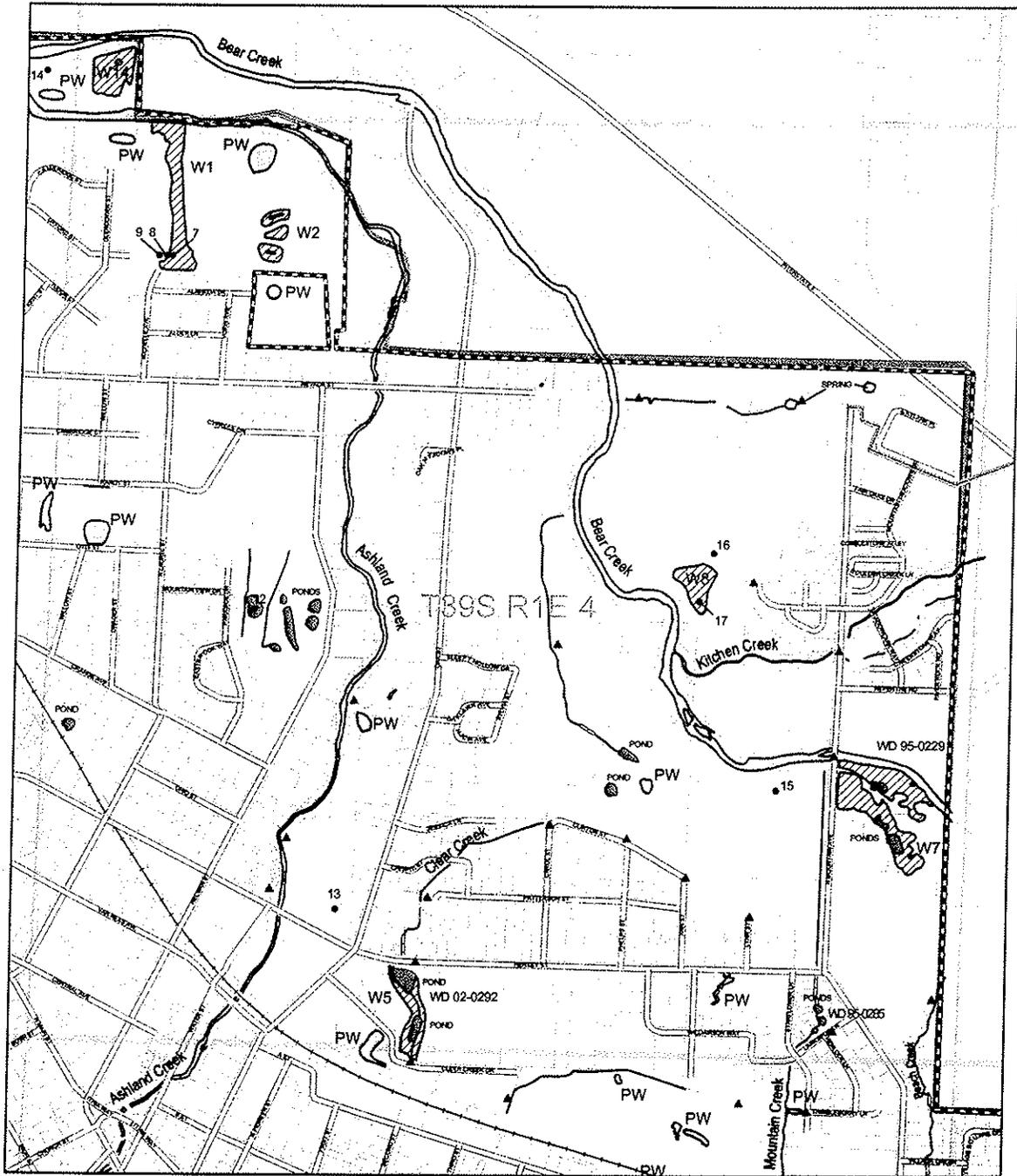
- Natural Resources**
- Wetlands
 - Possible Wetlands
 - Pond
 - Streams
- Sections**
- City Limits
 - UGB
 - Streets



Map prepared by Jackson County, OR, 2003. GIS: W. Galloway, Fisheries/Environmental Services, 11/20/03. Scale of 3000:1. Date of publication: 11/20/03.



City of Ashland
Local Wetlands Inventory
T39S R1E 4



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Levees |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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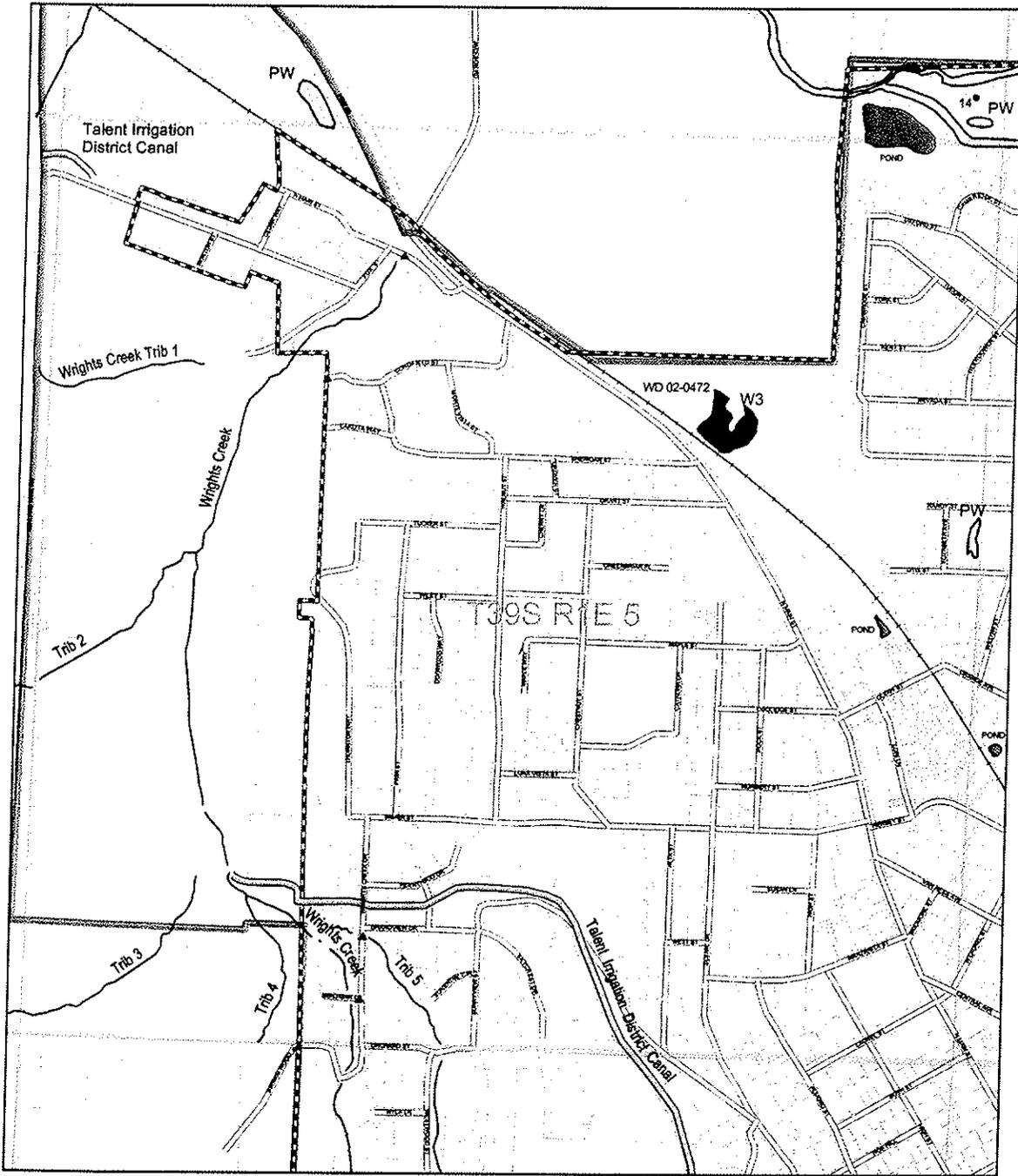
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 Standard Parallel 2: 44.800000
 Latitude Of Origin: 41.809987

GCS North American 1983
 Print date: 12/12/06. Prepared By: R. Gutierrez

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 5



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Textlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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Projection Information:
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 Central Meridian: -120.500000
 Standard Parallel 1: 42.333333
 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.888889

OCB North American 1983
 Print Date: 12/12/06, Prepared By: R. Guzman

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 8



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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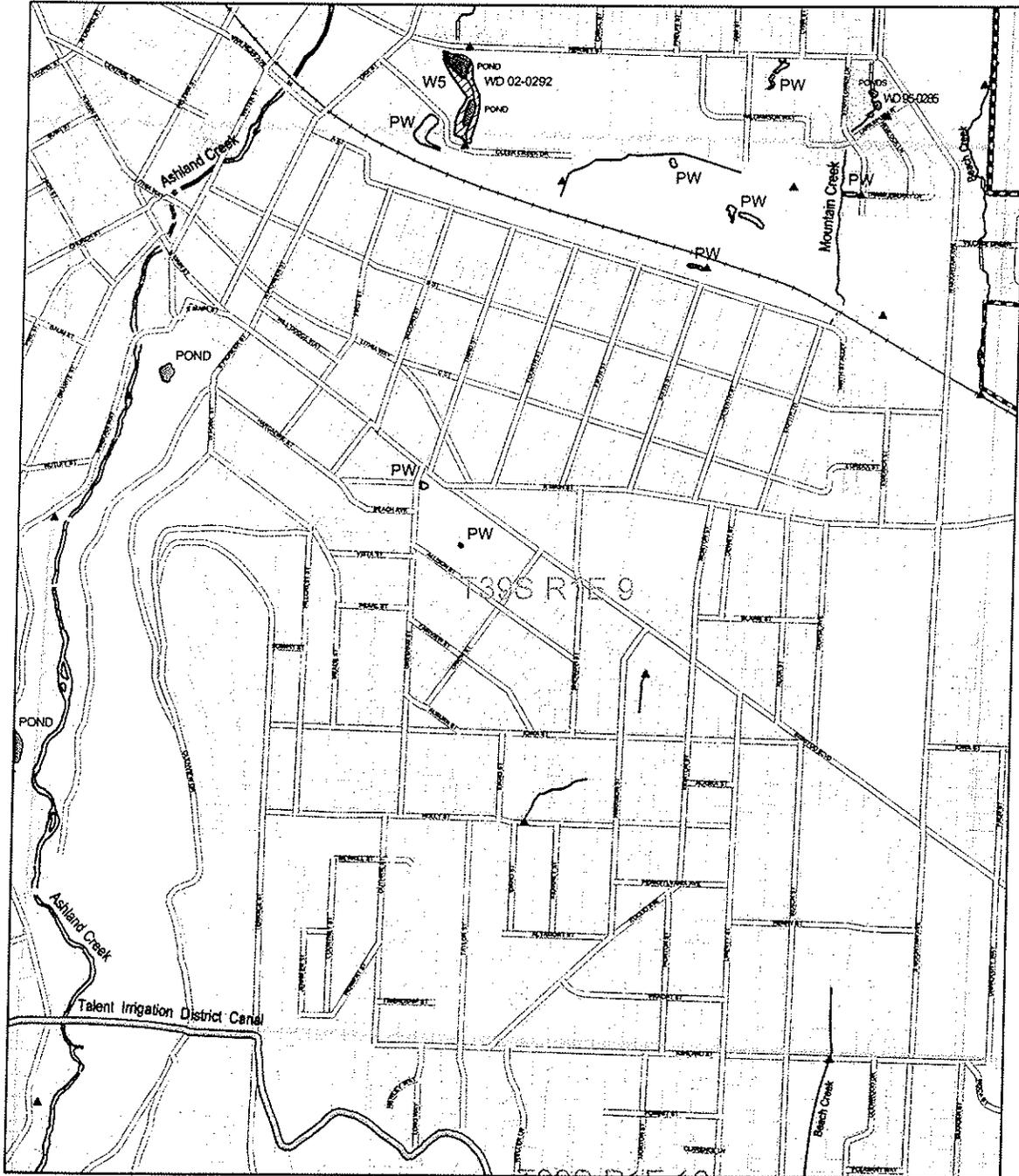
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 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.000000

©2001 North American 1983
 Print Date: 12/12/01; Prepared By: R. Ostermeyer

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City of Ashland
Local Wetlands Inventory
T39S R1E 9



Legend

- Wetlands, field verified
- Wetlands, not field verified
- Possible Wetlands
- Pond
- Riparian Corridor Safe Harbor (50 feet)
- Sample Plot
- Observation Point
- Texts
- Urban Growth Boundary
- City Limits
- Sections
- Streets
- Railroad
- Streams, intermittent drainages, and ditches
- Laterals
- Talent Irrigation District Canal
- Culverted Streams

WI-W14 Wetland Unit



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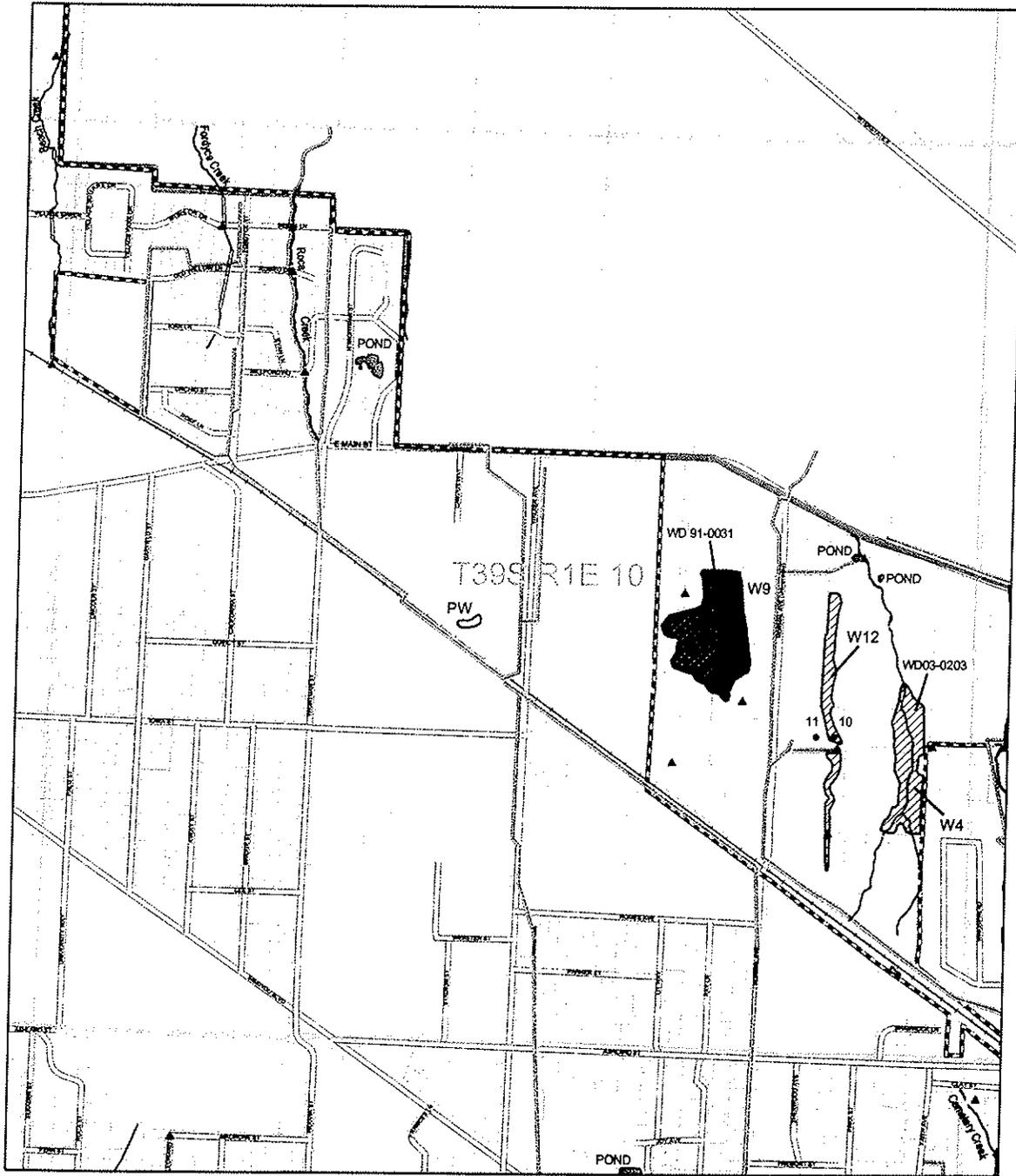
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 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.866667

GCS North American 1983
 Print date: 12/12/06. Prepared by: R. Gutierrez

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 10



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Curved Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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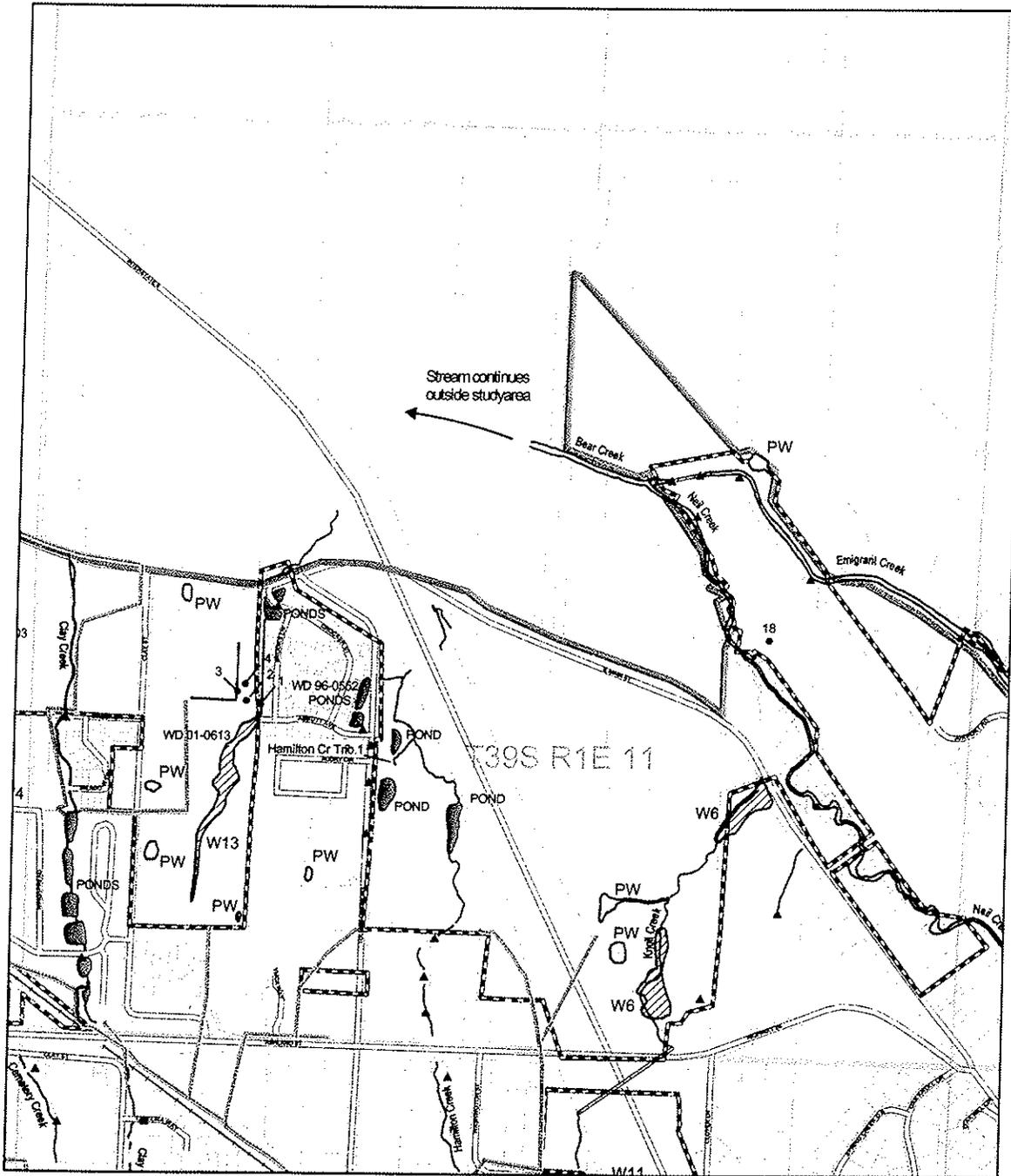
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 Standard Parallel 1: 42.253333
 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.699997

OCS North American 1983
 Plot Date: 12/12/01; Prepared By: R. Gutierrez

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 11



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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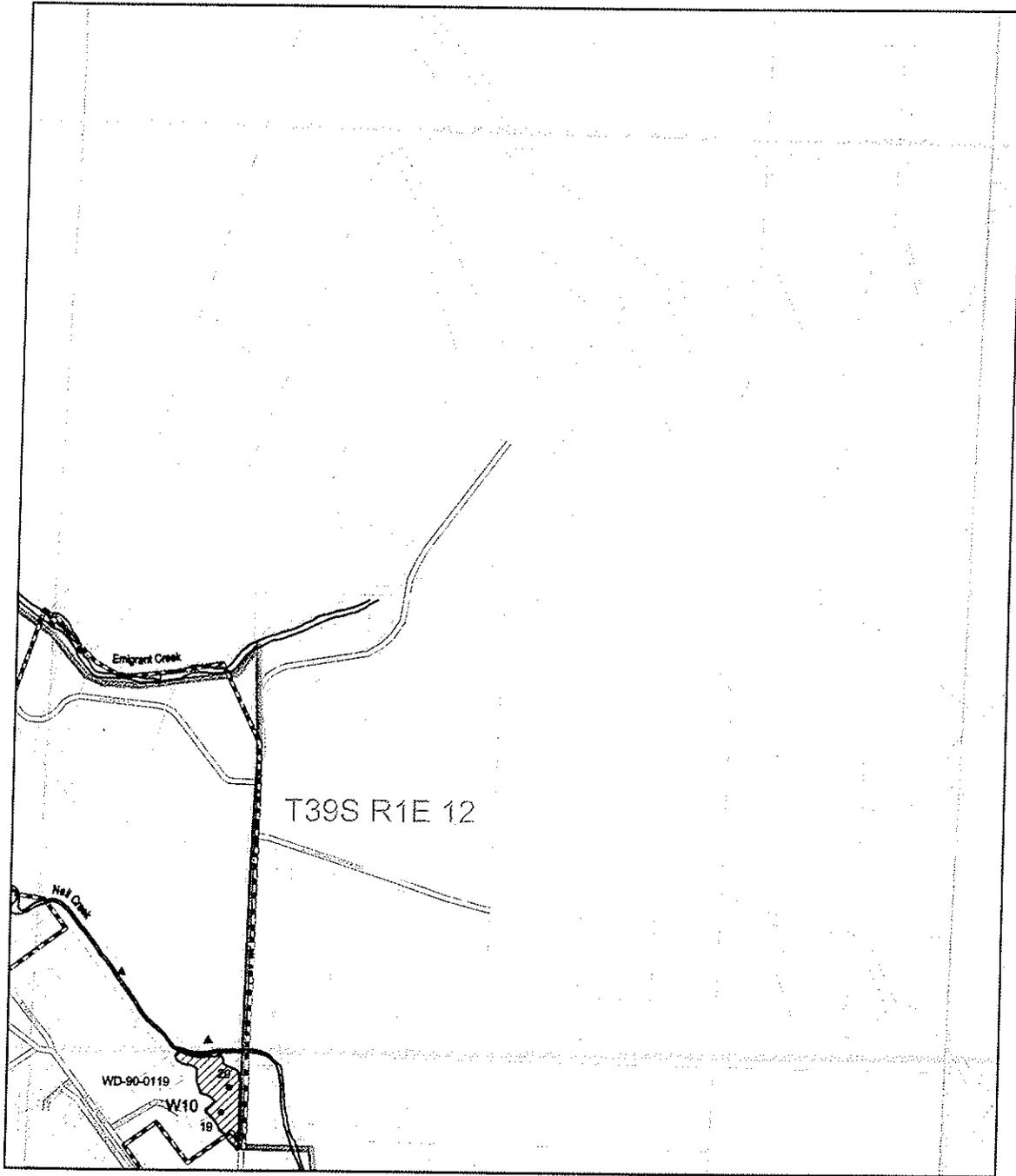
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 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.688889

OCS North American 1983
 PMS Clear 1212/26. Prepared by R. Galarza

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 12



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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Maps have been prepared using City of Ashland digital orthophotos. Photos are 8x10 format. Pixel Resolution: 11 feet. Date of Photography: July 2001.

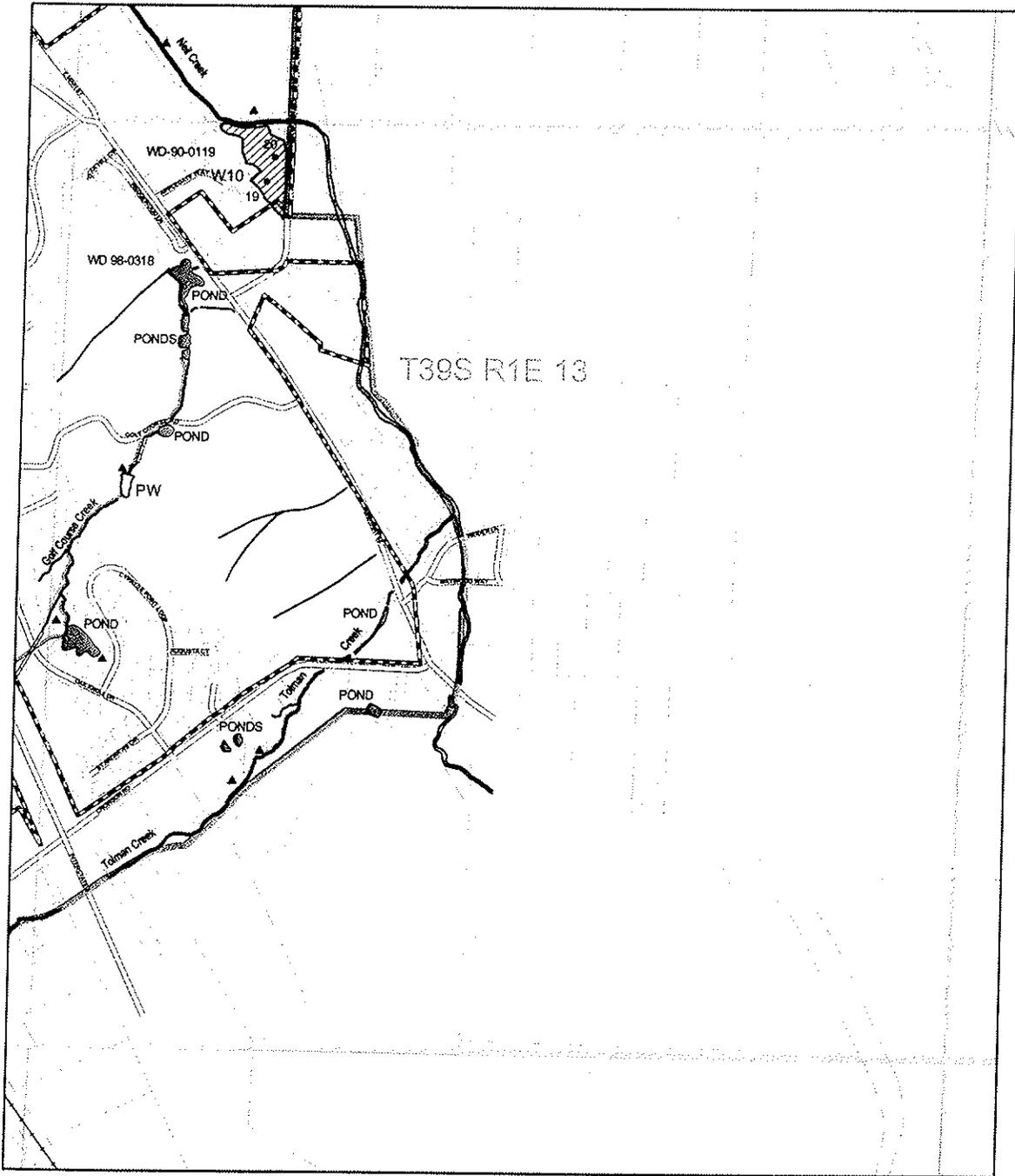
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 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.868667

OCB North American 1983
 Post date: 12/12/00; Prepared By: R. Gutierrez

Study area is contained within the Bear Creek watershed.



City of Ashland
Local Wetlands Inventory
T39S R1E 13



Legend

- Wetlands, field verified
- Wetlands, not field verified
- Possible Wetlands
- Pond
- Riparian Corridor Safe Harbor (50 feet)
- Sample Plot
- Observation Point
- Taxlots
- Urban Growth Boundary
- City Limits
- Sections
- Streets
- Railroad
- Streams, intermittent drainages, and ditches
- Laterals
- Talent Irrigation District Canal
- Culverted Streams

W1-W14 Wetland Unit



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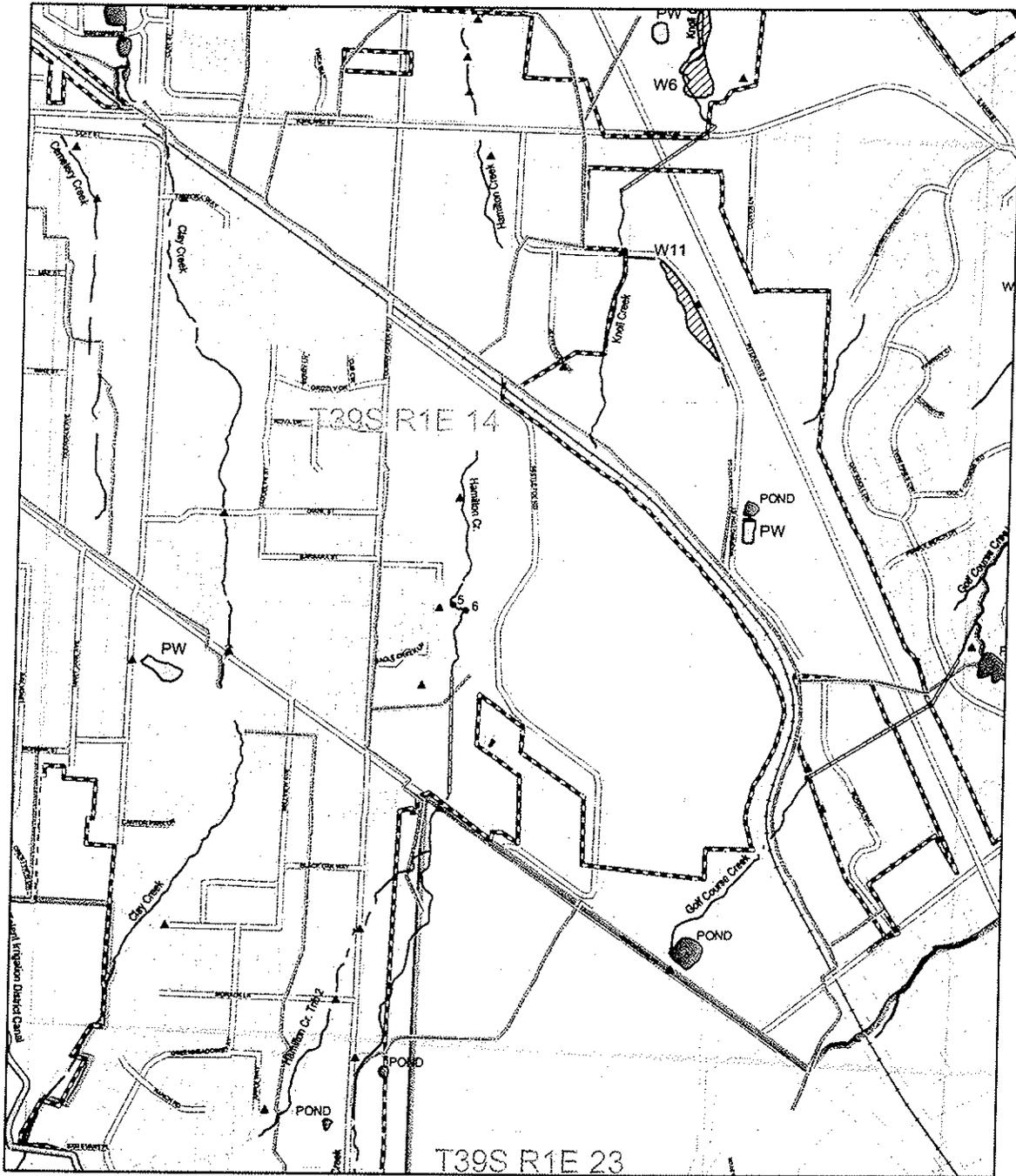
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 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.866667

GCS North American 1983
 Print Date: 12/12/06, Prepared By: R. O'Leary

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 14



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Textots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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Maple here has been prepared using City of Ashland digital orthophotos. Photos are 80 format. Pixel Resolution: 1 pixel. Date of Photography: July 2001.

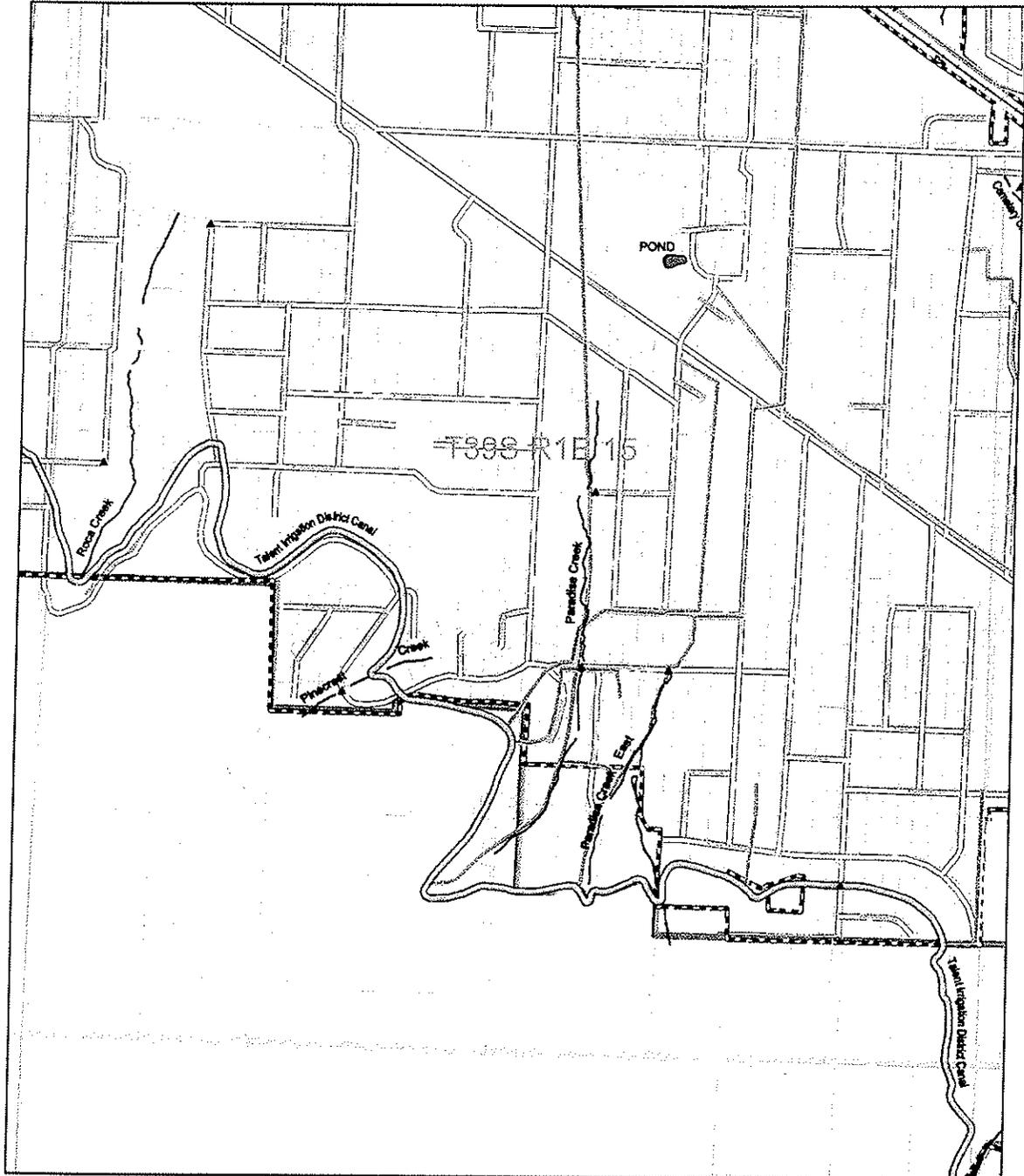
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 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.888887

OGS North American 1983
 Plot Date: 12/12/00; Prepared By: R. Guzman

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 15



Legend

- | | | | | | |
|--|---|--|-----------------------|--|--|
| | Wetlands, field verified | | Tadpole | | Streams, intermittent drainages, and ditches |
| | Wetlands, not field verified | | Urban Growth Boundary | | Lateral |
| | Possible Wetlands | | City Limits | | Talent Irrigation District Canal |
| | Pond | | Section | | Converted Stream |
| | Riparian Corridor Safe Harbor (50 feet) | | Street | | W1-W14 Wetland Unit |
| | Sample Plot | | Railroad | | |
| | Observation Point | | | | |

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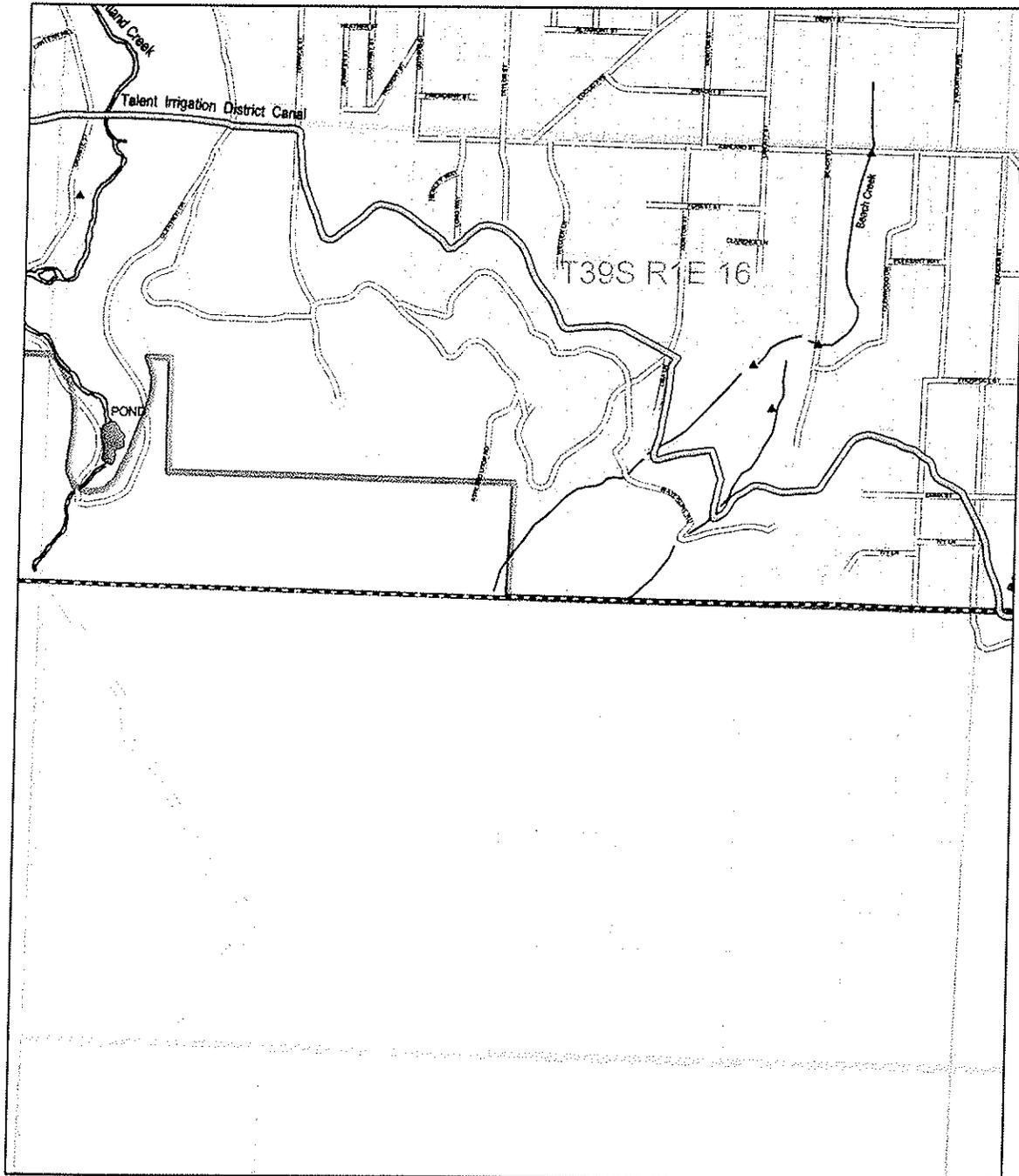
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 Standard Parallel 2: 44.500000
 Latitude Of Origin: 41.899997

DCS North American 1983
 Plot date: 12/12/01; Prepared by: R. Galtman

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 16



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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Maps have been prepared using City of Ashland digital orthophotos. Photos are 300 format. Pixel Resolution: 1' pixel. Date of Photography: July 2001

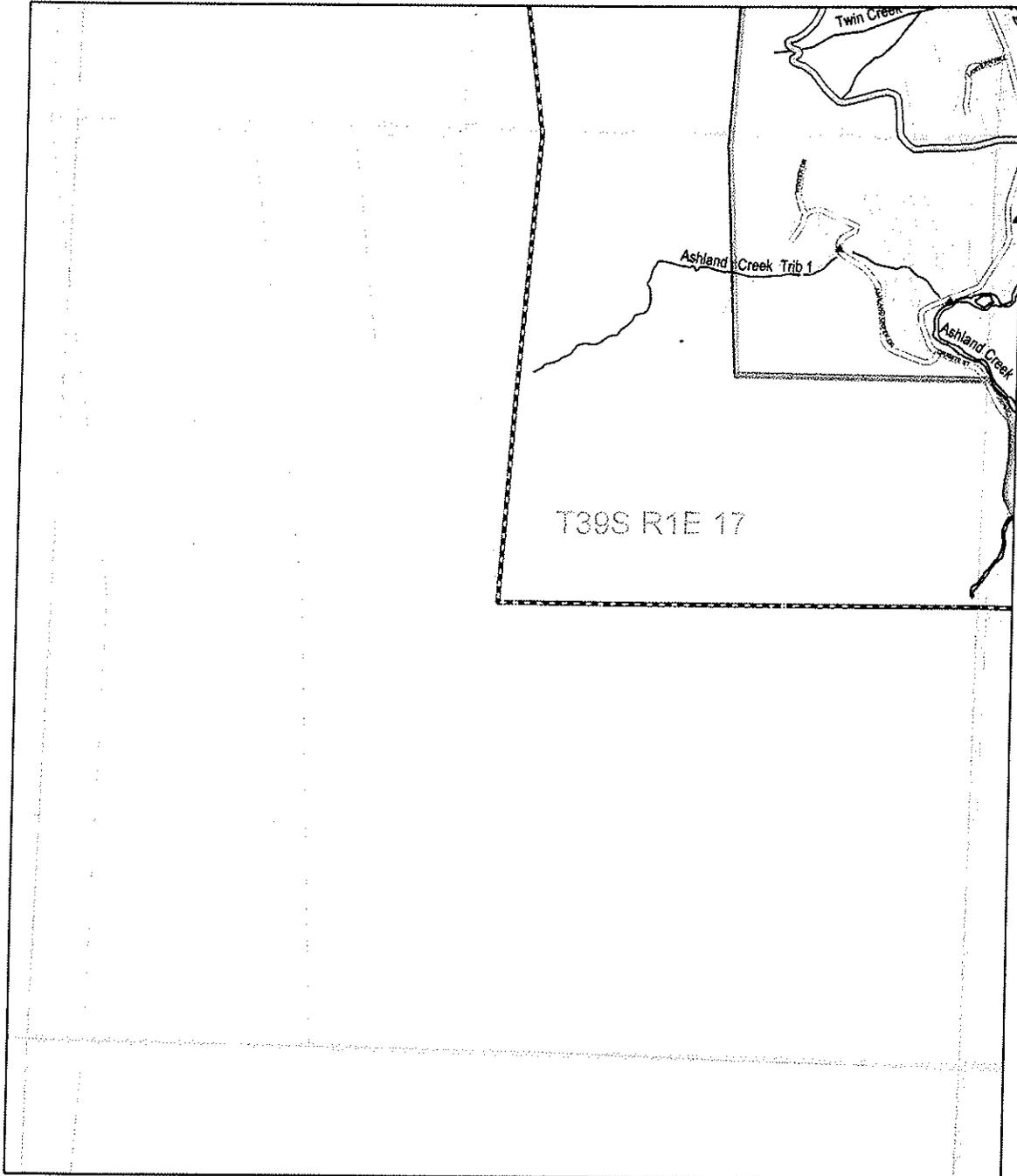
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 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.866667

GCS North American 1983
 File Date: 12/12/00; Prepared By: R. Gutierrez

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T39S R1E 17



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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Maps have been prepared using City of Ashland digital orthophotos. Photos are 30 format. Pixel Resolution: 1' pixel. Date of Photography: July 2001.

Projection Information:
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 Lambert Conformal Conic
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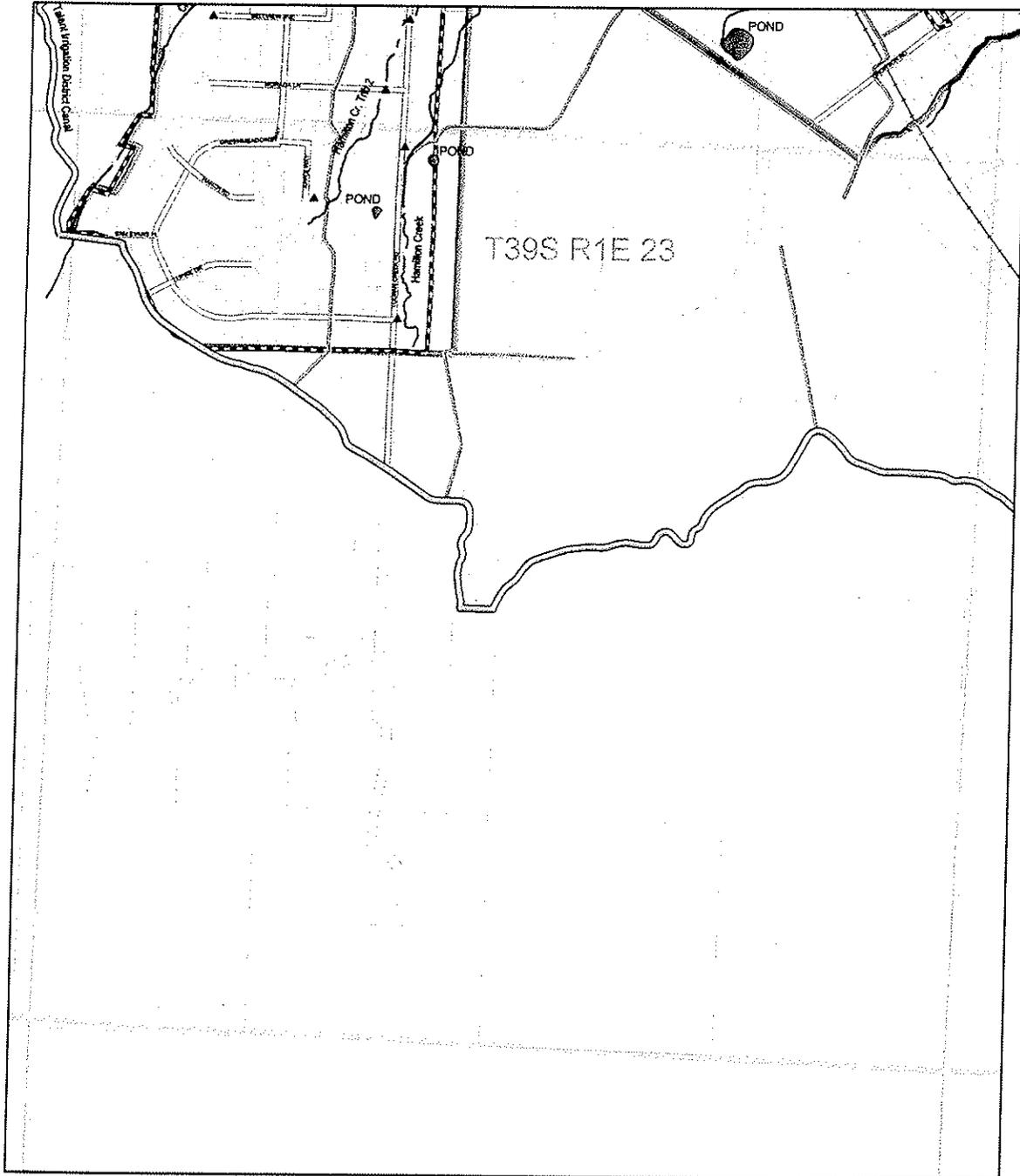


Study area is contained within the Bear Creek watershed

GCS North American 1983
 Print date: 12/12/05. Prepared By: R. Dutmer



City of Ashland
Local Wetlands Inventory
T39S R1E 23



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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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 Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

The local wetlands inventory has been prepared in accordance with OAR 141-066-0180 through 141-066-0280 and OAR 141-066-0300 through 141-066-0350 by SWCA, Inc.

Maps have been prepared using City of Ashland digital orthophotos. Photos are 300 format. Pixel Resolution: 1 pixel. Date of Photography: July 2001.

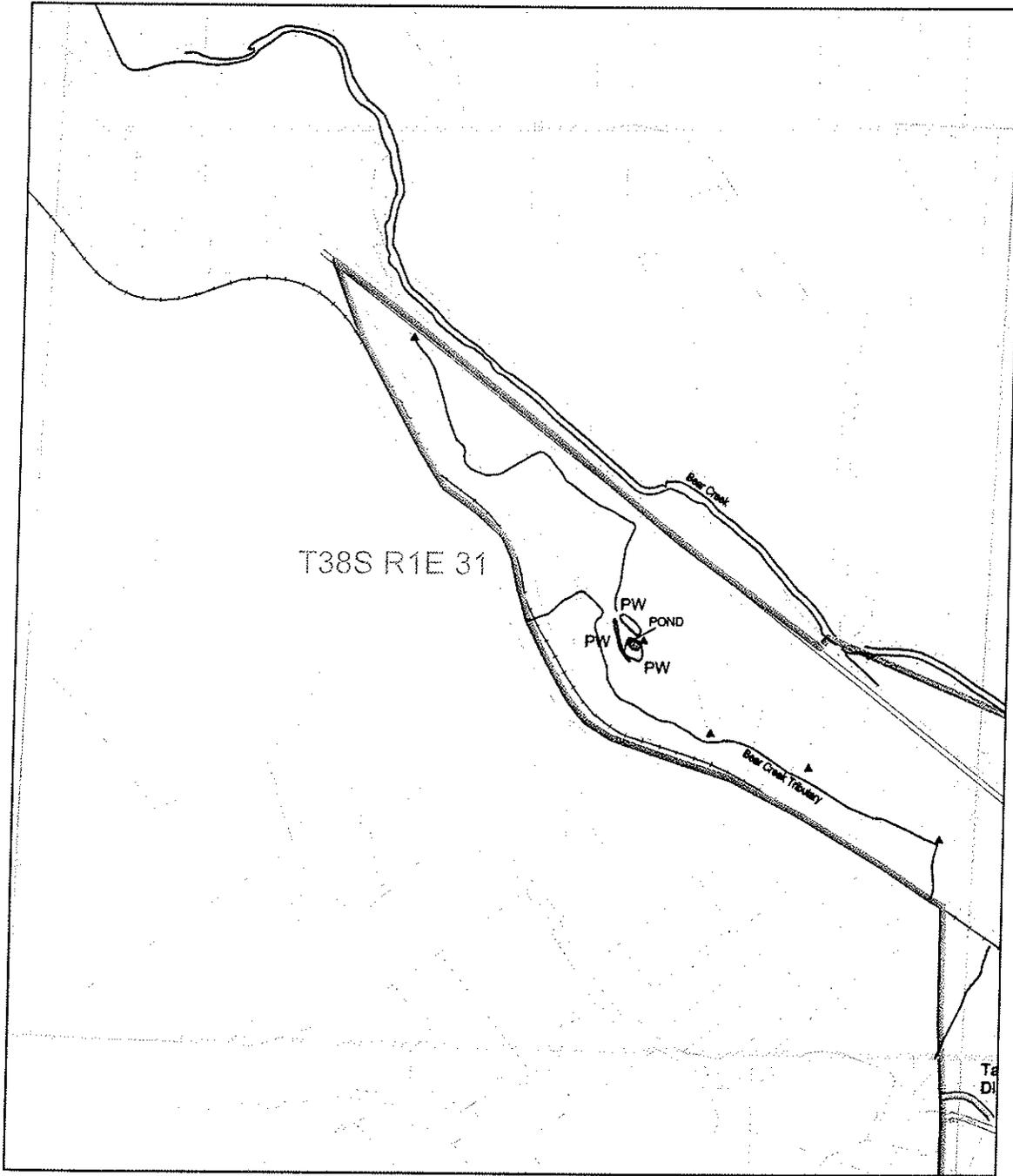
Projection Information:
 NAD 1983 StatePlane Oregon South FIPS 3602 Feet
 Lambert Conformal Conic
 False Easting: 4621250.000000
 False Northing: 0.000000
 Central Meridian: -120.500000
 Standard Parallel 1: 42.833333
 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.868887

GCS North American 1983
 Print date: 12/12/06. Prepared By: R. Oulamaz

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T38S R1E 31



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Taxlots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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The local wetlands inventory has been prepared in accordance with OAR 141-086-0180 through 141-086-0240 and OAR 141-086-0300 through 141-086-0350 by SWCA, Inc.

Maps have been prepared using City of Ashland digitized orthophotos. Photos are 8-D format. Pixel Resolution: 1' pixel. Date of Photography: July 2001.

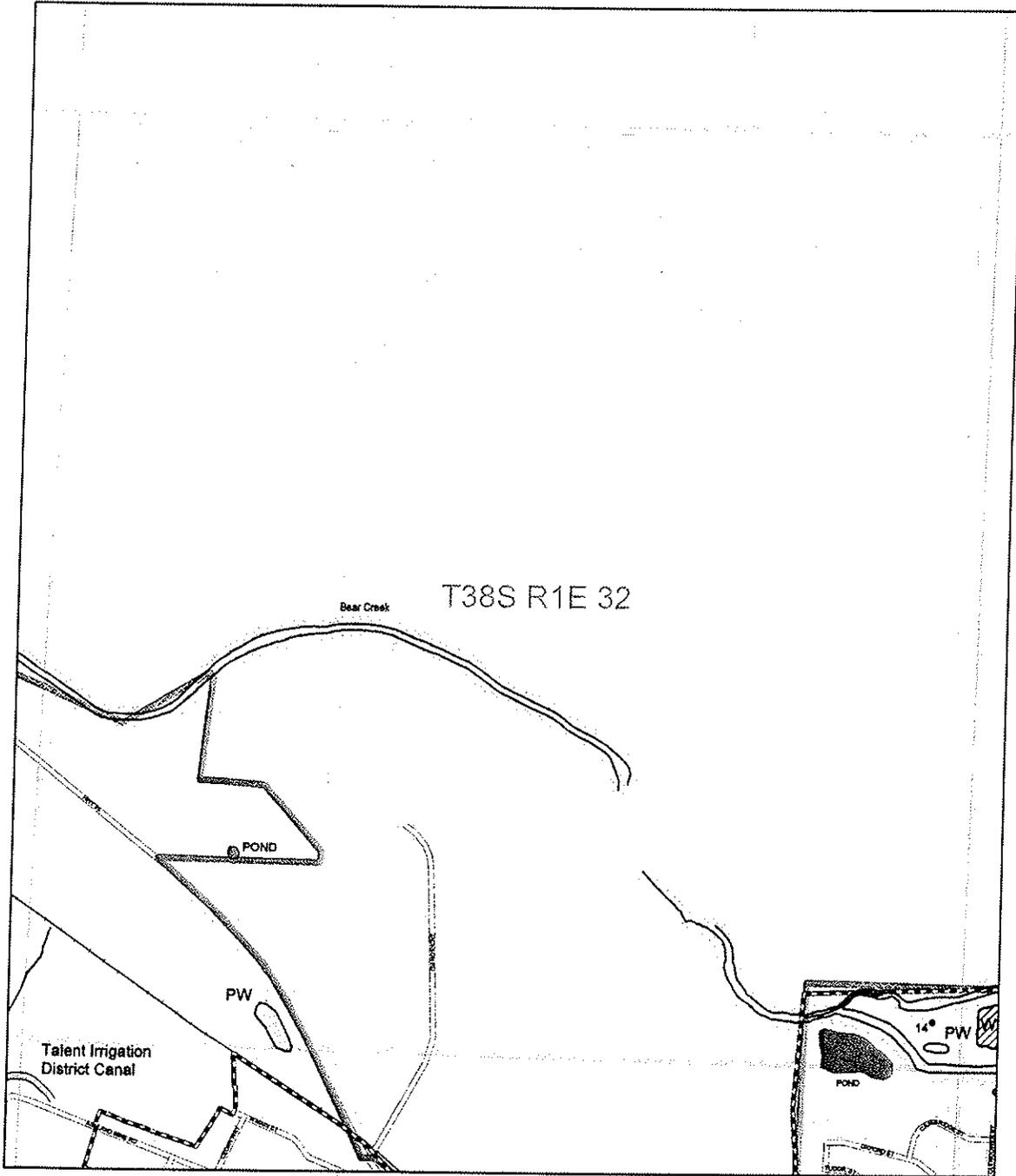
Projection Information:
 NAD 1983 Baseline Oregon South FIPS 3602 Feet Lambert Conformal Conic
 False Easting: 4921250.000000
 False Northing: 0.000000
 Central Meridian: -120.300000
 Standard Parallel 1: 43.253333
 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.666667

QCS North American 1983
 Print date: 12/15/06; Prepared By: R. Guenzel

Study area is contained within the Bear Creek watershed



City of Ashland
Local Wetlands Inventory
T38S R1E 32



Legend

- | | | |
|---|-----------------------|--|
| Wetlands, field verified | Tardots | Streams, intermittent drainages, and ditches |
| Wetlands, not field verified | Urban Growth Boundary | Laterals |
| Possible Wetlands | City Limits | Talent Irrigation District Canal |
| Pond | Sections | Culverted Streams |
| Riparian Corridor Safe Harbor (50 feet) | Streets | W1-W14 Wetland Unit |
| Sample Plot | Railroad | |
| Observation Point | | |

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Information shown on this map is for planning purposes only and wetland information is subject to change. There may be unmaped 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 Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

The local wetlands inventory has been prepared in accordance with OAR 141-086-0100 through 141-086-0240 and OAR 141-086-0200 through 141-086-0250 by SWCA, Inc.
 Maps were prepared using City of Ashland digital orthophotos. Photos are 300 Respal. Photo Resolution: 1 inch. Date of Photography: July 2001

Projection Information:
 NAD 1983 BasePlane Oregon South PPS 3002 Feet
 Lambert Conformal Conic
 False Easting: 4921250.000000
 False Northing: 0.000000
 Central Meridian: -120.300000
 Standard Parallel 1: 42.333333
 Standard Parallel 2: 44.000000
 Latitude Of Origin: 41.666667

GCS North American 1983
 PWS Rev: 12/12/06, Prepared By: R. Gueters

Study area is contained within the Bear Creek watershed

**WETLAND SUMMARY SHEETS
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City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 1

Site Code: W1

Location: South of Ashland Creek, west of sewage treatment plant, east of BMX park

Township 39S Range 1E Section 4 Quarter NW

Tax Map Tax lot(s) 391E04BB 102 & 200

DSL #: none

Approximate size (acres): 2.23

Cowardin classification: PEM

HGM classification: Slope Valley

Hydrologic basin: Ashland Creek

Soil type(s): Brader-Debenger, Barron

Sample Plot Number(s): 7, 8 & 9

Field verification date(s): 6/4/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs: cattail, poison hemlock, and creeping spikerush

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation & groundwater seeps

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, no woody vegetation, <0.5 acre open water
Fish Habitat:	Low	wetland does not include a stream, lake or pond
Water Quality:	High	evidence of ponding, high veg. cover, Ashland Creek is WQ limited
Hydrologic Control:	Medium	unrestricted outlet, no woody veg., upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This emergent wetland is dominated by cattail, poison hemlock (a noxious species) and creeping spikerush. Other species noted in the wetland include meadow foxtail, teasel, Himalayan blackberry, willow-herb, soft rush, sedge and bedstraw. The wetland is connected to Ashland Creek at its downslope edge. Adjacent uplands are dominated by ryebrome, downy cheat grass, tall fescue, geranium and hairy vetch.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 2

Site Code: W2

Location: Ashland Demonstration Wetlands, south of Ashland Creek, east of sewage treatment plant

Township 39S Range 1E Section 4 Quarter NW

Tax Map Tax lot(s) 391E04BB 200

DSL #: none

Approximate size (acres): $0.16 + 0.22 + 0.26 = 0.64$

Cowardin classification: POW/PEM HGM classification: Depressional Closed Nonpermanent

Hydrologic basin: Isolated

Soil type(s): Brader-Debenger

Sample Plot Number(s): none

Field verification date(s): 6/4/03 & 6/24/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs: narrow-leaf cattail, hardstem bulrush

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	sparse woody veg., low interspersions, <0.5 acre open water, isolated
Fish Habitat:	Low	small seasonal ponds with no connection to stream, no cover or shade
Water Quality:	High	evidence of ponding, high veg. cover, Ashland Creek is WQ limited
Hydrologic Control:	Medium	outside floodplain, no woody veg., upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Not locally significant, not subject to state jurisdiction. Note: although Wetland W2 displays intact water quality function, it is excluded from the locally significant wetland criteria according to OAR 141-086-0350(1) since it was created for the purpose of wastewater treatment. The wetland is also non-jurisdictional since it was created in upland soils and is smaller than 1 acre.

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

The Ashland Demonstration Wetlands consist of 3 excavated ponds, 0.16, 0.22 and 0.26 acre in size, dominated by narrow-leaf cattail and hardstem bulrush. The upper pond also contained poison hemlock (noxious) and floating pennywort with red-osier dogwood, rose and willow shrubs planted on the side slopes. The middle pond also contained globepodded hoarycress, a noxious species. The ponds were constructed in 1996 and were lined and planted. The ponds were built as an experimental system to determine their effectiveness for removing

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Wetland 2, continued

phosphorous from the City's wastewater. The ponds received 10,000 gallons per day from the sewage treatment plant until 1998 or 1999 when the experiment was discontinued since preliminary results revealed that this type of natural treatment system would not be adequate to meet DEQ's phosphorous standard given the volume of the City's wastewater and small size of the treatment ponds. The wetland/upland boundaries are well-defined by topography and a change to non-hydrophytic vegetation surrounding the ponds consisting of ripgut brome, ryebrome, tall fescue, hairy vetch, and two-color lupine.

Three rectangular areas were excavated immediately north of the Ashland Demonstration Wetlands to provide stormwater infiltration. These areas are currently dominated by non-hydrophytic vegetation and do not meet the wetland criteria. The upper two excavated areas are dominated by dead giant reed (invasive in California), and the lower excavated area is dominated by a brome species. These three excavated areas are not included in the mapping for wetland unit 2.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 3

Site Code: W3

Location: Billings Ranch, north of railroad, just south of City limits

Township 39S Range 1E Section 5 Quarter NE

Tax Map Tax lot(s) 391E05 200

DSL #: WD 02-0472; RF-30032

Approximate size (acres): 1.83

Cowardin classification: PEM

HGM classification: Slope Valley

Hydrologic basin: Bear Creek

Soil type(s): Shefflein, Coker

Sample Plot Number(s): none (recent delineation)

Field verification date(s): 6/25/03 (off-site)

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs: common velvetgrass, grass species, bulrush and cattail

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation & groundwater seeps (seeps noted in wetland delineation report)

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, no woody veg., <0.5 acre open water
Fish Habitat:	Low	wetland does not include a stream, lake or pond
Water Quality:	Medium	primary water source = groundwater, evidence of ponding, high veg. cover
Hydrologic Control:	Medium	outside floodplain, unrestricted outlet, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Not locally significant but still jurisdictional

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

The Billings Ranch residential subdivision site was under construction at the time of the site visit. This wetland was viewed from off-site from Nevada Street using binoculars. Grading activity was occurring, and orange construction fencing was present adjacent to the wetland area. Vegetation was dominated by grasses, including common velvetgrass (all species could not be identified with binoculars). Trace amounts of teasel, hardstem bulrush, rush and dock were also noted. The wetland delineation report describes the portion of the wetland to be impacted as being dominated by upland and wetland grasses (often facultative wetland grasses) with lesser amounts of rushes and sedges. The portion of the wetland to be protected is described as having bulrush and cattails.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Wetland 3, continued

This site was delineated in 2002 (DSL WD 2002-0472). A portion of this wetland is slated to be filled under permit (DSL RF-30032), with mitigation to occur adjacent to Billings Pond just north of this wetland. The size of the wetland to remain after permitted impacts is 1.14 acres.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 4

Site Code: **W4**

Location: Cemetery Creek, north of railroad, south of Main Street

Township **39S** Range **1E** Section **10** Quarter **SE**

Tax Map Tax lot(s) 391E10D 201; 391E10DA 3200, 3500 & 3600

DSL #: WD 03-0203 (east side of tax lot 3600 only)

Approximate size (acres): 3.86

Cowardin classification: PEM

HGM classification: Riverine Flow-Through

Hydrologic basin: Cemetery Creek

Soil type(s): Kubli

Sample Plot Number(s): none (no permission to access)

Field verification date(s): 6/3/03

Dominant Plant Species (Common Names):

Trees:

Shrubs: Pacific willow, weeping willow

Herbs: reed canarygrass, cattail

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Cemetery Creek, also stormwater input from adjacent residential development to east noted

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, no woody veg., <0.5 acre open water
Fish Habitat:	Medium	low shading and cover, adjacent land use is agriculture
Water Quality:	High	evidence of ponding, high veg. cover, adjacent land use is agriculture
Hydrologic Control:	Medium	outside floodplain, unrestricted outlet, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This wetland unit is associated with Cemetery Creek. Vegetation is dominated by reed canarygrass (invasive) and cattail, with areas of Pacific willow and weeping willow shrubs. Himalayan blackberry and white poplar shrubs were also noted in areas. A few black cottonwood trees are also present along the stream. The wetland is closely bordered by residential development along its east edge. The western wetland boundary is defined by a change to upland grasses. A wetland fill violation occurred at the west end of Creek Drive, and an on-site wetland determination was conducted by the Division of State Lands in April 2003 (DSL WD 03-0203).

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 5

Site Code: **W5**

Location: Clear Creek Village mitigation site, north of Chegar Street, south of Hersey Street

Township **39S** Range **1E** Section **4** Quarter **SW**

Tax Map Tax lot(s) 391E04CD 1904

DSL #: WD 02-0292

Approximate size (acres): 1.29

Cowardin classification: PEM/POW

HGM classification: Riverine Impounding

Hydrologic basin: Clear Creek

Soil type(s): Coker

Sample Plot Number(s): none

Field verification date(s): 6/3/03

Dominant Plant Species (Common Names):

Trees:

Shrubs: Oregon ash, red-osier dogwood, Douglas spirea, willow, red elderberry

Herbs: cattail, hardstem bulrush, rush, blue wildrye, tufted hairgrass, buttercup

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Stormwater runoff, wetland is the headwaters of Clear Creek

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	mod. interspersed, <0.5 acre open water, adjacent land use = developed
Fish Habitat:	Medium	low shading and cover, adjacent land use is developed
Water Quality:	High	evidence of ponding, high veg. cover, adjacent land use is developed
Hydrologic Control:	High	enclosed basin, evidence of ponding, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

A wetland delineation of the Clear Creek Village mitigation site was recently conducted by Integrated Environmental Design (DSL WD 02-0292). Two on-line ponds are present on Clear Creek. The site contains a diverse vegetation community in the emergent wetland area and native shrub plantings should develop into a scrub-shrub wetland community over time. Wetland boundaries are well-defined by topography and a change to non-hydrophytic vegetation.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 6

Site Code: W6

Location: Knoll Creek, north of Interstate-5, south of East Main Street

Township 39S Range 1E Section 11 Quarter SE

Tax Map Tax lot(s) 391E11D 100, 300, 900 & 1000

DSL #: none

Approximate size (acres): 1.71

Cowardin classification: PEM

HGM classification: Riverine Flow-Through

Hydrologic basin: Knoll Creek

Soil type(s): Kubli, Brader-Debenger, Central Point

Sample Plot Number(s): none (no permission to access) Field verification date(s): 6/4/03 (off-site)

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs: cattail, rush

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Knoll Creek

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	sparse woody vegetation, moderate interspersions, <0.5 acre open water
Fish Habitat:	High	natural stream channel, adjacent land use is undeveloped
Water Quality:	High	surface water-driven, evidence of ponding, high veg. cover
Hydrologic Control:	Medium	outside floodplain, unrestricted outlet, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This unit was viewed from off-site from the Windmill Inn parking lot using binoculars. Two stream-associated wetlands are present along Knoll Creek. The wetlands are predominantly emergent with a minor scrub-shrub component. Vegetation is dominated by cattail and rush, with a few willow, black cottonwood, Oregon ash and rose shrubs also present. Adjacent uplands are dominated by Himalayan blackberry and upland grasses.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 7

Site Code: W7

Location: North Mountain Nature Park, south of Bear Creek, east of Mountain Avenue

Township 39S Range 1E Section 4 Quarter SE

Tax Map Tax lot(s) 391E04DA 300; 391E04DD 100 & 400

DSL #: WD 95-0229

Approximate size (acres): 3.25

Cowardin classification: PEM/POW

HGM classification: Riverine Impounding

Hydrologic basin: Bear Creek

Soil type(s): Camas-Newberg-Evans

Sample Plot Number(s): none

Field verification date(s): 6/24/03

Dominant Plant Species (Common Names):

Trees:

Shrubs: Douglas spirea, Oregon ash, sandbar willow, black hawthorn and black cottonwood

Herbs: cattail, hardstem bulrush, soft rush, sedge, meadow foxtail, bentgrass and creeping buttercup

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Beach Creek (ponds) & precipitation (emergent wetlands)

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	High	connected to Beach & Bear Creeks, moderate interspersions, wide buffer
Fish Habitat:	Medium	low shading and cover, stream channel modified (on-line ponds)
Water Quality:	High	surface water-driven, evidence of ponding, high veg. cover
Hydrologic Control:	High	within floodplain, evidence of ponding, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

Three on-line ponds (upper, middle and lower ponds) are present on Beach Creek. We refer to the pond at the downstream end of Beach Creek as the lower pond and to the pond further upstream on Beach Creek the upper pond, although the North Mountain Park informational brochure refers to the lower pond as the upper pond and vice versa. The ponds are fringed by emergent wetlands containing cattail, hardstem bulrush, soft rush, sedge, and meadow foxtail with Douglas spirea, Oregon ash, sandbar willow, black hawthorn, and black cottonwood shrubs. The lower wetlands are located in the floodway of Bear Creek. Floating aquatic vegetation in the ponds includes lesser duckweed and Mexican water fern. Western pond turtle were observed in the upper pond. Additional emergent wetland vegetation observed in the non-ponded areas included meadow foxtail, bentgrass, creeping buttercup, teasel, Watson's willow-herb, and rush.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 8

Site Code: W8

Location: North of Bear Creek, west of Mountain Avenue

Township 39S Range 1E Section 4 Quarter NE

Tax Map Tax lot(s) 391E04AC 900

DSL #: none

Approximate size (acres): 0.90

Cowardin classification: PSS

HGM classification: Slope Valley

Hydrologic basin: Isolated, no apparent connection to Bear Creek

Soil type(s): Camas-Newberg-Evans, Darow, Medford

Sample Plot Number(s): 16 & 17

Field verification date(s): 6/24/03

Dominant Plant Species (Common Names):

Trees:

Shrubs: sandbar willow, Pacific willow and Himalayan blackberry

Herbs:

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation, may be spring-fed

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, <0.5 acre open water, isolated
Fish Habitat:	Low	wetland does not include a stream, lake or pond
Water Quality:	Medium	no evidence of ponding, high veg. cover, Bear Creek is WQ limited
Hydrologic Control:	High	restricted outlet, woody veg., upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This scrub-shrub wetland is dominated by sandbar willow and Pacific willow shrubs surrounded by a dense Himalayan blackberry thicket. One Oregon ash tree was also present in the wetland, along with trace amounts of soft rush, spreading rush and teasel (invasive). This wetland is bordered on the south and west by a gravel road, and no culvert was observed under the road that would connect the wetland with Bear Creek to the south. Upland vegetation adjacent to the wetland is dominated by yellow starthistle (noxious), ripgut brome, tumbled mustard, poison hemlock (noxious), teasel and Himalayan blackberry and hairy.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 9

Site Code: **W9**

Location: North of railroad, south of East Main Street, west of Cemetery Creek

Township **39S** Range **1E** Section **10** Quarter **NE & SE**

Tax Map Tax lot(s) 391E10D 903, 909, 910, 913 & 1000

DSL #: WD 91-0031

Approximate size (acres): 5.38

Cowardin classification: PEM

HGM classification: Slope Valley

Hydrologic basin: Isolated

Soil type(s): Kubli

Sample Plot Number(s): none (difficult access)

Field verification date(s): 6/25/03 (off-site)

Dominant Plant Species (Common Names):

Trees:

Shrubs: Himalayan blackberry is around the perimeter

Herbs: (from 1991 delineation) fine grass, cattail, soft rush, creeping buttercup, common velvetgrass

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation, apparently spring-fed

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, <0.5 acre open water, isolated
Fish Habitat:	Low	wetland does not include a stream, lake or pond
Water Quality:	High	evidence of ponding, high veg. cover, adjacent land use is developed
Hydrologic Control:	High	evidence of ponding, outlet restricted, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This wetland was difficult to view from off-site due to the presence of berms bordering much of the site and the lack of viewing points from adjacent roads. The south portion of the wetland was partially viewed from a permission to access parcel on Normal Street and was observed to be surrounded by dense blackberry with a few willow and black cottonwood. A portion of this wetland was delineated in 1991 (DSL WD 91-0031). Wetland vegetation on the wetland data sheets included a fine grass, cattail, soft rush, creeping buttercup, common velvetgrass and Himalayan blackberry.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 10

Site Code: **W10**

Location: North of Highway 66, south of Neil Creek

Township **39S** Range **1E** Section **13** Quarter **NW**

Tax Map Tax lot(s) 391E13B 2001

DSL #: WD 90-0119

Approximate size (acres): 2.12

Cowardin classification: PEM

HGM classification: Slope Valley

Hydrologic basin: Neil Creek

Soil type(s): Barron, Kubli, Camas-Newberg-Evans

Sample Plot Number(s): 19 & 20

Field verification date(s): 6/25/03 & 6/26/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs: reed canarygrass, poison hemlock, teasel

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, no woody vegetation, <0.5 acre open water
Fish Habitat:	Low	wetland does not include a stream, lake or pond
Water Quality:	Medium	no evidence of ponding, high veg. cover, Neil Creek is WQ limited
Hydrologic Control:	Medium	within floodplain, unrestricted outlet, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This wetland is dominated by reed canarygrass (invasive), poison hemlock (noxious) and teasel (invasive). A few willow, white alder and Oregon ash shrubs are also present. Soils are hummocky, indicating possible prior agricultural use. The wetland appears to be connected to Neil Creek at its downslope end. Adjacent uplands consist of quack grass, ripgut brome, downy cheat grass, yellow starthistle (noxious), globepodded hoarycress (noxious) and Himalayan blackberry.

Historically this site appears to have been upland, per the 1990 wetland determination; however, recent normal hydrologic conditions present for several years support a revised finding that it is now jurisdictional wetland.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 11

Site Code: **W11**

Location: Southwest of Washington Street & Interstate-5, north of railroad

Township **39S** Range **1E** Section **14** Quarter **NE**

Tax Map Tax lot(s) 391E14A 1102 & 1104

DSL #: none

Approximate size (acres): 0.85

Cowardin classification: PEM

HGM classification: Slope Valley

Hydrologic basin: Knoll Creek

Soil type(s): Kubli

Sample Plot Number(s): none (no permission to access)

Field verification date(s): 6/5/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs: meadow foxtail

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, no woody vegetation, <0.5 acre open water
Fish Habitat:	Low	wetland does not include a stream, lake or pond
Water Quality:	Medium	no evidence of ponding, high veg. cover, adjacent land use is developed
Hydrologic Control:	Medium	outside floodplain, no evidence of ponding, upstream land use developed

Determination of Goal 5 Locally Significant Wetland: Not locally significant but still jurisdictional

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This wetland was viewed from off-site from Washington Street with binoculars. This wetland consists of a roadside emergent wetland along the southwest side of Washington Street, dominated by meadow foxtail, with lesser amounts of blue wildrye, birdsfoot-trefoil and catchweed bedstraw. This wetland is connected to Knoll Creek via a roadside ditch at its downstream end. The wetland boundary is defined by a change to upland grasses.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 12

Site Code: **W12**

Location: West of Cemetery Creek, north of railroad, south of East Main Street

Township **39S** Range **1E** Section **10** Quarter **NE & SE**

Tax Map Tax lot(s) 391E10D 201, 203, 204, 300 & 700

DSL #: none

Approximate size (acres): 1.68

Cowardin classification: PEM

HGM classification: Slope Valley

Hydrologic basin: Cemetery Creek

Soil type(s): Kubli

Sample Plot Number(s): 10 & 11

Field verification date(s): 6/5/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs: cattail, meadow foxtail, water foxtail and soft rush

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation & TID

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, no woody vegetation, <0.5 acre open water
Fish Habitat:	Low	wetland does not include a stream, lake or pond
Water Quality:	High	evidence of ponding, high veg. cover, adjacent land use is agriculture
Hydrologic Control:	Medium	outside floodplain, unrestricted outlet, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This wetland swale originates in a horse pasture north of the railroad tracks and is located approximately 400 feet west of Cemetery Creek. The wetland is dominated by cattail, meadow foxtail, water foxtail and soft rush. Lesser amounts of western buttercup, forget-me-not, common velvetgrass, spreading rush and creeping spikerush were also present, with a few black cottonwood trees also present in the northern portion. Adjacent uplands contain Mediterranean barley, ryegrass, tall fescue, yellow clover and mayweed chamomile.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 13

Site Code: **W13**

Location: West of Hamilton Creek, north of Ashland Street, south of East Main Street

Township **39S** Range **1E** Section **11** Quarter **SW**

Tax Map Tax lot(s) 391E11C 2500; 391E11CA 2762 & 12761; 391E11CB 1000 & 1100

DSL #: WD 01-0613

Approximate size (acres): 1.41

Cowardin classification: PEM

HGM classification: Slope Valley

Hydrologic basin: Bear Creek

Soil type(s): Kubli

Sample Plot Number(s): 1 - 4

Field verification date(s): 6/3/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs: common velvetgrass, meadow foxtail, Kentucky bluegrass, soft rush, cattail and spearmint

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Precipitation & TID

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	Medium	1 Cowardin class, no woody vegetation, <0.5 acre open water
Fish Habitat:	Low	wetland does not include a stream, lake or pond
Water Quality:	High	evidence of ponding, high veg. cover, adjacent land use is agriculture
Hydrologic Control:	Medium	outside floodplain, unrestricted outlet, upstream land use is developed

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This wetland is the headwaters of a small unnamed tributary to Bear Creek that flows behind a residential subdivision. The wetland consists of a gentle topographic swale trending north through several agricultural properties. A portion of this wetland was previously delineated (DSL WD 01-0613) and the adjacent area was partially plowed up to the edge of wetland. The wetland is described as containing common velvetgrass, meadow foxtail, Kentucky bluegrass, soft rush, cattail and spearmint in the wetland delineation report. Several Canada geese were observed on the headwater area in this area from off-site. Uplands are meadow foxtail, brome, tall fescue and orchard grass.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Site: Wetland 14

Site Code: **W14**

Location: East pond between Ashland Creek & Bear Creek, downstream of sewage treatment plant

Township **38S** Range **1E** Section **33** Quarter **SW**

Tax Map Tax lot(s) 391E05 100

DSL #:

Approximate size (acres): 1.16

Cowardin classification: POW/PEM

HGM classification: Depressional Closed Nonpermanent

Hydrologic basin: Ashland Creek

Soil type(s): Camas-Newberg-Evans

Sample Plot Number(s):

Field verification date(s): 6/24/03

Dominant Plant Species (Common Names):

Trees:

Shrubs: Himalayan blackberry, Oregon ash, willow and black cottonwood

Herbs: cattail, knotweed (*Polygonum* species), yellow iris, poison hemlock and willow-herb

Other:

Primary hydrology source:

(including hydrology source and use of artificially created wetlands; any potential non-jurisdictional status)

Inlet from Ashland Creek

OFWAM Summary:

<u>Function</u>	<u>Rating</u>	<u>Rationale</u>
Wildlife Habitat:	High	>1 acre open water (seasonal) & emergent veg., connected to Ashland Cr.
Fish Habitat:	Medium	low shading and cover, Ashland Creek is water quality limited
Water Quality:	Medium	moderate veg. cover, adj. land use undeveloped, Ashland Cr. WQ limited
Hydrologic Control:	High	within floodplain, evidence of ponding, restricted outlet

Determination of Goal 5 Locally Significant Wetland: Significant

Description of the wetland, including topographic position, land uses, alterations, and the basis for the wetland boundary determination:

This wetland is a seasonal open water pond located near the confluence of Ashland Creek with Bear Creek just downstream of the Ashland sewage treatment plant. The pond is signed as the "Ashland Sediment Passive Treatment Pond" and was reportedly constructed in 1987 as a settlement pond to divert water from Ashland Creek during sluicing of the upstream Reader Reservoir. Sluicing last occurred in 1985. The pond is connected to Ashland Creek and contains both an inlet and outlet structure. The pond bottom and side slopes are comprised of granite sediment. Pond depth appeared to range from 1 to 6 feet. Vegetation fringing the pond includes cattail, yellow iris, poison hemlock, willow-herb, a few Oregon ash, willow and black cottonwood shrubs. Dense Himalayan blackberry is present along the north side adjacent to Bear Creek. Small diameter

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Wetland Summary Sheet

Wetland 14, continued

branches and woody debris were present in the pond. The pond dries up in the summer and becomes an emergent wetland dominated by knotweed in the middle and other emergents around the perimeter. Wildlife use included the following birds: wood duck, mallard, barn swallow, tree swallow, red-winged blackbird, and great blue heron.

**RIPARIAN SUMMARY SHEETS
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City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Ashland Creek

Township **38S** Range **1E** Section **32**; Township **39S** Range **1E** Sections **4, 9, 16 & 17**

Sample Plot Number(s): 13 (upland) Field verification date(s): 6/4/03, 6/5/03, 6/24/03, 6/26/03

Dominant Plant Species (Common Names):

Trees:

White alder, black cottonwood, big-leaf maple, Oregon ash, and Pacific willow; with lesser amounts of weeping willow, choke cherry, incense cedar, and Douglas fir

Shrubs:

Oregon ash, Pacific willow, sandbar willow, red-osier dogwood, and Himalayan blackberry, with lesser amounts of snowberry, mock orange, Pacific ninebark, bittersweet nightshade, Pacific yew, thimbleberry, oceanspray, beaked hazelnut, madrone, and California myrtle

Herbs:

English ivy, periwinkle, sword fern

Other:

Description:

Ashland Creek originates outside the study area in the steep hillside south of Ashland. The Granite Street Reservoir is present on Ashland Creek at the upstream end of the study area. The reservoir is surrounded by a fringe of Himalayan blackberry with black cottonwood, white alder, Pacific willow, Oregon ash, Oregon white oak and big-leaf maple trees.

The upstream portion of Ashland Creek meanders through Lithia Park for approximately 1 mile. Ashland Creek receives flow from Lithia Springs. The stream channel ranges from 15 to 30 feet wide and generally widens as it trends downstream. Cobbles, boulders, and woody debris provide good in-stream structure, and the stream is well shaded by a riparian and upland forest consisting of white alder, big-leaf maple, and Oregon ash. Invasive species including Himalayan blackberry and English ivy are present in a few areas along Ashland Creek. The stream channel is confined by well-defined stream banks in Lithia Park. No wetland benches were noted; however, a few off-channel shallow water areas were created during the 1996 flood. These shallow water areas contain managrass, common velvetgrass, American speedwell, sawbeak sedge, and willow-herb. Two off-line ponds are present adjacent to Ashland Creek. Both ponds have concrete lined sides with embedded boulders and contain floating "Lake Restorer" islands designed to improve water quality. The upper pond is the larger pond and is used by wood ducks, mallards, and turtles. A few topographic draws were noted in the steep hillside above Ashland Creek, indicating that intermittent drainages may flow downslope to Ashland Creek. At the downstream end of Lithia Park beginning at the bridge at Calle Guanajuato Way, Ashland Creek is confined within a series of concrete sidewalls, some with adjacent planter boxes containing red-osier dogwood and willow shrubs.

The downstream portion of Ashland Creek ranges from 10 to 20 feet wide and is bordered predominantly by residential development, a few agricultural parcels and the Ashland Community Garden. Ashland Creek contains good in-stream structure with many cobbles and boulders as well as

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Ashland Creek, continued

in-stream woody debris in some areas. Portions of the stream channel bottom are comprised of bedrock. Ashland Creek is confined within its stream banks due to topography of the adjacent side slopes and armoring of banks with riprap and boulders in some areas; therefore, wetland benches are generally not present along Ashland Creek. A riparian and upland forest corridor generally ranging from 50 to 150 feet wide is present along Ashland Creek. Development along Ashland Creek has resulted in some fragmentation and open canopy areas, but the stream is well-shaded in many areas. Dominant riparian vegetation consists of white alder, black cottonwood, Oregon ash, Pacific willow, sandbar willow, weeping willow and red-osier dogwood. Some areas of Himalayan blackberry and English ivy were noted, although invasive species are not generally dominant along the stream corridor.

Two large man-made open water ponds are present near the confluence of Ashland Creek with Bear Creek just downstream of the Ashland sewage treatment plant. The east pond is seasonal and becomes an emergent wetland in the summer and was therefore mapped as wetland unit W14.

The west pond (1.9 acres) is accessible from a trail off the end of Glendower and appears to be a diversion pond from Ashland Creek. The pond was reported to have been constructed approximately 30 years ago. An overflow structure to Ashland Creek was noted at the west end. The pond contains a fringe of reed canarygrass, teasel, and poison hemlock with scattered black cottonwood, sandbar willow, Oregon ash and rose shrubs. This pond appears to contain water year-round and was therefore mapped as a pond rather than a wetland. Wildlife use noted includes wood duck, mallards and western pond turtle.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Ashland Creek Tributary 1

Township **39S** Range **1E** Section **17**

Sample Plot Number(s): none

Field verification date(s): 6/26/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Willow, Himalayan blackberry, Oregon ash

Herbs:

Common horsetail, soft rush, periwinkle, sword fern, hosta, columbine

Other:

Description:

The headwaters of this tributary to Ashland Creek are located in the steep hillside to the west of Ashland Creek. The stream channel is confined within steep side slopes and is 2 to 5 feet wide with large cobbles. The stream was not flowing during the June site visits. Riparian side slopes contained a mixture of native and ornamental species in the herb layer. Adjacent uplands contain paintbrush, oceanspray, poison oak, madrone, and Oregon white oak.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Beach Creek

Township **39S** Range **1E** Sections **4, 9 & 16**

Sample Plot Number(s): none

Field verification date(s): 6/4/03, 6/24/03

Dominant Plant Species (Common Names):

Trees:

Big-leaf maple, Oregon white oak

Shrubs:

Oregon ash, Pacific willow, willow

Herbs:

cattail, curve-pod yellow-cress, poison hemlock, spearmint, teasel, bittersweet nightshade, yellow starthistle

Other:

Description:

The downstream section of Beach Creek daylight north of the railroad tracks where the stream is confined within steep Himalayan blackberry covered slopes. A weir structure is present on Beach Creek at the BPA substation site. Sedimentation has occurred upstream of the weir and a narrow wetland fringe is present containing cattail, curve-pod yellow-cress, poison hemlock and Pacific willow. A few Oregon ash and willow shrubs are also present, along with planted big-leaf maple and Oregon white oak saplings. Downstream vegetation along the stream channel consists of spearmint, teasel, bittersweet nightshade and yellow starthistle. Uplands consist of downy cheat grass, blue wildrye, Italian ryegrass, and planted big-leaf maple saplings. Downstream of the BPA substation, Beach Creek and an emergent wetland swale flow northwest through the North Mountain Nature Park to Bear Creek. Three on-line ponds (upper, middle and lower ponds) are present on Beach Creek. These ponds and associated wetlands were mapped as wetland unit 7.

The headwaters of Beach Creek originate in the steep hillside south of Ashland Street. Much of the stream is culverted through residential development. Beach Creek is intermittent where it is daylighted above Ashland Street. Downstream of Beach Street, the stream is bordered by steep side slopes with dense Himalayan blackberry and Pacific willow, black cottonwood and weeping willow trees in the riparian area. Adjacent uplands contain catchweed bedstraw, periwinkle, Himalayan blackberry, Oregon white oak and ponderosa pine. Upstream of Beach Street, Beach Creek is forked. The east fork is approximately 1 foot wide and flows through a rock and flagstone water feature through a backyard area and then continues upslope where it is confined at the bottom of steep Himalayan blackberry covered side slopes with tall fescue, bulbous bluegrass, and Oregon white oak further upslope. The west fork is an undefined channel at the bottom of a steep topographic ravine with very sparse herb layer that had been recently cleared of blackberry. Oregon white oak, madrone, big-leaf maple, Douglas fir and ponderosa pine were present in the tree canopy.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Bear Creek

Township 38S Range 1E Sections 31 & 32; Township 39S Range 1E Sections 4 & 11

Sample Plot Number(s): 14 (upland) Field verification date(s): 6/5/03, 6/24/03, 6/26/03

Dominant Plant Species (Common Names):

Trees:

black cottonwood, white alder, Oregon ash, weeping willow

Shrubs:

Himalayan blackberry, Pacific willow, sandbar willow, Piper's willow, black hawthorn

Herbs:

cattail, soft rush, common horsetail, curve-pod yellow-cress, buttercup, poison hemlock, teasel, hardstem bulrush

Other:

Description:

Bear Creek originates at the confluence of Emigrant Creek and Neil Creek just downstream of the airport. The downstream portion of Bear Creek varies from 30 to 75 feet wide. Bear Creek was observed at the Mountain Avenue bridge and the Bear Creek Greenway Trail bridge (Talent-Ashland Trail segment). The portion of Bear Creek located within the study area is bordered mostly by undeveloped land. Bear Creek has good in-stream structure with many cobbles and nice channel meanders. Bear Creek is topographically confined within its stream banks; therefore, wetland benches are generally not present. The stream is well-shaded by its riparian corridor which contains a mixture of native trees and shrubs and is generally dominated by black cottonwood, white alder, and Oregon ash in the tree canopy and by Pacific willow, sandbar willow and Piper's willow in the shrub layer. The stream channel is inaccessible in many areas due to dense thickets of Himalayan blackberry in the riparian corridor. An approximately 20 foot wide wetland bench containing cattail, yellow iris, American speedwell and soft rush is present on the north bank, downstream of Mountain Avenue. The stream channel is confined in this location by a steep Himalayan blackberry covered slope on the south bank. Two great blue heron nests with herons were observed in black cottonwood trees in the riparian corridor near Mt. Meadows Drive. Adjacent uplands contain a variety of upland pasture grasses, yellow starthistle, poison hemlock, Himalayan blackberry, oak and ponderosa pine.

The North Mountain Nature Park borders Bear Creek to the south at the northeast edge of the study area. The 14 acre park is being managed and enhanced by planting a variety of native species with the goal of improving the quality of fish and wildlife habitat in the Bear Creek riparian corridor. Bear Creek adjacent to the North Mountain Nature Park was approximately 30 to 35 feet wide and was flowing 1 to 2 feet deep and contained many in-stream cobbles and boulders.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Bear Creek Tributary 1

Township 38S Range 1E Section 31

Sample Plot Number(s): none

Field verification date(s): 6/5/03, 6/26/03

Dominant Plant Species (Common Names):

Trees:

Oregon ash, white alder

Shrubs:

Himalayan blackberry, Pacific willow, Piper's willow, cherry

Herbs:

Cattail, curve-pod yellow-cress, reed canarygrass, soft rush, common horsetail, hardstem bulrush, poison hemlock, mannagrass, buttercup, forget-me-not

Other:

Description:

This Bear Creek tributary is located in the northwest corner of the study area, outside the city limits and inside the UGB. The headwaters of the tributary originate in the steep hillslope south of the study area. The tributary flows northwesterly along the bottom of the hillslope behind several car dealerships and the Lithia Springs Inn. The stream is culverted under West Jackson Road, heads northerly through the Jackson Hot Springs RV Park, then continues northwesterly prior to being culverted under Highway 99 and joining Bear Creek. The stream varies from 3 to 10 feet wide and is bordered by a narrow emergent wetland fringe behind the Lithia Springs Inn. Wetland vegetation consists of cattail, curve-pod yellow-cress, reed canarygrass, soft rush, common horsetail, hardstem bulrush, poison hemlock, mannagrass, buttercup, forget-me-not with areas of Himalayan blackberry, willow and cherry shrubs. Oregon ash and white alder trees are present along the downstream portion. Adjacent uplands consist of brome, Himalayan blackberry, Oregon white oak, big-leaf maple, ponderosa pine, and Douglas fir.

Hydrology of the tributary is partially fed by sulfur springs, one of which was observed at the rear of the Lithia Springs Inn property. Sulfur springs also appear to be feeding a small concrete-lined pond south of West Jackson Road. Two-foot contours and black and white aerial photo coverage was not available for this area, and mapping the stream location was difficult in areas due to tree canopy cover and lack of permission to access the area.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Cemetery Creek

Township **39S** Range **1E** Sections **10 & 14**

Sample Plot Number(s): none

Field verification date(s): 6/3/03, 6/5/03, 6/25/03

Dominant Plant Species (Common Names):

Trees:

Weeping willow, Pacific willow, black cottonwood

Shrubs:

Himalayan blackberry, sandbar willow, Pacific willow, choke cherry

Herbs:

Cattail, meadow foxtail, water foxtail, reed canarygrass, creeping buttercup, small-fruited bulrush, western buttercup, creeping spikerush, forget-me-not, velvetgrass

Other:

Description:

The headwaters of Cemetery Creek originate north of Siskiyou Boulevard. The stream channel is approximately 10 feet wide at the Clay Street Park with a narrow fringe of cattail, creeping buttercup and bittersweet nightshade. The riparian area contained Himalayan blackberry, sandbar willow, Pacific willow, choke cherry and black cottonwood. Adjacent uplands consisted of Himalayan blackberry, and mowed lawn (park) with a few pine and ornamental maple trees.

The stream channel is forked to the north of the railroad tracks. Emergent wetlands are associated with Cemetery Creek along this downstream section and were mapped as wetland unit 4. A wetland fill violation has been reported at the west end of Creek Drive (DSL WD 03-0203). Cemetery Creek generally ranges from 1 to 5 feet wide and is bordered by agricultural fields. The downstream portion is channelized through a landscaped yard where it is bordered by mowed lawn, the escaped ornamental periwinkle (*Vinca* species) and a few Piper's willow and weeping willow. Three small landscaped ponds are present adjacent to the stream.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Clay Creek

Township **39S** Range **1E** Sections **11 & 14**

Sample Plot Number(s): none

Field verification date(s): 6/3/03, 6/25/03

Dominant Plant Species (Common Names):

Trees:

white alder, Pacific willow, weeping willow, black cottonwood, black locust

Shrubs:

white alder, Pacific willow, Himalayan blackberry, Japanese knotweed, tree of heaven

Herbs:

Mannagrass, American speedwell, reed canarygrass, cattail, soft rush, sawbeak sedge, waterweed, monkey-flower, forget-me-not, English ivy

Other:

Description:

Clay Creek is labeled on the USGS and NWI maps as Hamilton Creek (Hamilton Creek the next stream east of Clay Creek). The headwaters of Clay Creek are located outside the study area in the steep hillside south of Ashland. The upstream section of Clay Creek, south of Ashland Street, is channelized through residential development and is generally 5 feet wide. A narrow wetland fringe of reed canarygrass, cattail, and soft rush is present along the stream channel, and riparian vegetation consists of Himalayan blackberry, white alder, Pacific willow, weeping willow, and black cottonwood. Invasive species including English ivy and Japanese knotweed were noted adjacent to Siskiyou Boulevard. Adjacent uplands contain tall fescue, orchard grass, Mediterranean barley, tall oatgrass, hairy vetch, Himalayan blackberry, snowberry, Oregon white oak, California black oak, ponderosa pine, and madrone.

Downstream of Ashland Street, six on-line ponds are present on Clay Creek in the Wingspread Mobile Home Park. These ponds are characterized as open water ponds, some of which have a narrow fringe of cattail or contain a small island with a few willow. The ponds are connected by concrete spillways and are bordered by mowed lawn.

Much of the riparian vegetation along Clay Creek was removed in the Meadowbrook Park Estates and the side slopes adjacent to the stream are covered with bark dust. Downstream of this subdivision, the riparian corridor is more natural, although some clearing has occurred at the top of slope within the riparian buffer, and contains Pacific willow and black cottonwood on the side slopes and mannagrass, American speedwell, sawbeak sedge and waterweed (*Elodea* species) in and along the stream channel.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Clear Creek

Township **39S** Range **1E** Section **4**

Sample Plot Number(s): none

Field verification date(s): 6/4/03, 6/26/03

Dominant Plant Species (Common Names):

Trees:

Oregon ash, weeping willow, black cottonwood

Shrubs:

Himalayan blackberry

Herbs:

Cattail, soft rush

Other:

Description:

Clear Creek originates just north of Clear Creek Drive at the Clear Creek Village wetland mitigation site (DSL App. #12783; wetland unit 5) that was under construction during the June site visits. Just downstream and north of Hersey Street, Clear Creek is channelized through residential development and is approximately 3 feet wide with a narrow fringe of cattail and soft rush and is bordered by mowed lawns with a few weeping willow and black cottonwood at the top of bank. A section of Clear Creek is culverted north of Clinton Street and then daylights as an approximately 5 foot wide channel surrounded by dense Himalayan blackberry and an Oregon ash overstory. This section of Clear Creek, as well as two off-line ponds, are reported to receive flow from an irrigation ditch fed by Ashland Creek. Adjacent uplands consist of Himalayan blackberry with poison hemlock, Canada thistle and hairy vetch.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Emigrant Creek

Township **39S** Range **1E** Sections **11 & 12**

Sample Plot Number(s): none

Field verification date(s): 6/25/03

Dominant Plant Species (Common Names):

Trees:

white alder, black cottonwood, Pacific willow

Shrubs:

Himalayan blackberry, Oregon ash, Pacific willow, bittersweet nightshade

Herbs:

cattail, common horsetail, hardstem bulrush, mannagrass, water foxtail, meadow foxtail

Other:

Description:

Emigrant Creek originates east of the Ashland city limits and enters the study area at the northeast corner of the airport property, northwest of Dead Indian Memorial Road. Emigrant Creek is culverted through the mowed field at the northwest end of the runway in a very large (15 to 20 feet diameter) culvert. The stream is approximately 25 to 30 feet wide with abundant cobbles and boulders and occasional woody debris in the stream channel. The stream was flowing several feet deep during the June site visit, and channel meanders were noted in some areas. A narrow fringe of cattail, common horsetail, hardstem bulrush, mannagrass, water foxtail, meadow foxtail, bittersweet nightshade is present along the stream in a few areas. The stream is confined within steep side slopes with Himalayan blackberry, white alder, black cottonwood, Oregon ash and Pacific willow in the riparian area. Stream banks are armored with riprap in areas. Adjacent uplands consist of downy cheatgrass, ripgut brome, tall oatgrass, bulbous bluegrass, tumbled mustard.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Fordyce Creek

Township **39S** Range **1E** Section **10**

Sample Plot Number(s): None

Field verification date(s): 6/4/03, 6/26/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs:

Yellow nut-sedge, common velvetgrass, curve-pod yellow-cress

Other:

Description:

The majority of the Fordyce Creek has been culverted through residential development. Two small, unculverted stream sections remain south of Munson Drive and north and south of Kirk Lane. These remnant stream segments are 1 to 2 feet wide and consist of either a mowed grass channel or have rock lined sides with a fringe of emergent vegetation. The stream channel is bordered by mowed lawns and bark dust.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Golf Course Creek

Township **39S** Range **1E** Sections **13 & 14**

Sample Plot Number(s): none

Field verification date(s): 6/5/03, 6/25/03

Dominant Plant Species (Common Names):

Trees:

Weeping willow

Shrubs:

Pacific willow, sandbar willow, white alder

Herbs:

cattail, soft rush, hardstem bulrush, yellow iris, buttercup, American speedwell, curve-pod yellow-cress, sawbeak sedge

Other:

Description:

The headwaters of Golf Course Creek are located south of Highway 99, outside the UGB. An on-line pond (LWI -mapped wetland 14A) is present on Golf Course Creek at the upstream end of the study area. The pond contains a fringe of soft rush and is bordered by mowed grass up to the edge. Some woody debris and branches were present in the edge of the pond, and Canada goose were noted using the site.

Golf Course Creek receives flow from an off-line pond reportedly fed by TID water located in the residential subdivision north of Crowson Road and east of I-5. The pond has riprap sides with crushed gravel at the top of slope with a few Oregon white oak, ponderosa pine and black cottonwood surrounding the pond. Canada goose, wood ducks, great blue heron, and bullfrogs were noted at the pond. Golf Course Creek downslope from the pond was approximately 3 feet wide with a wetland fringe of curve-pod yellow-cress, birdsfoot trefoil, Watson's willow-herb and reed canarygrass and a few weeping willow. The stream was bordered by a mowed lawn with oak located further upslope.

On the Oak Knoll Golf Course, the stream is 2 to 3 feet wide with a narrow wetland fringes containing cattail, soft rush, hardstem bulrush, yellow iris, buttercup, American speedwell, curve-pod yellow-cress, sawbeak sedge, and a few willow shrubs. An on-line pond mapped on the NWI has been mostly filled (DSL Det. #98-0318) and several smaller on-line ponds were created on the downstream portion as wetland mitigation. Several very small seasonal drainages are visible on the golf course in the black and white aerial photographs. These drainages were visible during the site visit as very slight drainage patterns that followed site topography which decreases to the northeast. Uplands consist of mowed lawn with a few large weeping willow trees along the stream.

Upstream of Interstate-5, Golf Course Creek has a narrow riparian fringe consisting of a few willow and white alder shrubs. Adjacent uplands consist of orchard grass, hairy vetch, tumbled mustard, Himalayan blackberry, and Oregon white oak.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Hamilton Creek

Township 39S Range 1E Sections 11, 14 & 23

Sample Plot Number(s): 5, 6 (upland)

Field verification date(s): 6/3/03, 6/25/03

Dominant Plant Species (Common Names):

Trees:

Black cottonwood

Shrubs:

Pacific willow, sandbar willow, Himalayan blackberry

Herbs:

Broad-leaved cattail, soft rush, yellow iris, white waterlily, giant reed

Other:

Description:

Hamilton Creek is generally confined within a moderately steeply sloped riparian corridor. Narrow wetland benches (up to 5 feet wide) are present along the stream channel in downstream areas where topography adjacent to the stream channel is less steep (see sample plot 5). Wetland benches contain several species including manna grass, reed canary grass, buttercup, soft rush, American speedwell, curve-pod yellow-cress, cattail and willow. Periwinkle (*Vinca major*), an escaped ornamental species, was noted along the stream channel in the upstream portion that is bordered by residential development. A large on-line pond is present in the downstream portion. A small tributary (Hamilton Creek tributary 1) and several ponds are present downstream of the on-line pond. These ponds include two emergent wetland stormwater ponds north of Abbott Avenue in a residential subdivision as well as two ponds east of Tolman Road which contain a fringe of cattail and yellow iris and 2 clumps of giant reed (invasive in California). Uplands contain tall fescue, ryegrass, ripgut brome, medusahead rye, bulbous bluegrass, perennial ryegrass, oak, ponderosa pine, walnut and incense cedar, with dense thickets of Himalayan blackberry present in disturbed areas.

The upstream portion of Hamilton Creek, above Siskiyou Boulevard, is generally 2 to 3 feet wide and is bordered by a fringe of reed canary grass, soft rush and manna grass with Himalayan blackberry on the side slopes. Adjacent upland areas are dominated by tall fescue, sweatpea, ripgut brome, Himalayan blackberry, Oregon white oak, and ponderosa pine. A small tributary (Hamilton Creek tributary 2) joins Hamilton Creek a few hundred feet upstream of Siskiyou Boulevard. A section of Hamilton Creek flows along Tolman Creek Road where it is confined between the road fill slope and an adjacent mowed lawn. Further upstream, the channel is confined within steep side slopes with a narrow riparian fringe of reed canary grass, common horsetail and willow. Adjacent uplands contain Himalayan blackberry, beaked hazelnut, western crabapple and Oregon white oak.

The headwaters of Hamilton Creek originate outside the study area boundary.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Kitchen Creek

Township **39S** Range **1E** Section **4**

Sample Plot Number(s): None

Field verification date(s): 6/4/03

Dominant Plant Species (Common Names):

Trees:

black cottonwood, Pacific willow, white alder

Shrubs:

Himalayan blackberry

Herbs:

hardstem bulrush, cattail, creeping buttercup, meadow foxtail

Other:

Description:

The headwaters of Kitchen Creek originate outside the study area. Kitchen Creek is forked in the upstream portion through residential development. The north fork is 3 to 5 feet wide and contains a narrow wetland fringe of hardstem bulrush, creeping buttercup, and meadow foxtail with black cottonwood, Pacific willow and white alder along the streambanks. The south fork is 5 to 10 feet wide and contains a small on-line pond with a fringe of hardstem bulrush and cattail. A small putting green and a mowed lawn is present between the two forks. Non-landscaped upland areas adjacent to Kitchen Creek contain ripgut brome, ryebrome, tall fescue, orchard grass, California poppy and a few oak. The two forks of Kitchen Creek join below Mountain Avenue, and the stream flows to Bear Creek through a steeply sloped riparian corridor dominated by Himalayan blackberry with a few Pacific willow.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Knoll Creek

Township **39S** Range **1E** Sections **11 & 14**

Sample Plot Number(s): none

Field verification date(s): 6/4/03, 6/25/03

Dominant Plant Species (Common Names):

Trees:

Black cottonwood, Pacific willow

Shrubs:

Himalayan blackberry

Herbs:

Common horsetail, meadow foxtail

Other:

Description:

Knoll Creek is generally confined within steep Himalayan blackberry covered slopes with a few black cottonwood and Pacific willow present in the riparian corridor. Adjacent uplands are dominated by Himalayan blackberry and Oregon white oak. Two stream associated emergent wetlands are present north of I-5 and west of the Windmill Inn and were mapped as wetland unit 6.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Mountain Creek

Township **39S** Range **1E** Sections **4 & 9**

Sample Plot Number(s): none

Field verification date(s): 6/3/03, 6/24/03

Dominant Plant Species (Common Names):

Trees:

Oregon ash, weeping willow

Shrubs:

Sandbar willow, Himalayan blackberry

Herbs:

knotweed, willow-herb, cattail, hardstem bulrush

Other:

Description:

The majority of the historic upstream portion of the stream has been culverted through residential development, although two small unculverted sections remain north of Holly Street and north of Iowa Street. The section of Mountain Creek north of Holly Street is a 2 to 3 foot wide stream channel confined at the bottom of steep Himalayan blackberry covered slopes. The upper portion of the slopes contain periwinkle, English ivy, cherry, black cottonwood, and big-leaf maple. The section of Mountain Creek located north of Iowa Street flows through a rock lined channel bordered by English ivy, sword fern and English laurel shrubs.

Mountain Creek is daylighted north of the railroad tracks along the east edge of the Southern Pacific Railroad property. The riparian corridor along Mountain Creek contains Oregon ash, sandbar willow, weeping willow and Himalayan blackberry. Two small on-line ponds are present in the residential subdivision south of Hersey Street and contain cattail, and a scrub-shrub wetland fringe of sandbar willow, Pacific willow, weeping willow, white alder and black cottonwood. North of Hersey Street, Mountain Creek is confined to a roadside ditch until it joins Bear Creek. A 6 to 10 foot wide intermittent drainage containing knotweed, willow-herb and small amounts of cattail and hardstem bulrush originates west of Mountain Creek on the Southern Pacific site and may be culverted to Mountain Creek. Uplands contain ripgut brome, bulbous bluegrass, tall oatgrass, and vetch.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Neil Creek

Township **39S** Range **1E** Sections **11, 12 & 13**

Sample Plot Number(s): 18 (upland)

Field verification date(s): 6/25/03

Dominant Plant Species (Common Names):

Trees:

Oregon ash, Pacific willow, black cottonwood

Shrubs:

Himalayan blackberry, Oregon ash, sandbar willow, black hawthorn

Herbs:

creeping buttercup, yellow iris, mint, soft rush, reed canarygrass, teasel

Other:

Description:

Neil Creek originates southeast of the Ashland city limits and enters the study area at the southeast corner of the airport property, on the west side of Dead Indian Memorial Road. The downstream section of Neil Creek is approximately 10 to 12 feet wide and was flowing approximately 6 to 12 inches deep during the June site visit, with a narrow wetland fringe of creeping buttercup, yellow iris, mint, soft rush, reed canarygrass, and teasel. Cobbles were observed in one section of stream where the stream channel was not obscured by Himalayan blackberry. The stream channel is confined at the bottom of steep side slopes dominated by Himalayan blackberry in most areas. Oregon ash, Pacific willow, sandbar willow, black hawthorn, and black cottonwood trees and shrubs are also present in the riparian corridor. A berm is present at the top of the slope along the west edge of the airport runway and is dominated by ripgut brome, hairy vetch, tumbled mustard, yellow starthistle, poison hemlock, and redstem filaree.

The upstream portion of Neil Creek, just prior to its confluence with Emigrant Creek, is approximately 20 to 25 feet wide. Adjacent uplands are dominated by Himalayan blackberry, rattail fescue and tumbled mustard.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Paradise Creek

Township **39S** Range **1E** Section **15**

Sample Plot Number(s): none

Field verification date(s): 6/25/03

Dominant Plant Species (Common Names):

Trees:

white alder

Shrubs:

Himalayan blackberry

Herbs:

creeping buttercup, curve-pod yellow-cress, soft rush, common velvetgrass, American speedwell, sedge, cattail

Other:

Description:

The headwaters of Paradise Creek are located outside the study area in the steep hillside south of Ashland. Paradise Creek is daylighted in the south portion of the study area; however, the majority of the downstream portion, below Clarke Avenue, has been culverted due to development. The upstream portion of Paradise Creek, above Peachey Road, is 2 to 3 feet wide with a fringe of creeping buttercup, curve-pod yellow-cress, soft rush, common velvetgrass, American speedwell, sedge, and cattail. Side slopes above the stream are dominated by Himalayan blackberry and white alder. Adjacent uplands consist of tall fescue, ripgut brome, hare's-foot clover, tumbled mustard, hairy vetch, Oregon white oak and ponderosa pine.

The downstream portion of Paradise Creek and its riparian area, adjacent to Sunset Avenue, have been encroached upon by residential development. Portions of the stream channel are confined within a rock lined channel and the stream is bordered by mowed grass, ornamental species, and other landscaping.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Paradise Creek East

Township **39S** Range **1E** Section **15**

Sample Plot Number(s): none

Field verification date(s): 6/25/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Himalayan blackberry, Piper's willow, Pacific willow

Herbs:

common velvetgrass

Other:

Description:

The headwaters of Paradise Creek East are located outside the study area in the steep hillside south of Ashland. A small section of Paradise Creek East is daylighted in the south portion of the study area. Paradise Creek East, above Peachey Road, is topographically confined within a 2 to 3 foot wide stream channel with a fringe of common velvetgrass. A small off-line pond is present just west of Peachey Road. The riparian area contains Himalayan blackberry, Piper's willow and Pacific willow shrubs. Adjacent uplands consist of tall fescue, Himalayan blackberry, Oregon white oak, ponderosa pine and backyard areas. Further upslope, Paradise Creek East becomes a forked drainage.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Pinecrest Creek

Township **39S** Range **1E** Section **15**

Sample Plot Number(s): none

Field verification date(s): 6/25/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

snowberry, Himalayan blackberry

Herbs:

tall oatgrass, false Solomon's seal

Other:

Description:

The headwaters of Pinecrest Creek are located just outside the study area in the steep hillside south of Ashland. A small section of Pinecrest Creek is daylighted in the south portion of the study area upslope of Oneida circle. The majority of Pinecrest Creek has been culverted due to development. The upstream portion of Pinecrest Creek at Pinecrest Terrace is a narrow 6 to 12 inch wide channel that is not very well defined by topography. The stream channel was dry during the June site visit, with leaves in the bottom of the channel and only a trace amount of riparian vegetation consisting of tall oatgrass, false Solomon's seal, snowberry, and Himalayan blackberry. Adjacent uplands were steeply sloped with hare's-foot clover, Oregon grape, Himalayan blackberry, California black oak, ponderosa pine, and madrone.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Roca Creek

Township **39S** Range **1E** Sections **10 & 15**

Sample Plot Number(s): None

Field verification date(s): 6/4/03, 6/25/03, 6/26/03

Dominant Plant Species (Common Names):

Trees:

white alder, black cottonwood, Pacific willow, weeping willow

Shrubs:

white alder, black cottonwood, Pacific willow, Oregon ash, bittersweet nightshade, red-osier dogwood, big-leaf maple

Herbs:

Reed canarygrass, soft rush, hardstem bulrush

Other:

Description:

The headwaters of Roca Creek are located outside the study area in the steep hillside south of Ashland. The upstream daylighted portion of Roca Creek, above Madrone Street, is 2 to 3 feet wide and is confined at the bottom of very steep side slopes. Riparian vegetation consists of white alder, black cottonwood and Pacific willow shrubs and trees. Adjacent uplands are dominated by orchard grass, ripgut brome, charming barley, hare's-foot clover, common oat, hairy vetch, Himalayan blackberry, and Oregon white oak.

The majority of the downstream portion of Roca Creek has been culverted due to development. The stream daylights north of East Main Street in a residential subdivision. A small on-line pond is present on Roca Creek with a water control structure. A patch of hardstem bulrush is present at the upper end of the pond, and red-osier dogwood, white alder and big-leaf maple plantings are present on the side slopes. Downstream from the pond, the stream channel ranges from 3 to 6 feet wide and contains a narrow fringe of reed canarygrass, bittersweet nightshade, and soft rush with a few willow shrubs. The stream channel is bordered by mowed lawn with a few planted Oregon ash and big-leaf maple saplings. A portion of the stream channel consists of a mowed grass channel with a few weeping willow and Pacific willow, bordered by mowed lawn.

Roca Creek downstream of Seena Lane is approximately 10 feet wide and contains dense reed canarygrass in and adjacent to the stream channel, along with bittersweet nightshade, willow and Oregon ash shrubs.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Strawberry Creek

Township **39S** Range **1E** Section **8**

Sample Plot Number(s): none

Field verification date(s): 6/26/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs:

Other:

Description:

Strawberry Creek is located in the steep hillside to the west of Ashland Creek. No field data was collected since permission to access was not granted, and Strawberry Creek is not visible from adjacent public roads.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Tolman Creek

Township **39S** Range **1E** Sections **13 & 14**

Sample Plot Number(s): none

Field verification date(s): 6/5/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Pacific willow

Herbs:

yellow iris, American speedwell, buttercup, curve-pod yellow-cress

Other:

Description:

Tolman Creek on the Oak Knoll Golf Course is 3 to 5 feet wide and is bordered by a narrow wetland fringe of yellow iris, American speedwell, buttercup, curve-pod yellow-cress and a few Pacific willow shrubs. A small on-line pond is present. Adjacent uplands contain tall fescue, catchweed bedstraw, Himalayan blackberry, and a few white alder.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Twin Creek

Township **39S** Range **1E** Section **8**

Sample Plot Number(s): none

Field verification date(s): 6/26/03

Dominant Plant Species (Common Names):

Trees:

Shrubs:

Herbs:

Other:

Description:

Twin Creek is located in the steep hillside to the west of Ashland Creek. No field data was collected since permission to access was not granted, and Twin Creek is not visible from adjacent public roads.

City of Ashland Local Wetland and Riparian Corridor Inventory and Assessment
Riparian Summary Sheet

Site: Wrights Creek

Township **39S** Range **1E** Sections **5, 6 & 8**

Sample Plot Number(s): none

Field verification date(s): 6/5/03

Dominant Plant Species (Common Names):

Trees:

Big-leaf maple, Pacific willow, ponderosa pine, quaking aspen

Shrubs:

Snowberry, serviceberry, Oregon ash, western wahoo, Himalayan blackberry

Herbs:

English ivy

Other:

Description:

Wrights Creek is confined within tall steep slopes and no wetland benches were observed at several road crossings. The stream channel is approximately 10 feet wide and contains many cobbles and boulders in the downstream portion. The riparian corridor contains good tree and shrub cover. Himalayan blackberry is present in open canopy areas. Uplands upslope of the riparian corridor contain downy cheat grass, tall fescue, tall oatgrass and hairy vetch.

Five tributaries to Wrights Creek are also included in this unit. Tributaries are similarly confined within steep side slopes, but the stream channels are narrower and contain more Himalayan blackberry than the mainstem of Wrights Creek. Adjacent uplands contain downy cheat grass, bulbous bluegrass, blue wildrye, common oat, hairy vetch, and catchweed bedstraw.

ATTACHMENT F

Written Comments

Received since July 22, 2008
Planning Commission Meeting

Maria Harris - Fwd: notes on riparian ordinance

From: Maria Harris
To: Maria Harris
Date: 8/8/2008 4:18 PM
Subject: Fwd: notes on riparian ordinance

>>> Tom Dimitre <dimitre@mind.net> 08/06/08 5:07 PM >>>
Hi all: I apologize for my tardiness in getting this out, but things have been a little busy....

Here are my additional thoughts re the riparian ordinance:

- 1) Any exceptions to the protected riparian area should not be allowed.
- 2) Non conforming - allow rebuilding of non conforming only if there is no alternative. For example, it is possible that those buildings along the creek on the plaza, etc. would have no alternative so would be able to be rebuilt. Other properties, where the property had space to move the building out of the zone or farther from the creek would have to rebuilt in the non riparian area.
- 3) Canopy Cover. There should be something in the ordinance about a minimum percentage of canopy cover. This is one of the most important aspects of riparian protection, especially when it comes keep the stream cool for fish.
- 4) Enforcement. Enforcement should be easy. Folks should not have to take their tape measure out and try to figure out if 150 sq ft or more was in the protected area. ANYTHING in the protected area (that is not a legally grandfathered conforming use) would not be allowed. Trying to enforce the current proposal could be very confusing - does the trunk space of a tree or the canopy count towards the 150 sq ft.?
- 5) We should advocate for the maximum protection in the protected zone and the widest justifiable zones.
- 6) Penalties. Other cities, such as W. Lind have penalties for not complying with the ordinance. We should have the same.
- 7) Education. The public must be educated as to why it is important to protect the riparian zone. A narrative, such as we saw in our staff report, would be a good start to put at the front of the ordinance.
- 8) Incentives. What are the incentives that we are going to get people to comply - especially those in grandfathered, legal, non conforming status?

If we create a weak ordinance that is not enforceable and has no

incentives for people to comply, we will have wasted our time.

Those are my thoughts are the moment.

Thanks.

Tom Dimitre



Oregon

Theodore R. Kulongoski, Governor

Department of Fish and Wildlife

Rogue Watershed District Office

1495 East Gregory Road

Central Point, OR 97502

(541) 826-8774

FAX: (541) 826-8776

July 28, 2008

Mr. Derek Severson
Associate Planner
City of Ashland Planning Division
51 Winburn Way
Ashland, OR 97520

RECEIVED

AUG - 8 2008

City of Ashland
Community Development



Dear Mr. Severson:

In this letter, we have summarized our best available information on fish distribution in the Ashland area. The Oregon Department of Fish and Wildlife (ODFW) was asked to provide an update to facilitate city efforts to develop a Water Resources Protection Zones ordinance.

In coordination with the Oregon Department of Forestry, ODFW developed the fish presence survey protocol to guide implementation of the Forest Practices Act. We have made an extensive effort at surveying for fish distribution in the Rogue watershed, but many streams have not yet been surveyed. Because trout (primarily cutthroat) and steelhead are capable of using higher gradient stream reaches as habitat, these fish are typically the most broadly distributed fish species in Oregon watersheds, and are the target of the surveys.

ODFW fish presence surveys have documented fish use on the following streams. The US Forest Service has also conducted fish surveys on streams in the area.

Ashland—Ashland Creek is a fish bearing stream far into the watershed above Reeder Reservoir. Distribution of anadromous fish (coho salmon and steelhead) ends at the dam off Granite Street.

Kitchen—fish use is confirmed up to a five foot falls above Interstate 5 at river mile 1.1. Juvenile steelhead were found during the survey.

Neil—distribution of anadromous fish has been confirmed to river mile 7.7 (steelhead), while cutthroat trout have been confirmed to river mile 12.9.

Tolman—fish use is confirmed up to the culvert under Interstate 5. Steelhead juveniles were found during the survey. Adult steelhead have been observed just above Oak Knoll Golf Course and Crowson Road.

Clay—fish use is confirmed up to an 8 foot vertical falls at river mile 0.07, not far from the confluence with Bear Creek. Juvenile coho salmon, steelhead and cutthroat trout were found during the survey, along with sculpin. Culverts just below the falls may hinder fish passage. This stream is misidentified as Hamilton Creek on some topographical maps.

Hamilton—fish use is confirmed up to a culvert barrier where the creek flows under Main Street at river mile 0.27. Juvenile steelhead have been found below the culvert barrier.

Wrights—fish use is confirmed up to a four foot falls at river mile 0.2, downstream of Highway 99. Juvenile steelhead were found during the survey.

Please note that fish can use streams that dry up naturally in summer. This is especially true in the Rogue watershed, where we have a much more extreme climate than most of western Oregon. Rogue summer steelhead are known to thrive in small and often ephemeral streams, with large spawning populations using small Rogue tributaries between Grants Pass and Gold Ray Dam.

It is also true that juvenile fish move around in the winter in response to high flows. Juvenile salmon and trout often use small streams and off-channel wetland habitat as a refuge from the higher flows found in the larger tributaries.

During the development of the proposed ordinance, you compiled a list of intermittent/ephemeral streams found in the city. You asked for feedback on this list of streams: Cemetery; Beach; Fordyce; Golf Course; Knoll; Mook/Clear; Mountain; Paradise; Pinecrest; Roca; Strawberry; and Twin Creek. Of course, stewardship relies on good practices throughout the watershed, not simply on fish bearing streams. But we will add that fish use during winter freshets is possible on any stream where the gradient is acceptable and fish are not blocked by barriers. It is possible that juvenile fish use some of these streams seasonally.

As part of our Salmon Trout Enhancement Program (STEP), we are utilizing volunteer help to increase monitoring and outreach on small streams, urban streams, and intermittent streams of the Rogue watershed. We survey for fish use in these streams during winter with an upstream migrant trap. We then work to inform streamside landowners and the general public about the fish and what can be done to provide good stewardship.

Our STEP volunteers operated a trap on lower Hamilton Creek this past winter. Despite the lack of high flows, we trapped several juvenile steelhead. We plan to continue this work on Hamilton Creek and other Ashland area streams.

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Van Dyke". The signature is fluid and cursive, with a long horizontal stroke at the end.

Dan Van Dyke
District Fish Biologist





Maria Harris - Re: Re WRO

From: "Mick Church" <mickchurch@gmail.com>
To: "John Stromberg, Planning Commissioner" <pcstromberg@opendoor.com>
Date: 7/28/2008 1:07 PM
Subject: Re: Re WRO
CC: "Pam Marsh" <pam.marsh@gmail.com>, "Deborah Miller" <hmiller@jeffnet.org>, "Melanie Mindlin" <sassetta@mind.net>, "Dave Dotterer" <thedotts@charter.net>, "Mike Morris" <msquared@mind.net>, "Michael Dawkins" <michaeldawkins@yahoo.com>, "Tom Dimitre" <dimitre@mind.net>, "Bill Molnar" <bill@ashland.or.us>, "Maria Harris" <maria@ashland.or.us>, "Cate Hartzell" <cate@mind.net>, "April Lucas" <lucasa@ashland.or.us>

I think that developing something that encourages owners who have legal nonconforming issues to develop and implement a plan to make improvements is a good thing. I have the distinct feeling, however, that on the issue of the width of the protection zone and what the owner can do within it, market forces and human nature would result in some rather self-serving proposals. If owners were so responsible with their creek frontage property, would we even need to amend the current ordinance?

Mick

On Sat, Jul 26, 2008 at 10:43 PM, John Stromberg, Planning Commissioner <pcstromberg@opendoor.com> wrote:

Hi, Everyone

There's a possible new wrinkle to the WRO. I discussed it with Bill before he went out of town and he said it was related to a provision he and Maria had considered (included?) in an earlier draft.

Here's my version, just so we all are on the same page. Bill and Maria may propose alterations and/or alternatives.

The idea is to allow property owners an alternative to meeting some of the standard provisions of the Ordinance, for example the fixed width of the protection zone adjoining a watercourse. Under this option a property owner would submit a plan for what lands would be included and how they would be developed, in relation to a set of goals or guidelines that the ordinance is intended to achieve. The plan would be reviewed by a technical advisory committee, which would make a recommendation to someone (the PC or staff or?) which would have approval authority.

What this option would do is provide an avenue for property owners who felt the ordinance didn't address the unique characteristics of their property. It would also add an element to the Ordinance that allowed property owners more control and that could be positive in its approach, with the owner deciding how the water course would be treated rather than being 'dictated' to by the City. For some owners this might be an attractive possibility.

An extension of the idea would be to make it available to property owners who weren't applying to develop their property but who, as a result of passage of the WRO, found themselves with non-conforming uses. In this case they could submit alternate treatment plans which, if approved and implemented, would remove the non-conforming designation. Again this could provide the basis for a property owner who wanted to create his/her own plan, to have that amount of control but within the goals and guidelines of the Ordinance.

Maria Harris - Re WRO

From: "John Stromberg, Planning Commissioner" <pcstromberg@opendoor.com>
To: Pam Marsh <pam.marsh@gmail.com>, Deborah Miller <hmiller@jeffnet.org>, Melanie Mindlin <sassetta@mind.net>, Dave Dotterer <thedotts@charter.net>, Planning Commissioner Stromberg <pcstromberg@opendoor.com>, Mike Morris <msquared@mind.net>, Michael Church <mickchurch@gmail.com>, Michael Dawkins <michaeldawkins@yahoo.com>, Tom Dimitre <dimitre@mind.net>
Date: 7/26/2008 10:44 PM
Subject: Re WRO
CC: Bill Molnar <bill@ashland.or.us>, Maria Harris <maria@ashland.or.us>, Cate Hartzell <cate@mind.net>, April Lucas <lucasa@ashland.or.us>

Hi, Everyone

There's a possible new wrinkle to the WRO. I discussed it with Bill before he went out of town and he said it was related to a provision he and Maria had considered (included?) in an earlier draft. Here's my version, just so we all are on the same page. Bill and Maria may propose alterations and/or alternatives.

The idea is to allow property owners an alternative to meeting some of the standard provisions of the Ordinance, for example the fixed width of the protection zone adjoining a watercourse. Under this option a property owner would submit a plan for what lands would be included and how they would be developed, in relation to a set of goals or guidelines that the ordinance is intended to achieve. The plan would be reviewed by a technical advisory committee, which would make a recommendation to someone (the PC or staff or?) which would have approval authority.

What this option would do is provide an avenue for property owners who felt the ordinance didn't address the unique characteristics of their property. It would also add an element to the Ordinance that allowed property owners more control and that could be positive in its approach, with the owner deciding how the water course would be treated rather than being 'dictated' to by the City. For some owners this might be an attractive possibility.

An extension of the idea would be to make it available to property owners who weren't applying to develop their property but who, as a result of passage of the WRO, found themselves with non-conforming uses. In this case they could submit alternate treatment plans which, if approved and implemented, would remove the non-conforming designation. Again this could provide the basis for a property owner who wanted to create his/her own plan, to have that amount of control but within the goals and guidelines of the Ordinance.

There's much to discuss with this but it might be a bridge between the cut and dried requirements of the Ordinance as it now stands and the education component we've been occasionally considering in our discussions.

John Stromberg
Planning Commissioner

Remember: All email sent to this address is in the public domain

Removal of vegetation:

- Soil compaction is issue that scientist would raise - how about regulating time of year that it's done, to reduce damage to stream bank.
- At what point do we encourage/allow removal of so many blackberries in these zones that we change the wildlife habitat in a way that damages its viability in these areas? Is there scientific guidance? see page # 22, and the removal section.

Pesticides p 11 - A has sentence on pesticides, herbicides + fertilizers but here + in other places there's language that confuses the intent. Is pesticide/herbicide/fertilizer allowed in zones in this ordin or NOT? Clarify this. p 11 - A; p 11 A - 2 - d; p 12 - 6 - a; p 12 - 7 - d - i all mention these - Simplification possible?

Is it feasible to add to Purpose & Intent an M: (something like) "To reduce stream temperatures thru shade from vegetation."

p 5. Is the list cited here at end of page what people were asking for?

p 7. Top of bank:

- address natural vs. altered (by natural forces or man-made?)
- Scientist needed to look at how to differentiate between stream sections that because of soil, topography, & other factors will or won't braid or move. What's the relationship of floodplain to this question?

p 13 Replacement of Bldgs - a) do we document the existing use prior to flood or damage? Do we deed restrict the new

building to the original use?

b) ~~Does the replacement have to be in the same footprint?~~
Do we know ahead of time the existing square footage and restrict the rebuild to existing square footage?

c) Melanie suggested an option of a no-cost negotiation w/ staff for relocation that better protects the zone.
Is this feasible?

Driveways / Bldg Envelopes Previously Approved -

a) group adding time limit - ~~is~~ is it apparent that there's only one kind of approval?

p. 21 - 1. c Solar Access - why is this included? Does it match another section elsewhere?

April Lucas - Fwd: Re:

From: Bill Molnar
To: Lucas, April
Date: 7/24/2008 9:02 AM
Subject: Fwd: Re:
CC: Harris, Maria

April

Can you make sure that this email exchange between Michael Dawkins and Tom Dimitre is included in the record for the Water Resources ordinance.

Thanks

Bill Molnar
Community Development Director
City of Ashland, OR
Tel: (541) 552-2042
Fax: (541) 552-2050
molnarb@ashland.or.us

This email is official business of the City of Ashland, and it is subject to Oregon public records law for disclosure and retention.

If you have received this message in error, please let me know.

>>> Tom Dimitre <dimitre@mind.net> 07/23/08 9:30 AM >>>
The problem, Michael, is that these streams are now interconnected and wherever the water comes from it all ends up down in Bear Creek and it all provides habitat on the way down to Bear Creek. If we are going to try and improve the water quality, etc. of Bear Creek, we have to protect those streams (TID added or not) that contribute to Bear Creek's flow.

While we will never get back to "natural" conditions, even if we could agree on a definition, we do know that gardens, fences, concrete, etc were not part of the natural regime. Placing these items in the protection zone does two things:
1) undermines the idea of protection, 2) add debris to the creek when the flood comes, and 3) creates hazards for those downstream - whether to people by getting hung up and creating damage to other properties, and to fish and other wildlife that use the streams.

My theory is that if a flood takes out a house, patio, deck, etc - that should tell us

something - we should learn from that - it is probably not a good idea to build where floods are going to occur. It's a pretty basic concept. The exception, of course, is when someone has no choice but to build in the same place due to lot constraints (such as on the plaza, etc). As I mentioned last night, a hardship variance could be the method for those folks, to be able to rebuild.

Also, something that didn't get said last night is that this is not an issue of private property rights - this is an issue of community rights - the good of the commons - the right of the community (that means all landowners whether or not they own land adjacent to water) to enjoy the benefits of a better functioning riparian system and all that that contributes to the community.

Thanks for your thoughts.

Tom

On Jul 23, 2008, at 9:11 AM, michael dawkins wrote:

> Fellow students - As often is the case after leaving our bi-monthly
> get togethers, I realized that I had not made my point forcefully
> enough. I had attempted to frame our water resource protection
> ordinance into two parts. One - fish bearing, two - the
> intermittent & ephemeral streams. The conversation last night
> focused on bringing all streams back to a "natural" state, and the need for more "science". I suggest to
> you that if we were to have real science, we would have to go back
> in time before water was taken from one stream and dumped into a
> canal - TID. If we were to picture Ashland before the early white
> settlers, we would most likely observe in the Summer, a number of
> dry grassed gullies below 2400 feet elevation. Early photos of
> Ashland show little tree cover outside of our fish bearing streams
> on the valley floor. These non fish bearing streams real function
> is that of drainage - Winter and Spring rains and snow melt, and
> that occasional Summer thunder/hailstorm deluge. While I
> appreciate more than most the interconnectedness of life
> communities, after all, plant ecology was what I studied in
> college, I have a hard time getting all fuzzy about returning to
> nature, when the very stream bed we are discussing is NOT natural.
> Water is dumped into them, or seeps into them via TID canals.
> Without this factor, we would not be discussing this issue. Unless
> we cut off water to the canal for a couple of years and measure the
> moisture that may exist below the stream bed throughout the Summer
> and Fall, science can only postulate that there may be an ecology
> more lush than just a dry streambed.
> In my view since this is a man made situation, I am much more
> prone to give latitude to homeowners to enjoy and enhance the
> blessing of having the water way on their property. I would rather
> focus on the education concepts, forest gardening, no chemicals,

- > right choices in plant materials, ways that streambanks are
- > degraded, so as not to do that, etc. then trying to create an
- > illusion of getting back to nature.
- > The fish bearing streams - I have lived on three of them Neil,
- > Tolman, and Ashland - on the other hand are worthy of the upmost
- > protection within the science of ecology.

>

> Michael

>

>

>

>

ATTACHMENT G

“A Guide to Riparian Tree Planting in Southwest Oregon”

M. Bennett and G. Ahrens, September 2007
Oregon State Univ. Extension Service

a guide to

RIPARIAN TREE PLANTING

in Southwest Oregon

M. Bennett and G. Ahrens

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Figure 1.—A newly installed riparian planting along Bear Creek, Jackson County.

Planting trees in riparian areas is increasingly common in Oregon as part of efforts to improve fish habitat, water quality, and other riparian functions. Yet tree survival and growth are poor in many projects, and some fail outright (see “Survey shows variable success with riparian tree planting,” page 4).

Establishing trees in riparian areas poses significant challenges. There are often high levels of competing vegetation and animal damage. Despite proximity to water, riparian soils are often droughty. Potential planting sites either may be subject to frequent flooding or on dry terraces far from the water table. There may be limits on use of tools and techniques near water,

such as herbicides or heavy equipment. And, landowners may face difficulties integrating the riparian area’s needs with management goals for adjacent lands. Despite these challenges, riparian tree planting projects can be successfully designed and implemented.

This publication is a step-by-step guide to riparian tree planting in interior southwest Oregon, including Jackson and Josephine counties and the noncoastal portions of Douglas County (Figure 2, page 2). Compared to other parts of western Oregon, this area experiences hotter, drier summers, and lower annual precipitation, which poses unique challenges for the survival and growth of riparian plantings.

Max Bennett, Extension forester, Jackson and Josephine counties, and Glenn Ahrens, Extension forester, Clatsop County; both of Oregon State University.

While some details apply mainly to this region, the principles discussed are broadly applicable to tree-planting projects in riparian areas throughout the Pacific Northwest.

We outline six steps to develop successful riparian projects:

- Design your project
- Select and obtain plant materials
- Prepare the site
- Plant your trees right
- Take care of the planting
- Monitor and learn from the results

Why focus on trees? Shrubs and herbaceous vegetation are important components of riparian areas, too. However, trees are the key to enhancing impor-

tant riparian functions such as shade over the stream and large woody debris in the stream. Once trees are established, conditions for other vegetation are often favorable.

Tree establishment costs vs. benefits

Riparian restoration is often a noncommercial and community-oriented endeavor, in which cost-benefit criteria vary greatly depending on perspective. Well-established methods effective in commercial forestry and agriculture have been adapted to some riparian situations at costs of \$0.70 to \$1.50 per established tree. On the other hand, some riparian planting efforts successfully establish trees without

herbicides using intensive manual labor (often volunteer) equivalent to \$5 to \$10 per tree. Both cases can be considered successful, depending on your perspective. Regardless of methods employed, establishing healthy, vigorous trees or shrubs that will persist in the long term (that is, be “free to grow”) is the objective measure of success.

In this publication, we present information on methods, effectiveness, and costs to help you decide on the best approach in your situation. We also emphasize the major challenges in riparian planting and the need to diligently apply effective methods in order to ensure success.

Caution: A minimalist approach to riparian planting often leads to failure.

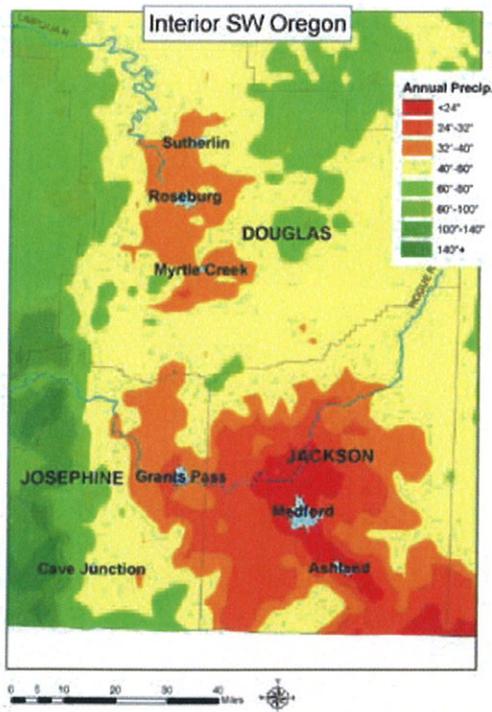


Figure 2.—The approximate area discussed in this publication. Interior southwest Oregon experiences hot, dry summers. Moisture stress is often the the most important factor influencing the survival and growth of riparian plantings in this region.

STEP 1. DESIGN YOUR PROJECT

Assess watershed needs

Base your project goals and design on a careful assessment of current riparian functions at both the local and watershed levels. To determine your priorities, identify what is missing or most in need of enhancement. For example, the assessment may show that warm water temperature is the limiting factor along certain streams in your watershed; your enhancement efforts would then be directed at increasing shade to moderate stream temperatures (Figure 3).

Look first to any watershed assessments prepared by the local watershed council or the larger public or private landowners in your watershed.

Then make your own assessment of local needs and opportunities on sites available for your project. Contact your local Extension office for more information on watershed councils and major landowners in your watershed.

Develop objectives to enhance key riparian functions

Develop objectives for your riparian tree planting project that are aimed at restoring or enhancing important riparian *functions* (Figure 4, page 4), not just vegetation *conditions*. While your actions will most directly affect vegetation conditions, choose target conditions in order to support desirable functions (see Appendix 1, “Key riparian functions, supporting vegetative conditions, and riparian buffer design considerations,” page 25).

Conditions before European settlement often are used as a guide for desirable riparian conditions, so consult references on historical conditions, if available. Restoration to presettlement conditions, however, often is impossible or inappropriate. Due to the natural complexity and changeable nature of riparian systems, there is no absolute “natural” condition for a given riparian area.

Riparian areas are naturally dynamic, changing in response to processes such as fire, flood, and landslides. These processes themselves have changed under the persistent influence of humans’ land uses (farm, forest, residential, commercial) and structures (roads, buildings, parking lots, dams). In order to restore riparian functions, set objectives for vegetation conditions within a realistic range of possibilities determined by the environmental processes expected to predominate from now on.

What would happen if you took no action on your prospective project site? Given the dynamic nature of riparian areas, perhaps the system could move in the right direction with no human intervention. Or, perhaps the only action needed is to remove certain influences, such as livestock grazing or intensive cultivation right next to the stream bank.

Along with objectives for enhancing riparian function, consider your overall land management objectives as well as time and financial constraints.

- Realistically, how much money, time, and energy are available to install and maintain the project, and will this be adequate to achieve its ecological objectives?

Checklist for Step 1: Design your project

Attention and thought at this stage, though time consuming, will lead to a better and more cost-effective project in the long run.

- ❑ Assess needs for riparian enhancement based on local site conditions and overall watershed priorities. What is missing or most in need of enhancement?
- ❑ Target key riparian *functions* such as streambank stability, large woody debris, and shade. Don’t focus just on trying to restore vegetative conditions thought to have prevailed in the past.
- ❑ Select your project sites after evaluating stream size, channel type, flood potential, competing vegetation, animal damage potential, and soil moisture and fertility. What sites offer the highest potential for success and the biggest “bang for the buck”?
- ❑ Think about possible obstacles to success, such as conflicting management goals (e.g., the landowner doesn’t want to establish a buffer because it will take land out of production), lack of time and money for maintenance treatments, access to the site, and landowner commitment. Is there still a good chance of success?
- ❑ Develop site-specific designs, taking into account desired buffer width, location and directional orientation of the buffer, access, fencing needs, species composition, and tree spacing and arrangement.

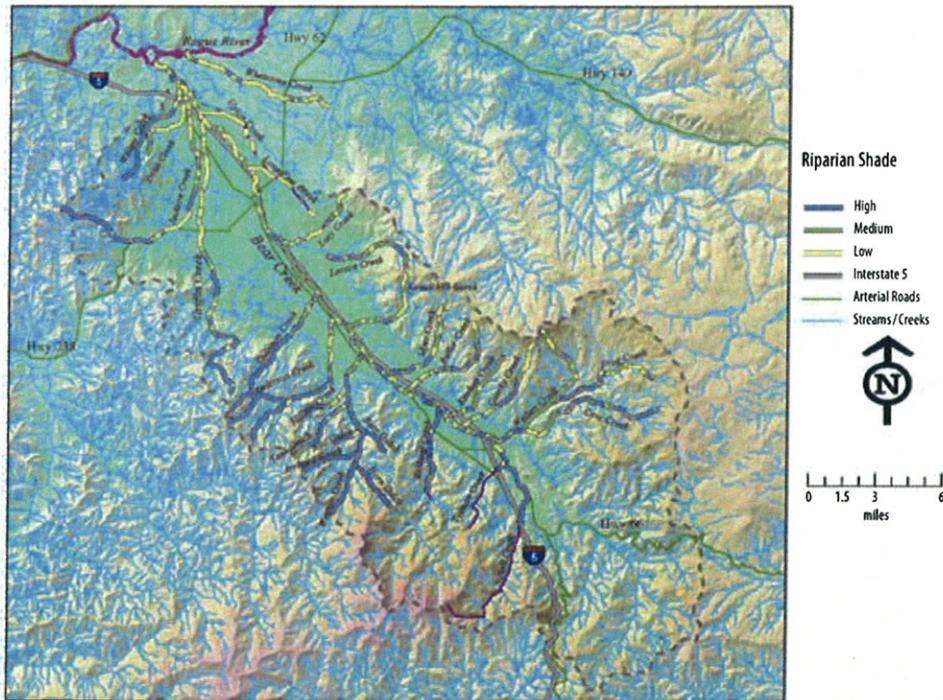


Figure 3.—Example of a watershed-level assessment of riparian conditions. This map was used to identify stream reaches for potential riparian planting projects to enhance stream shading. (Map courtesy of Bear Creek Watershed Council.)

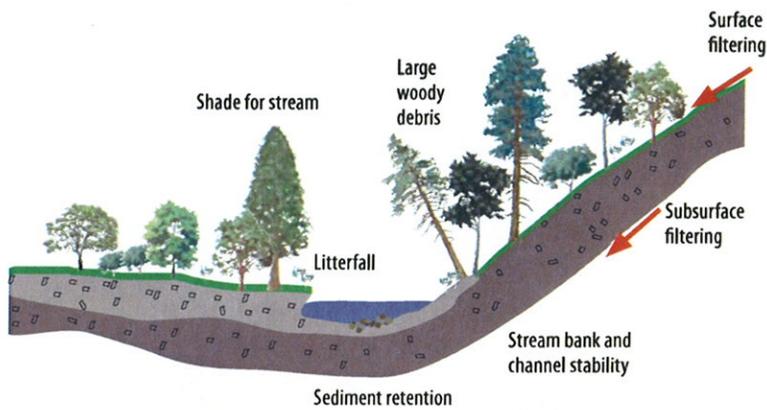


Figure 4.—Important functions of a riparian area include shade for the stream, stream bank stability, woody debris for the stream, sediment retention, litter for aquatic organisms in the stream, water filtering, aquatic habitat, and riparian wildlife habitat. (Adapted from Sacramento Area Flood Control Agency.)

SURVEY SHOWS VARIABLE SUCCESS WITH RIPARIAN TREE PLANTING

Slightly fewer than half of 105 riparian tree planting projects in western Oregon achieved tree survival rates of 75 percent or more, according to a study by the Oregon Watershed Enhancement Board in 2002.

In 40 percent of the projects in the study, fewer than half the trees survived.

Projects installed under the Conservation Reserve Enhancement Program (CREP) were more successful than projects funded by grants. The study's authors attributed this difference to the greater use of

site preparation, postplanting maintenance, and tree protection under the CREP program.

Data for southern Oregon (in the Rogue, Umpqua, and Klamath basins) show that “over 50 percent of projects have some mortality related to desiccation and soil conditions, over 30 percent have suffered from plant competition, and 50 percent from animal predation.”

Statewide Survey of OWEB Riparian and Stream Enhancement Projects. 2002. Anderson, M., and G. Graziano. Oregon Watershed Enhancement Board, Salem, OR.

- What conflicts might arise with adjacent land uses (e.g., farming or grazing), and how can these be resolved?
- Is there good access to the planting site, and can you move in any needed equipment or supplies?
- Is the planting site in a remote location, which will be visited only occasionally, or in a place where it can be monitored frequently?

The scale of the project is also an important consideration. Small projects (e.g., dozens to a few hundred trees) allow use of a wider range of techniques, such as hand-cutting competing vegetation, that would be prohibitively expensive on larger projects. As the project's size and complexity increase, so does the need for cost-effective methods of site preparation, planting, and vegetation control (also called *release*).

Select sites

Base site selection on key site factors and the degree to which the project will benefit riparian functions or achieve other goals.

Site factors to consider include stream size, stream channel characteristics, soil moisture and fertility, animal damage potential, and competing vegetation (see Appendix 2, “Factors to consider in site selection,” page 26). Assess these factors to determine feasibility for individual sites as well as to choose among prospective sites.

Once a site is selected, consider soils, climate (macro and micro), and hydrology to guide project design and species selection.

Many riparian planting projects are initiated by watershed councils and public agencies but are on private lands. Thus, landowner objectives and commitment are critical in both site selection and project success.

Sites that are less than ideal from an ecological standpoint still may be the most favorable in the watershed because participating landowners are enthusiastic, capable, and willing to follow through with postplanting maintenance. Site selection then becomes a matter of finding willing owners of sites where riparian plantings will, over time, significantly enhance watershed function, even if they are not ideally located. The potential educational value of a site (e.g., for watershed tours) also may be an important factor in site selection.

Design the project

Once you have selected potential sites, consider the extent to which tree establishment goals can be met by encouraging or “releasing” natural regeneration (see Appendix 4, “Promoting natural regeneration,” page 30).

Then design the planting project, detailing features such as location of plantings, space between plants, fencing, access for people and equipment, in-stream structures, future maintenance, and monitoring. Practical considerations for access, site preparation, planting, protection, and

maintenance are particularly important. See Appendix 3, “Project design features and considerations” (page 28), to help you choose features that fit your situation.

STEP 2. SELECT AND OBTAIN PLANT MATERIALS

What species should I plant?

Choose species that are well adapted to conditions on your site. Key factors to consider include planting zone and tolerance to drought, flood, and shade.

Riparian planting zones

Riparian planting zones (Figure 5, at right, and Table 1, page 6) reflect the availability of soil moisture during the dry summer months and the potential for flooding

Drought tolerance

Moisture stress is often the limiting factor in seedling survival in southwest Oregon due to the hot, dry climate. Even sites close to streams may have sandy or rocky soils with low moisture-holding capacity, and those dry out in summer. Choose a species that is drought tolerant, or plant deeply enough that roots can access the midsummer moisture level.

Checklist for Step 2: Select and obtain plant materials

Species and stock type selection are critical aspects of your riparian project.

- Select species that are well adapted to the site. Is the site droughty, flood-prone, or shady? Take into account the species’ tolerances to these factors.
- Choose species and stock types that are appropriate for individual riparian planting zones, which reflect the availability of soil moisture during the dry summer months and the potential for flooding.
- Consider also availability, cost, planting difficulty, handling sensitivity, and the skills and experience of the planting crew in selecting species and stock types.
- Choose high-quality seedlings with a root system in balance with the shoot (aboveground portion of the plant). Bigger stock often has better survival and growth rates, but it is harder and more expensive to plant.
- Select plant materials that have been collected locally or grown from seed collected from locally adapted sources; use appropriate seed transfer guidelines.
- Plan ahead. Order seedlings well in advance.

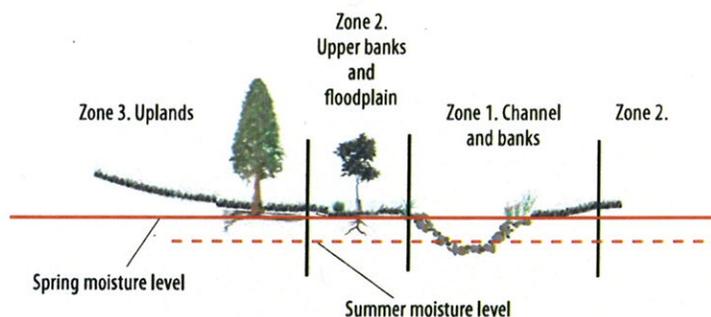


Figure 5.—Riparian planting zones (adapted from Crowder and Edelen 1996). The availability of soil moisture during the dry summer months is a key factor in selecting species to plant.

Flood tolerance

If planted in Zone 1 (stream channel and banks), the species must have high flood tolerance; if planted in Zone 2 (upper banks and floodplain), medium flood tolerance. Be aware of areas with poor soil drainage, which species such as Douglas-fir and incense-cedar cannot tolerate.

Shade tolerance

Many riparian tree species are intolerant of shade and thus are not suitable for planting in the understory of other trees. Examples are willow, cottonwood, and alder.

Table 2 (page 7) lists riparian tree species for interior southwest Oregon and each species' riparian planting zone and tolerances to drought, flooding, and shade. A variety of shrubs and small trees may be suitable for riparian plantings (Table 3, page 8), although less is known about their environmental tolerances and field performance.

Coniferous species often are a priority for riparian plantings due to their high value for functions of shade and large woody debris. Most species will contribute, to some degree, to important riparian functions.

Native species usually are the best choice, simply because their adaptability to local sites is proven. However, non-natives may be appropriate, too, when they help meet goals for riparian function.

While your assessment of site conditions should cover all major environmental factors, moisture is often the single most important factor in southwest Oregon. It is important to select species based on their moisture needs and drought tolerance in relation to local climate, soils, and topographic riparian moisture zones (Figure 5, page 5, and Table 1). A variety of shrubs and small trees may be suitable for riparian plantings (see Table 3, page 8), although less is known about their environmental tolerances and field performance. Table 2 lists riparian tree species for interior southwest Oregon, their growth rates, suitability for various objectives, and tolerances to drought, flooding, and shade.

Coniferous species are often a priority for riparian plantings due to their high value for functions of shade and large woody debris. Most species contribute to important riparian functions to some degree.

Native species are usually the best choice, simply because their adaptability to local sites is proven. However, non-natives may be appropriate, too, when they help meet goals for riparian function.

Table 1.—Riparian planting zones.

Zones	Description	Planting
Zone 1 includes the stream channel and banks.	The zone is flooded at least part of every winter and supports largely hydrophytic (water-loving) vegetation. Often, soils are rocky and difficult to plant.	Cuttings (whips and poles) of hydrophytic species planted deeply enough to access midsummer moisture. Large plugs (see page 9) or bare-root stock may be feasible, but consider the risk that they will be washed away by strong storm flows.
Zone 2 includes the upper banks and floodplain.	This may be a very narrow zone in a channelized or confined stream, or a wide zone in an unconfined stream. Moisture usually decreases from the boundary of Zone 1 to the boundary of Zone 3. Shrub and weed competition may be intense. Often, soils are sandy and/or rocky and droughty.	Plantings of hydrophytic species may be successful if seedlings or cuttings are able to access midsummer moisture. Most stock types are suitable for this zone. Larger stock, either bare root or container, usually will survive and grow better. Cuttings must be longer and planted more deeply than in Zone 1.
Zone 3 includes the upper terrace and the uplands adjacent to the stream bank.	This zone supports primarily upland vegetation, although some Zone 1 and Zone 2 species may be at the boundary with Zone 2.	Appropriate species are upland conifers and hardwoods. Drought tolerance is a key consideration. Stock types are usually bare-root or plug seedlings.

Table 2. Characteristics of riparian and bottomland tree species in southwest Oregon.

Species	Riparian planting zone	Tolerance to			Comments
		Flooding	Drought	Shade	
Bigleaf maple <i>Acer macrophyllum</i>	2-3	Medium	Medium	High	Lives longer than cottonwood and alder. A soil builder.
Black cottonwood <i>Populus trichocarpa</i>	1-2	High	Low	Low	Prefers moist but well-drained soils. Well-suited for shade and bank stabilization. Roots well from cuttings.
Douglas-fir <i>Pseudotsuga menziesii</i>	3	Low	Medium	Medium	Does not tolerate even short periods of flooding. Poorly suited to riparian plantings in areas with less than 30 inches of annual rainfall.
Grand fir <i>Abies grandis</i>	2-3	Medium	Low	High	Fast growth. Source of woody debris. Higher precipitation zones.
Hybrid cottonwood <i>Populus trichocarpa</i> x other <i>Populus</i> species	1-2	High	Low	Low	A hybrid of native black cottonwood and non-native species; various clones are used. Excellent growth; similar requirements to those of native species.
Incense-cedar <i>Calocedrus decurrens</i>	2	Low	High	Medium	Slow growth. Source of woody debris.
Oregon ash <i>Fraxinus latifolia</i>	2-3	High	Medium	Medium	Tolerates poorly drained, heavy clay soils that dry out in summer.
Oregon white oak <i>Quercus garryana</i>	2-3	Medium	High	Low	Very slow growing. Important habitat values. Adds diversity.
Ponderosa pine <i>Pinus ponderosa</i>	2-3	Medium	High	Low	Large, long lived; moderate growth rate on average sites if weed control is good. Source of large woody debris over the long term. Better than Douglas-fir for droughty sites in southwest Oregon.
Red alder <i>Alnus rubra</i>	1-2	High	Low	Low	Grows in higher precipitation zones than white alder. A nitrogen fixer.
Western redcedar <i>Thuja plicata</i>	2-3	High	Low	High	Only on the wetter sites in southwest Oregon; not found in Jackson or Josephine counties.
White alder <i>Alnus rhombifolia</i>	1	High	Low to medium	Low	Common riparian tree in interior valleys. A nitrogen fixer.



Figure 6.—Black cottonwood is well suited for giving shade and for stabilizing stream banks.

Table 3. Characteristics of riparian and bottomland small tree and shrub species in southwest Oregon.

Species	Riparian planting zone	Tolerance to			Comments
		Flooding	Drought	Shade	
Chokeberry <i>Prunus virginiana</i>	2-3	Medium	Medium	Low	Large shrub or small tree. Good wildlife species.
Klamath plum <i>Prunus subcordata</i>	2-3	Medium	Medium	Low	Large shrub or small tree. Confined to southern part of our region.
Mock orange <i>Philadelphus lewisii</i>	2-3	Medium	Medium	Medium	Tall understory shrub.
Oregon crabapple <i>Malus fusca</i>	3	High	Medium	Medium	Large, thicket-forming shrub or small tree.
Pacific ninebark <i>Physocarpus capitatus</i>	2	Medium	Low	Medium	Tall understory shrub. Roots from cuttings.
Red-osier dogwood <i>Cornus stolonifera</i>	1-2	High	Low	Medium	Medium to tall understory shrub. Roots well from cuttings.
Serviceberry <i>Amelanchier alnifolia</i>	2-3	Medium	Medium	Medium	Large, thicket forming shrub.
Snowberry <i>Symphoricarpos albus</i>	2-3	Medium	Medium	High	Low shrub. Roots from cuttings.
Willows <i>Salix</i> spp.	1	High	Low	Low	Some willows are tree size; others are large shrubs. Root very well from cuttings. Well suited to bank stabilization and bioengineering projects.

What type of seedling should I plant?

Several types of seedling or stock types are used in riparian plantings (Table 4, page 9). Important considerations in selecting a stock type are:

- Availability
- Handling sensitivity
- Cost
- Ease of transport and planting
- Survival and growth potential

As a general rule, regardless of stock type, bigger is better. Bigger stock is less likely to be overtopped by competing vegetation, handles browse better, and is often more heat and drought

tolerant. However, bigger stock is also more expensive to buy and plant. It is important to ensure that bigger stock has an adequate root system to support the large shoot system.

Bare-root seedlings (Figure 7, page 9) are grown in nursery beds, usually for 2 years. Common designations are “2-0” which is a 2-year-old tree that has grown only in a nursery bed, and “1-1” which is a tree grown 1 year in a nursery bed and 1 year in a lower density transplant bed.

The 1-1s tend to be larger than the 2-0s and have denser, more fibrous root systems. They also cost more. Bare-root trees are

planted during the winter dormant season. Advantages of bare-root seedlings are relatively low cost, ease of transport, and wide availability of many species, especially conifers. Disadvantages are a smaller planting time “window” compared to container (plug) seedlings, more skill needed in planting, and the trees’ greater sensitivity to root drying and other damage prior to or during planting.

Wildings are trees uprooted from the wild, usually where small seedlings are abundant, and replanted in the desired location. Advantages are the cost—they’re free—and greater assurance that the stock is adapted to local conditions. However, digging

wildlings is labor intensive, and it can be difficult to find a good source. Landowner permission is required. Take care to avoid damaging wildlings' root systems during transplanting. Severe transplant shock has been common with wildlings due to damaged or diminished root systems that were unable to support the trees' large shoots.

Container seedlings are grown in containers and planted with the soil intact around the roots. Small container seedlings commonly are referred to as plugs. They come in a wide range of sizes, from "Styro-10s" (10 cubic inches of soil in the plug) to 1-gallon pots to large, specialized plugs grown in PVC pipes that are 24 inches long (Figure 8, page 10). Advantages include a larger planting time window (fall through early spring), less skill needed in planting, and less potential for handling and planting damage. Compared to bare-root seedlings, small plugs are easier to plant on rocky and other difficult sites, and large plugs show better survival on droughty sites. A major disadvantage of container stock is higher cost.

Plug-1 seedlings (Figure 7) are container seedlings that have been transplanted to an outdoor nursery bed and grown there for 1 year. They have characteristics of both container and bare-root seedlings and have well-developed fibrous root systems. They are more expensive than bare-root seedlings.

Cuttings are leafless stem cuttings from dormant hardwood trees and shrubs (Figure 9, page 10).



Figure 7.—Examples of different stock types. From left: Douglas-fir container (plug), 2-0, and 1-1; and ponderosa pine P-1. From Robin Rose and Diane Haase, 2006, *Guide to Reforestation in Oregon*, Oregon State University.

Table 4.—Characteristics of seedling stock types for riparian planting.

Stock type	Size (stem caliper and height)	Unit cost range	Comments
Bare-root	0.1–0.5 caliper, 8–24 inches	15¢–65¢	Wide availability; winter planting; extra care in handling.
Wildlings	0.1–0.5 caliper, 8–24 inches	Labor and transport	Need landowner permission; extra care in handling; transplant shock is common.
Container plugs	0.05–0.3 caliper, 6–20 inches	25¢–80¢	Fall to spring planting window; less skill in handling; easier for rocky sites.
Container: 1- to 5-gal pots, or 3- to 4-inch by 18- to 24-inch PVC pipe	0.2–2.0 caliper, 12–60 inches	\$1.00–\$10.00	Fall to spring planting window; less skill in handling; survival on droughty sites; expensive to plant.
Cutting: cane or whip	0.25–1.0 caliper, 12–72 inches	20¢–30¢ per foot; or, labor and transport	Presoaking advised; can U-cut from local sites; must plant so roots are within reach of summer water table; tolerate flooding; grow rapidly.
Cutting: pole	1.0–4.0 caliper, 48–96 inches		
Ball and burlap (B&B)	1.5–5.0 caliper, 36–240 inches	\$25.00–\$250.00	Expensive, instant landscape for park, yard, or green space.



Figure 8.—Large container stock at Stone Nursery, Central Point, OR. Increasingly, riparian plantings in southwest Oregon are made with large (1 gal or larger) container stock.



Figure 9.—Cottonwood and willow cuttings, ready for planting. Note that the two cuttings in the foreground have begun to root.

When conditions are right, cuttings will root after planting, though some species such as cottonwood and willow root much better than others (See Table 3, page 8). *Canes* or *whips* are flexible cuttings, 1 to 4 feet long and up to about 1 inch in diameter at the large end. *Poles* are rigid cuttings, larger in diameter and usually longer than whips. Any cutting **must** be planted deeply enough to access midsummer soil moisture. Cuttings of some species are available at nurseries or can be U-cut at cooperating landowners'. Most cuttings in riparian projects are cottonwood and willows. Soaking cuttings before planting and selecting

newer (current-year or 1-year-old) wood generally increase survival and growth rates. Advantages of cuttings are relatively low cost, ease of planting (for whips), tolerance of flooding, and rapid establishment since the cuttings are often large to begin with and grow well once they have rooted.

Ball and burlap (B&B) stock has a large ball of soil around the root system held in place with a burlap wrap. These tend to be much larger, much more expensive trees and are seldom used in remote locations. However, ball and burlap stock is used commonly in stream plantings in park settings and other greenspace located in or near urban areas. Advantages include good survival and growth. Disadvantages include the cost and the difficulty of planting.

Obtaining high-quality planting stock

Many commercial forest nurseries in the Pacific Northwest grow plants for riparian and other restoration projects. The popularity of these projects, and the demand for planting stock, has grown enormously in the past decade. Most nurseries grow some stock on “speculation,” based on expected demand, which they sell on a first-come, first served basis.

Generally, you also can contract with nurseries to grow plants to your specifications, using seed you’ve collected or have acquired from another source. A minimum number of seedlings (e.g., 2,000) is required for such contracts.

Lists of nurseries are available from the OSU Extension forester who serves your county and from Oregon Department of Forestry Stewardship foresters; or, see the website for the Oregon Association of Nurseries—<http://www.nurseryguide.com/>—which has a searchable database of Oregon nurseries.

Characteristics of high-quality seedlings

Seedlings should be vigorous and free from damage and disease and should have a root system large enough to support the aboveground portion (the shoot) of the plant. A well-developed root system is particularly important in southwest Oregon, with its long summer drought.

For bare-root trees, a shoot-to-root ratio of 1.5 (or less) to 1 is desirable. The root system should be dense and fibrous (see Figure 7, page 9). Shoot systems also should be dense and well branched; tall, thin stock is often less vigorous and less resilient to damage. Seedlings should be fully dormant for winter planting.

For container seedlings, the root mass should be well developed and visible throughout the soil medium. Within a batch of seedlings, buyer and seller should agree on a minimum stem diameter (caliper) and height to cull out undersize stock.

SEED SOURCES AND GENETIC ISSUES

To ensure that plants are adapted to the local environment, they should be grown from a local seed source. How local is “local?”

Because climate varies so much over short distances in southwest Oregon, there is no rule of thumb (e.g., “50 miles”) for how far trees and shrubs can be moved safely from their source. Instead, *seed zones* have been established to minimize the risk.

Seed zones are geographic areas within which temperature, rainfall, and other climatic factors are fairly uniform. If the area includes major elevation changes, *elevation bands* within each zone further define areas with important similarities in conditions.

Trees can be planted safely within their zone of origin based on both the geographic seed zone and the elevation band. Planting in a higher or lower elevation band from the zone of origin increases the risk that the plant will adapt poorly to its new environment.

The seed zone and elevation (to the nearest 500 or 1,000 feet) normally should be specified when ordering seedlings.

Seed zones have been established for most conifer species and for red alder and black cottonwood. Relatively little is known about genetic variability among other native riparian hardwoods and shrubs. In the absence of specific zones for a species, Randall (1996) recommends using basic westside zones to guide seed transfer in other hardwood and shrubs species (Figure 10). Most of interior southwest Oregon is in Zones 5, 7, and 10. Seed transfer should be relatively safe within these zones.

In practice, planting stock is not always available from the desired seed zone and elevation. In this case, how can risks of seed transfer be minimized?

- Moving between two adjacent seed zones, especially close to their boundaries, may pose little risk, as long as there is relatively little difference in temperature and precipitation.
- Avoid moving seed across major environmental divides, such as from the interior valleys to the coast and vice versa.
- Moving up in elevation (more than 1,000 feet) increases the risk of frost damage. Moving down in elevation poses less risk, although growth may be slower.
- Regardless of zone boundaries, moving seed from areas of high precipitation (i.e., above 60 inches) to areas of low precipitation (below 30 inches) poses risks that plants will be vulnerable to drought stress.

For more information, see “Selecting Native Plant Materials for Restoration Projects,” EM 8885-E (see page 32)

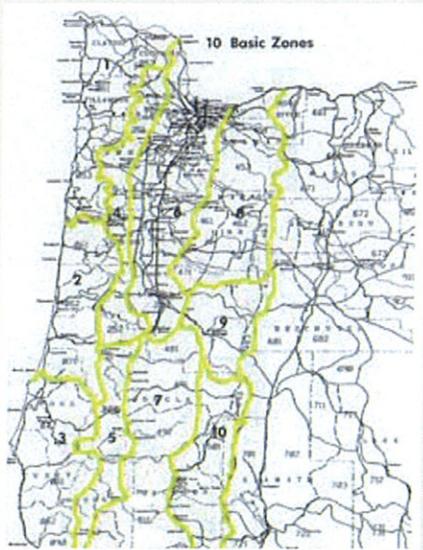


Figure 10.—Basic seed zone map for western Oregon. Use for hardwoods and other species that do not have their own designated seed zones. Zones for conifers vary by species.

STEP 3. PREPARE THE SITE

Research has amply demonstrated that good site preparation can greatly increase both survival and growth rates of planted stock. Inadequate site preparation reduces survival and increases the risk of project failure. Competing vegetation is usually easier to control before planting than after. Good survival rates and rapid initial growth of planted stock produce early dominance of planted trees, which greatly reduces the need for maintenance weeding.

In evaluating tools and methods, consider the vegetation on the site, what may invade after planting, the species and stock type(s) to be planted, site access, and terrain. Smaller seedling stock generally require more thorough site preparation merely to ensure survival and growth. Larger stock may be more competitive with weeds, but their performance still will be improved greatly by increasing weed control.

Table 5 (page 13) describes and compares a range of preparation methods for major types of competing vegetation. The most effective methods kill both the shoot and root of competitors. Herbicides are the least costly method for this. Removing only the above-ground portion of competing vegetation provides good access and temporarily reduces competition. However, if root systems of perennial herbs and shrubs are not killed or removed, they usually resprout quickly and compete vigorously with the planted stock. This can be controlled with repeated cutting, mowing, or slashing, which of course entails greater effort and/or cost. There is a clear

Checklist for Step 3: Site preparation

Competing vegetation often is easier to control before planting than after. Lack of adequate site preparation is a major factor in the failure of riparian projects.

- ❑ Plan ahead for site preparation: reduce the amount of vegetation that will compete with planted trees for moisture, nutrients, and sunlight.
- ❑ Ideally, choose site preparation methods that remove or kill the root system of competing vegetation, so that it doesn't resprout. Mowing or cutting provides only a temporary reprieve from competition unless it is repeated frequently, which is labor intensive and expensive.
- ❑ Consider effectiveness, duration, and cost in choosing site preparation methods. Herbicides are often the most effective and least costly method for controlling competing vegetation. Tilling, cutting, mowing, pulling, grubbing, and mulching can also be effective.
- ❑ Plan ahead to minimize potential erosion problems. Aggressive site preparation may remove competing weeds, but also will expose bare soil, leading to erosion and the possibility that new weeds will invade the site.

tradeoff between less effective site preparation and increased need for maintenance.

It's important to consider the effects of site preparation on potential future weed communities.

Intensive mechanical site preparation that includes tilling or removing roots can control established weeds effectively. However, these mechanical methods also expose mineral soil, which is invaded quickly by weed seed blown in from surrounding areas as well as by sprouting, previously dormant seed already in the soil. After herbicide use, dead thatch, leaves, or stems often can be left in place as a mulch, although weeds eventually seed in again. Repeated herbicide application also can result in bare soil that weeds will colonize after treatments cease. The result is replacing one weed problem with another.

USE PESTICIDES SAFELY!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

Table 5.—Site preparation methods for vegetation types.

Method	Effectiveness and duration*	Cost per acre per application	Comments
Grasses and herbaceous vegetation			
Herbicides: applied with vehicle and boom spray or hose, or with backpack or hand sprayer	High 1–2 years	\$50–\$150	Can apply to strips or planting spots – minimum area 3 x 3 feet, centered on seedling. Dead plant material temporarily protects soil, delays weed reinvasion from seed.
Mechanical: tilling	High 2–4 months	\$80–\$160	Exposed soil is rapidly reinvaded by weeds sprouting from seed.
Mechanical: mowing	Low 1–4 weeks	\$40–\$120	Mowing does not stop moisture competition but may reduce rodent problems. Must be repeated often.
Manual: scalping, hoeing	Medium 3–6 weeks	\$100–\$300	Exposed soil is rapidly reinvaded by weeds sprouting from seed.
Mulch mats	Medium 1–2 years	\$150–\$400	Must be well secured and lie flat on ground. Mulch mats can harbor rodents and might wash away in high water.
Woody shrubs			
Herbicides: applied with vehicle and boom spray or hose, or with backpack or hand sprayer	High 1–3 years	\$50–\$200	Complete spray coverage is most effective. Dead plant material provides temporary soil protection, delays weed reinvasion from seed.
Herbicides: cut-stem or basal-bark treatment	High 1–3 years	\$40–\$100	Water-soluble formulations applied to cut stem surfaces. Oil-soluble formulations applied to penetrate bark. Standing dead material provides dead shade; debris and leaf litter cover soil.
Mechanical: grubbing roots, raking	High 1–2 years	\$500–\$800	Exposed soil is rapidly reinvaded by weeds sprouting from seed.
Mechanical: mowing	Low 1–4 weeks	\$80–\$160	Doesn't kill roots, which rapidly resprout. Must be repeated often.
Manual: slashing	Low 1–6 weeks	\$300–\$500	Doesn't kill roots, which rapidly resprout. Must be repeated often.
Manual: grubbing roots	High 1–2 years	\$1,000–\$2,000	Exposed soil is rapidly reinvaded by weeds sprouting from seed.

*Effectiveness at reducing competition for site resources; duration is the period that competition is significantly reduced.

Grasses and herbaceous vegetation

Many plantings, both upland and riparian, fail for lack of adequate grass control. Grasses are tough competitors for newly planted trees and shrubs, for several reasons:

- Grass has a dense, fibrous root system that rapidly absorbs soil moisture.
- Grass can green up in the fall, start growing early in the season compared to woody
- Grass can spread rapidly via underground runners (rhizomes) and can resprout from root fragments.
- Dense grass cover is good habitat for voles (meadow mice), which often girdle the bases of and kill seedlings. Pocket gophers also may be a problem in grass.

vegetation, and set seed by early summer, at which point much of the available moisture in the upper soil profile may be exhausted.

Most grasses and herbaceous vegetation are killed easily with herbicides before planting tree or shrub seedlings. Vegetation is treated in spots or strips at least 36 inches wide (Figure 11, page 14). Retaining the dead grass/herb thatch around planting spots helps suppress germination of new weeds. Mechanical tilling in strips effectively controls weeds temporarily. Adding mulch mats or mulch materials after tilling will delay recolonization of weeds from seed. Mowing grass and herbs alone is



Figure 11.—Using herbicide spray to create a grass-free strip in a pasture lessens moisture competition for newly planted tree seedlings, and Vexar tubing protects seedlings from browsing animals.



Figure 12.—Scalping provides only a temporary “leg up” on weed competition.



Figure 13.—Reed canarygrass.

not effective at reducing moisture competition but may reduce vole problems if mowing is close to the ground and frequent.

A simple site preparation method for grasses and herbs is to scalp them down to bare mineral soil—using a planting hoe or other tool—to create a planting spot at least 3 feet square (Figure 12). This is very labor intensive and provides only a temporary reprieve from competition. Larger scalps are even more effective, but time and expense increase accordingly.

At least one re-treatment usually is needed during the first growing season. Treatments also will be needed in subsequent years until the seedlings are free to grow, but the first year is most critical. Using mulch mats or other mulch materials after scalping can prolong the relief from competition; see Step 5 (page 19).

Reed canarygrass

Canarygrass is an exotic (non-native) invasive species that often grows in dense stands up to 6 feet high, forming a dense sod layer that excludes other plants (Figure 13). It is common in riparian zones and wetlands throughout western Oregon. Canarygrass is readily controlled with herbicides; higher volumes or concentrations of chemical may be needed compared to other grasses. Spraying fully developed canarygrass in fall may be most effective at killing the entire root system. Mowing in summer followed by a fall herbicide application can facilitate access and coverage while giving good control.

Small patches of canarygrass can be eliminated through hand-pulling, using a shovel or other digging tool. Work when soils are moist. The entire root mass must be removed, as new plants can sprout from small root fragments. For this reason, tillage is not effective unless followed by prolonged flooding. Cutting or mowing five times per season for at least 5 years reportedly is effective, but two mowings per season are not. Mowing can be with weed trimmers, machetes, or—where access and

slopes permit—tractor-mounted mowers. Mulches such as black plastic and weed cloth can be effective if the edges are well secured and the material is left in place for a year. Sheet mulching (e.g., several layers of cardboard topped by wood chips) also can work. Grazing is not effective.

Himalayan blackberry

This invasive species is very abundant in riparian areas throughout western Oregon. Himalayan blackberry (HBB) rapidly occupies disturbed areas, and mature patches may reach 6 to 8 feet high, with canes climbing even higher into trees. HBB thickets form virtual monocultures, displacing native vegetation and preventing new tree and shrub seedlings from becoming established. HBB propagates both from seed and vegetatively, from rhizomes and tip rooting. When cut, it resprouts rapidly, growing up to 48 inches in 1 year on good sites in southwest Oregon.

HBB is a good case for illustrating site preparation methods for competitive woody shrubs. Applying herbicide to uncut HBB foliage in late summer or in fall probably is the most effective one-time application. If HBB patches are large enough to impede access for herbicide application equipment, mowing plus herbicides may best facilitate access across the entire HBB-occupied area. It is effective to cut or mow in early to midsummer, then apply herbicides in fall once canes have regrown to approximately boot height. However, a single herbicide treatment won't control all plants (Figures 14a–c).

Several formulations of both glyphosate and triclopyr can control HBB. Late-season applications, especially of glyphosate, are more effective. Take extreme care whenever spraying, especially near riparian zones. See Step 5, page 19, for more about herbicide use.

Other methods for HBB control include the following. With all of them, a challenge is that even when HBB has been controlled effectively in a given area, the area later may be rapidly invaded from surrounding HBB patches—the so-called “edge effect.”

Manually uprooting blackberry roots and rhizomes is extremely labor intensive but effective if done thoroughly. Considerable soil may be displaced due to the depths of the roots, increasing the risk of erosion and invasion by other weeds on the bare mineral soil.

Mechanical removal with a brush-blade-equipped tractor or other specialized equipment can be effective if most or all the roots can be removed. Soil compaction, erosion, and weed invasion are concerns.

Grazing is ineffective for site preparation but may be suitable in a few cases for release treatments.

Mowing or slashing HBB once or twice per season, to stubble

height, is unlikely to reduce HBB cover significantly. However, multiple annual mowings repeated over several years may substantially reduce HBB cover. In a southwest Oregon trial, nine slashings done by hand over a single season provided levels of control comparable to herbicides. Where access and slopes permit, HBB can be mowed with a Brush Hog-type machine. More typically, crews use machetes, loppers, brush cutters, or chainsaws. A chainsaw with a hedge trimmer attachment also is effective.

Existing natural regeneration of native riparian trees and shrubs (especially regeneration from stump sprouts or root suckers) can be released with even temporary reductions in blackberry



Figures 14a–c.—Example of Himalayan blackberry control in a riparian terrace next to a farm field. Site preparation included two mowings followed by a fall application of glyphosate. Postplanting treatments included spot spraying with glyphosate and hand weeding. Clockwise from top left: the site just prior to mowing with a Brush Hog-type machine; in the middle of its first growing season; and after 4 years of growth.



Figures 15a–b.—Poison-hemlock, above left, and English hawthorn, above right, are common invasive species in southwest Oregon riparian areas.

cover. This is particularly true where soil moisture is not limited; for example, close to the active stream channel.

Himalayan blackberry is considered shade intolerant. In practice, most narrow riparian buffers with deciduous trees have adequate sunlight, from above and from the side, to sustain vigorous HBB growth. Establishing wider buffers with a heavy conifer component may provide enough shading to achieve HBB control in the long term.

Besides HBB, other invasive species common in southwest Oregon riparian zones include English hawthorn and poison-hemlock (Figures 15a–b), purple loosestrife, and various non-native grasses.

Minimizing erosion

“Light touch” site preparation may reduce the risk of erosion but poorly control competing vegetation. More aggressive site preparation may provide excellent competition control but also expose bare soil, thus increasing the risk of erosion. This is of particular concern on or near stream banks that are washed by storm flows.



Figure 16.—Erosion-control matting was used on this section of Thompson Creek, in Jackson County, after a steep, eroding bank was graded back to a more desirable angle, exposing bare soil. The site was revegetated with willow cuttings (visible as stakes in the fabric) and grass. Photo courtesy of Applegate River Watershed Council.

Strategies for minimizing erosion include:

- Prior to site preparation on stream banks and terraces, plant and establish willow cuttings near the channel, to dissipate stream energy.
- Remove competing vegetation only in small patches along a stream reach rather than in a continuous section.
- Use erosion-control cloth and other bioengineering approaches (Figure 16).
- Use herbicides and retain dead material to protect soil.
- Maintain untreated strips of vegetation along contours between treated areas.
- Maintain a heavy organic mulch on the soil surface, and place logs and other large woody debris perpendicular to the slope to capture any eroding sediment.

STEP 4. PLANT YOUR TREES RIGHT

Well-established guidelines for tree planting in forestry and horticulture generally are applicable for riparian plantings (see resources listed in “For more information,” page 32). However, special circumstances in riparian areas sometimes call for extra attention.

When to plant

- Plant bare-root seedlings during the winter dormant season, preferably when soils are above 40°F. Avoid planting during warm, dry, or windy weather or in dry or frozen soil or snow.
- Digging, lifting, and transplanting can be successful during more active growth periods (spring or fall), though little is known about suitability for this practice in southwest Oregon. This

Checklist for Step 4: Plant your trees right

Many problems with seedling survival can be traced back to improper care and handling of the seedlings, from nursery to the planting hole.

- Avoid problems by making sure seedlings stay cool and moist and by minimizing physical damage to them. This is critical from the time the seedlings leave the nursery, through transport, short-term storage, storage on site, and planting.
- Plant at the right time of year—during the winter dormant season for bare-root trees, and during fall through early spring for container seedlings.
- When planting, make sure the hole is deep enough and free of debris. Plant the seedling at the appropriate depth, with the roots in their natural position. Select suitable microsites for seedlings, such as the shade of logs or on well-drained hummocks.

usually requires retaining large soil and root volumes and/or immediate transplanting (“hot” planting). Planting during more active growth periods also is possible if irrigation is available.

- Container seedlings ranging from small plugs to ball-and-burlap stock can be planted fall through early spring. If soils are moist and warm

(above 40°F), fall planting may be advantageous since the seedlings’ roots may experience a significant pulse of fall root growth.

- Plant hardwood cuttings in the dormant season. Planting in late winter helps minimize the risk of loss to flooding.

Seedling care and handling

After trees are lifted or pulled at the nursery, they are vulnerable to damage throughout packing, transporting, storing, and planting. Many problems with seedling survival can be traced back to improper care and handling. Key concerns include:

- Roots dry out rapidly when exposed to the sun or wind. If roots appear dry, fine roots and root tips are likely damaged or dead already.
- When seedling temperatures exceed 42°F (and especially above 50°F for more than a few hours), they begin “growing in the bag”; i.e., respiring. This draws down their energy reserves, making less available for survival and growth after planting.
- Physical damage from crushing, dropping, or excess vibration, and from tearing roots when unpacking seedlings from bags or boxes.

Table 6 lists recommendations for seedling care and handling, focusing on bare-root stock.

Planting tools

Use the tool that is best suited to the seedling’s root system and to soil and site conditions.

For bare-root and plug plantings, a heavy-duty, reinforced shovel with a blade size matching the seedling root system works well. Other hand tools include the dibble and planting bar (suited for small plugs) and the hoedad (best suited for work on steeper slopes).

Table 6.—Checklist of seedling care and handling.

Stage	Recommended practice
Long-term storage (more than 3 days)	Store in a cooler at 33° to 36°F. Use packaging that prevents moisture loss. Most nurseries store and ship seedlings in waxed bags or boxes that “breathe” but prevent water loss.
Transporting from nursery	Use a refrigerated or insulated truck or reflective tarp (white exterior, silver-foil interior) over seedlings in an open-bed truck. Do not expose seedling containers to direct sunlight. Avoid using dark-color tarps, which build up heat. Travel during cool times of day if possible.
Short-term storage (a few hours to 3 days)	Store below 42°F (ideal temperature range is 34° to 36°F).
Transport to planting site	Use proper packaging for seedlings and reflective tarp. Do not transport seedlings in the open. Do not stack more than two bags or boxes high. When arriving at the site, store seedlings in shade. Do not take more seedlings than can be planted in 1 day.
At the planting site	The greatest risk of damage from moisture, temperature, and physical handling is at this stage. Handle seedling boxes or bags gently; do not throw or drop. Repair any tears with duct tape. Avoid rubbing or tearing roots when taking seedlings out of the storage bag and putting them in the planting bag. Do not cram too many in the bag. Seedlings may be dipped in water (for 1 minute at most) before placing in a planting bag, but do not store in water or the roots will die. Do not leave seedlings laying out on the ground, unprotected, and make sure the roots stay moist.

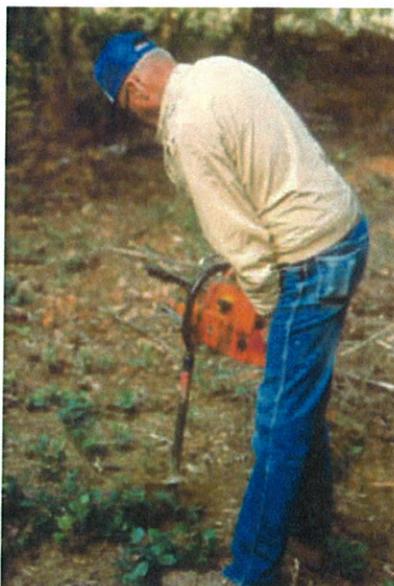


Figure 17.—Auger planting can be helpful for large stock types.

Tractor-mounted or hand-held power augers can work if the soil is not too heavy (clay) or rocky (Figure 17). Auger planting is especially helpful with large container stock. To plant very large stock or to open holes in especially rocky or gravelly soil, specialized equipment may be needed (Figure 18, page 18).

Contact the OSU Extension Service office that serves your county to find out about options for and availability of such equipment.

Planting techniques

A variety of tools and techniques are appropriate for planting tree seedlings as long as you accomplish the basic goals of:

- Opening a hole large enough to position the seedling roots naturally
- Positioning the tree straight and at the proper depth. Planting too shallowly is a common problem; the root collar (the point where highest root joins the tree stem) should not be exposed.
- Preparing soil of adequate quantity and quality to fill back around roots without debris or air pockets
- Refilling the hole and packing soil around roots, so that tree is held firmly but without compressing roots

Planting bare-root stock Figure 19 illustrates the standard technique for planting bare-root seedlings with a shovel or hoedad.



Figure 18.—The Stinger, an excavator with a boom-mounted dibble, is used to open planting holes and insert pole cuttings or large container stock. It is especially useful in rocky soils.

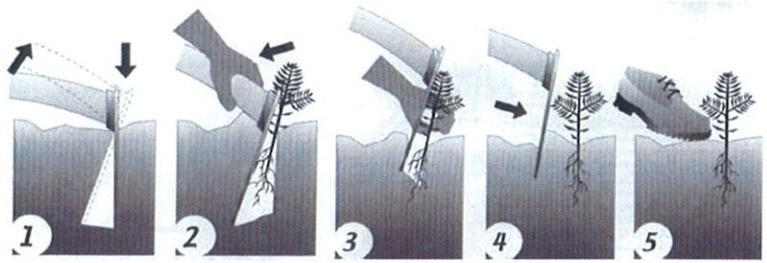


Figure 19.— Planting technique with a hoedad. From Rose, R., and P. Morgan, "Guide to Reforestation in Western Oregon," Oregon State University, 1992.

Planting plugs or container stock

Take care to keep the soil-and-root mass intact and ensure that it is well watered before planting. Prepare soil and open holes large enough to provide some free soil around the soil-root mass for unimpeded root growth. For larger plugs, augers may be needed to create sufficiently large planting holes.

Planting poles and other cuttings

Cuttings may be pushed into moist soil or planted in holes excavated with either hand tools or machinery, depending on the depth of planting and size of cuttings.

- General rules about care in handling, storage, moisture, and temperatures apply.
- Soaking in water for 1 to 10 days before planting is recommended for willow and cottonwood.
- Plant cuttings right end up (i.e., the buds point up).
- If possible, plant deeply enough that the bottom of the cutting is in the summer water table, or plan to do supplemental watering.
- Trimming some buds in spring may reduce transpiration and thus the plant's need for water.

Selecting the planting spot

Even within relatively narrow riparian areas, selecting specific planting spots can be important to minimize hazards. Whenever possible:

- On exposed south- and west-facing sites, plant in shade of debris, stumps, or logs.
- Avoid depressions that are subject to high water table or persistent ponding.
- In high-water areas, plant on hummocks and where soil is built up around rocks or debris.
- Where larger trees are to be retained, avoid overstory shade, or seek spots with more side light.
- Plant away from other shrubs or clumps of vegetation that are not going to be controlled effectively as weeds.
- Avoid planting on active wildlife trails, or plan for extra protection on seedlings in such locations.

AVOID THESE COMMON MISTAKES IN SEEDLING CARE, HANDLING, AND PLANTING

- Seedlings exposed to high or low temperatures during transport and temporary storage (leaving bags of bare-root trees in the garage for several days prior to planting is not a good strategy!)
- Seedlings not protected from drying out.
- Seedlings physically damaged by handling.
- Roots stripped when plants are pulled out of bundles.
- Branches or roots broken; trees hit or shaken during handling.
- Trees planted in unfavorable spot; e.g., on the south side of debris, in a wet depression, downhill from movable debris.
- Planting depth is too shallow (if the seedling root collar is exposed, the roots are not protected from drying out).

Other planting problems are illustrated in Figure 20.

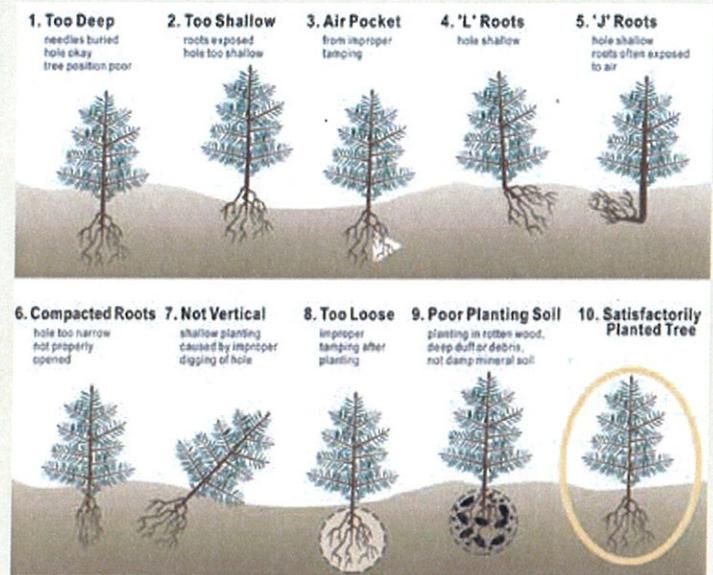


Figure 20.—Common tree planting problems. From Rose, R., and P. Morgan, "Guide to Reforestation in Western Oregon," Oregon State University, 1992.

STEP 5. TAKE CARE OF THE PLANTING

Maintenance weed management

Chemical Many people are reluctant to use chemicals or will use them only as a last resort. For many weed species and situations, however, judicious herbicide use is safe and extremely cost effective compared to other controls. Precautions are required to protect desirable plants and water in riparian areas.

Some herbicides are nonselective, meaning they will damage or kill any plants they contact. Various chemicals are available, however, with different selectivity and effectiveness on certain species or species groups.

Checklist for Step 5: Take care of the planting

Postplanting maintenance often makes the difference between success and failure of riparian plantings. Often, the single most important postplanting task is weed control, because sites can be rapidly occupied by competing vegetation, either from seed germinating on newly disturbed soil or from underground plant parts that resprout.

- Control competing vegetation using herbicides, manual or mechanical methods, mulching, or combinations of these methods. Good control of competing vegetation leaves more soil moisture and other site resources for seedlings.
- Minimize animal damage problems—whether from deer, elk, beaver, or other pests—by using seedling protective devices, fencing, or repellents. Plan ahead for this, based on the initial site assessment.
- Irrigate seedlings if needed to help them establish, especially water-loving species and on especially droughty soils. Consider the labor and expense involved, however, and whether the species can survive on the site over the long term without irrigation. Good weed control conserves soil moisture.
- Periodically visit the site to monitor seedling survival and growth and to assess maintenance needs. The first season after planting is the most critical, but maintenance may be needed for several years before seedlings are free to grow.

Some herbicides and/or their surfactants are toxic to aquatic organisms, and their use may have some restrictions.

Ask professional pesticide applicators or your OSU Extension office for current information on chemicals appropriate for your intended use.

Herbicide applications on forest land are regulated by the Oregon Department of Forestry, and on agricultural land by the Oregon Department of Agriculture. Land in other land-use categories may have different regulations. Contact the appropriate agencies for current information about buffer zones and restrictions on herbicide use near streams.

Here are some important points about using herbicides.

- Read the herbicide label and follow the instructions. The label is the law!
- Whenever possible, use formulations that are labeled for aquatic use. Note that toxicity of both the herbicide and the surfactant must be considered.
- Mix herbicides well away from riparian zones.
- Wear protective clothing and safety devices as the manufacturer's label instructs.
- Avoid spraying on windy or hot days (above 75°F) to minimize herbicide spray drift and risk

of volatilization (turning into a vapor). The risk varies with the herbicide.

- For herbaceous vegetation, spot-spraying or wipe-on techniques are suitable. Broadcast applications will seldom be appropriate due to the risk of drift.
- For woody vegetation, injection or cut-surface treatments can be appropriate. The Nature Conservancy's PVC applicator works well. A description and instructions for this are online at <http://tncweeds.ucdavis.edu/products/handbook/22.PVCapplicator.pdf>

See "For more information," page 32, for sources of more details on herbicide application and regulation.

Manual

Blackberries and other woody species can be cut back using chainsaws, brushcutters, and other tools. Grasses and forbs

can be removed (scalped) using a hoe. An area of at least 3 square feet around each tree is recommended (Figure 12, page 14); a larger area is better. Usually at least two treatments per season are needed because weeds regrow from root crowns or rhizomes. Manual treatments are labor intensive and therefore expensive unless labor is volunteer.

Mechanical

Riparian plantings can be designed for periodic mechanical maintenance including mowing and tilling. Adequate space between rows or planting spots is needed to prevent damage. It is essential that equipment operators know the locations of desirable plants. Accidental damage to planted trees during mechanical maintenance is very common, however. If planted trees are getting "lost in the weeds," that indicates maintenance is inadequate.



Figure 21.—Mulch mats underlie ponderosa pine seedlings on a dry site in southwest Oregon. Note the watering containers and tubing. Photo courtesy of Applegate River Watershed Council.

Mulching

Mulches commonly are used to suppress weeds around planted seedlings and to retain moisture into the summer. Various mulch materials have been used, including the following.

Weed mats Commercial products include Vispore, Pak, Brush Blanket, etc. Mats are made of woven synthetics, paper, or other materials (Figure 21). Longevity varies from one season to several seasons. Mats come in various sizes—e.g., 3 square feet—and larger is better. Mats are placed over scalped ground and fastened with landscape pins or with rocks and soil.

Mats are effective against grass and forbs but not sprouting woody vegetation. Their chief disadvantage is cost (75¢ or more per mat) and labor of installation. Newspapers, cardboard, and other low-cost alternatives also have been used as mats.

Organic materials Examples include straw and wood chips. These materials often are cheap and readily available (Figure 22). However, they are not as effective at suppressing weeds as mulch mats or fabric.

Animal damage control

In a recent survey,* animal damage was the second leading cause of plant mortality in riparian projects in the Umpqua, Rogue, and Klamath basins. Direct methods of damage prevention often are useful, but they also are expensive, and so the need for

*Statewide Survey of OWEB Riparian and Stream Enhancement Projects. 2002. Anderson, M., and G. Graziano. Oregon Watershed Enhancement Board, Salem, OR.



Figure 22.—Organic material such as bark or wood chips is often used as an inexpensive form of mulch and weed protection.

protection should be carefully assessed. Note that all physical protection measures (fencing, cages, tubing, etc.) require periodic inspection and maintenance.

Using large planting stock and taking steps, such as good weed control, to promote rapid seedling growth will help minimize many animal damage problems.

Livestock

Young seedlings are palatable to most livestock (cows, horses, sheep, llamas) and can be heavily damaged if not protected. The best solution is standard woven wire or electric fencing to keep livestock out of planted areas.

Beaver

Where beaver are present, damage can be extensive, and prevention is a must. Protection measures include:

- Individual tree protectors such as 2- or 4-inch mesh wire cages
- Chickenwire or sheet metal loosely wrapped around larger tree trunks
- Fencing the area between the plantings and the stream

Removing the beaver may be an option; however, it is very likely that the site will be repopulated by beaver from adjacent areas.

Deer and elk

Young seedlings typically are browsed early in the growing season, when new shoots are tender. Browse heights range up to 3.5 feet for deer and 4.5 feet for elk, so the main tree stem will need protection until trees reach these heights. Area fencing must be at least 8 feet high to keep out deer and perhaps as high as 12 feet for elk.

Tree shelters (Figure 23) and plastic mesh tubing, supported with a bamboo or wooden stake, often are effective but expensive and labor intensive to install (\$3 to \$6 per tree installed). Big-game repellants (e.g., Deer-Away, BGR), applied about every 2 weeks in spring and early summer, are effective against lighter browse levels. Bud-caps, made of Rite in the Rain paper, flexible netting, or other materials, are cheaper than tree shelters and sometimes prevent deer browse. Hardwoods and cedars are browsed heavily but pines less frequently.



Figure 23.—Tree shelters protect seedlings from several forms of animal damage but are expensive. Note: this tree needs better grass control.

Mice and voles

Most damage occurs during winter. Protections include:

- Good weed control, eliminating the heavy grass and herbs around seedlings that provide hiding cover
- Tree shelters
- Aluminum foil wrapped around the base of the seedling

Rabbits

Rabbits nip and clip seedlings. Protections include:

- Eliminating brush, heavy grass, and debris piles that provide hiding cover
- Using wire or plastic mesh tubes or tree shelters

Pocket gophers

Gophers can be a localized problem in pastures and meadows. Protections include:

- Good control of grass and herbaceous weeds across the planting area
- Gopher control with traps or poison

Irrigation

Irrigation can help planted seedlings survive southern Oregon's long summer drought as well as improve their vigor and growth. However, the need for irrigation should be carefully evaluated since it is time-consuming and expensive. In most cases, limit riparian plantings to species that will survive without irrigation beyond the establishment period.

While all plants can benefit to some degree from watering, good survival and growth can be achieved in many riparian projects *without* irrigation. This is particularly true for plantings of

upland species, which are adapted to southern Oregon summers. Species suitable for Zones 1 and 2 (see pages 7–8) will benefit most from watering.

In many cases, good weed control, proper planting technique, and planting high-quality stock of the appropriate species are just as critical to project success as supplemental watering.

Irrigation is most appropriate:

- When planting water-loving species such as alder, willow, and cottonwood, and the stock cannot be planted deeply enough to access mid-summer moisture
- For most species on very coarse soils (e.g., sandy or rocky) with minimal water-holding capacity
- If weeds are adequately controlled, or absent, and supplemental watering is needed to ensure survival or meet growth objectives
- During the first one or two growing seasons, to help seedlings establish. If irrigation is needed beyond this point, the plant materials' suitability for the site is questionable.



October 1999



August 2005

Figures 24a–b.—This project on Sterling Creek in Jackson County, used milk jugs in an intensive hand-watering system for the tree seedlings. Photos courtesy of Applegate River Watershed Council.

Irrigation methods

Hand watering Seedlings can be watered with buckets, 1-gallon milk jugs, etc (Figures 24a–b). This is labor intensive and most suited to small numbers of plants. Larger projects may employ a tank truck and pressurized hose, but this still is very labor intensive if there are more than a few dozen plants.

Drip systems Advantages of drip systems are the ease of watering once the system is set up. The chief disadvantage is the expense and labor of the initial installation.

Gravity-fed drip irrigation is seldom feasible on a large scale, due to the elevation drop needed. For example, to generate 20 pounds of pressure (a good target for a drip system), a 50-foot drop is needed. However, a 55-gallon drum or other storage container in an elevated position can water a few plants.

Gasoline- and battery-powered pumps are available. Conventional drip lines can water dozens of plants at once (Figure 25). After one to two growing seasons of use, the drip lines can be lifted and moved to a different location. However, weed growth over the surface may make it difficult to take up the line.

Water can be from the stream or brought in from off-site. If you plan to draw from the stream, you will need a water right. Contact the Oregon Water Resources Department for more information.



Figure 25.—Drip irrigation was installed in this newly planted area along Lazy Creek in Jackson County. Photo courtesy of Rogue Valley Council of Governments.

Deep pipes A 1- to 3-inch-diameter pipe (PVC or bamboo) is inserted 12 to 24 inches (depending on plant size and root depth) into the soil alongside the seedling. The pipe is filled with water at the time of planting and is refilled when it's empty. If the seedling is small, holes may be drilled in the pipe. The pipe is capped to keep out rodents and to reduce evaporation. This technology has been used successfully to establish plants in arid environments.

Soil amendments Materials that store and release moisture can be used as a soil amendment. For example, the material DRI-WATER consists of 98 percent water and 2 percent organic products (cellulose and alum); it breaks down slowly and releases water through the activity of naturally occurring soil bacteria. It reportedly has been used successfully in very harsh desert conditions.

Other options are water-absorbent polymers (also known as root-watering crystals, planting gels, and water-retention granules) which can be added to

the backfill soil when planting. They absorb up to 400 times their own weight in water, then slowly release it over time to make it available to plant roots. One study (Fisher 2004) indicates that these amendments can improve survival and growth in arid environments, but data from local field trials are lacking.

When to irrigate? How much?

For maximum benefit, begin watering before the onset of summer drought and high levels of plant moisture stress. For much of southern Oregon, this will be in late spring.

Plan to water each plant every 10 to 14 days, tapering off as summer progresses. Upland species in particular use drought stress to induce dormancy, a necessary process for winter hardiness; so heavy irrigation in late summer may be risky.

For smaller container seedlings and bare-root seedlings, give each plant 1 to 2 gallons per watering. Larger planting stock will need more.

Aim for a deep watering that thoroughly wets the rooting zone. Light, frequent waterings promote undesirable, near-surface root development. A slow watering, allowing water to soak into the ground rather than run off, is best.

STEP 6. MONITOR AND LEARN FROM RESULTS

Monitoring the results of your riparian planting project is essential in order to:

- Identify any immediate needs for maintenance to ensure that trees survive and grow
- Determine whether tree survival and growth objectives are being met (implementation monitoring)
- Determine whether objectives for riparian functions such as shade, water quality, and erosion control, are being met (effectiveness monitoring)
- Learn what specific treatments or techniques worked, and what didn't work and why, in order to guide future riparian restoration efforts
- Document project implementation for agencies that funded the project

Planning and documentation

Before implementing the project, think about what you want to monitor (e.g., tree survival, shade, bank stability). How will these be measured or evaluated? When do key monitoring tasks need to be done? What is appropriate given your objectives, time, skills, and budget? Develop a monitoring plan that addresses these questions.

Good documentation is essential. Prepare an overall project description including location, site conditions, site preparation, and maps and descriptions of planted areas to be monitored. Compile planting records and note what was planted, where, and how. Record all project

Checklist for Step 6: Monitor and learn from results

Monitoring is an essential part of a successful project, but in practice it is often neglected.

- Build monitoring plans into your initial project design.
- Plan to inspect the planting early in the first growing season to assess weed and animal damage issues, while there is still time to address them. Plan for one or more follow-up inspections during the growing season and at least annual inspections thereafter until the trees are free to grow.
- Document the project. Maintain a log of project activities and monitoring observations.
- Consider establishing one or more photo points to document and communicate change in riparian conditions over time. Also consider more intensive monitoring such as establishing temporary or permanent plots.

activities, by date, in a project log. Also note results from periodic visual inspection of the project. This will be very helpful in evaluating the project down the road.

Consider marking the locations of planted trees with surveying ribbon or wire flags. Although time consuming, this will make it easier to locate trees for needed maintenance and monitoring, and make it easier to see that crews don't damage or cut trees accidentally during release treatments.

Periodic visual inspections

This is the simplest and most important type of monitoring. The main purpose is to see how the plantings are doing and to decide what, if any, corrective actions are needed to make sure the trees survive and grow adequately to meet project objectives.

Plan for a visual inspection of the planting site at least once per season.

- Are grasses or other weeds encroaching upon or threatening to overtop planted trees?
- Is there evidence of browsing, girdling, or clipping of stems?
- What steps need to be taken to correct the problems?
- Are the trees vigorous and healthy?
- Are trees of some species, or in certain areas, doing better? If so, why?

Note your observations briefly in the project log. The most critical time for inspections is the spring after planting, while there is still time to do something about emerging weed or animal damage problems.

Photo monitoring A series of photos over time is a powerful tool for documenting starting conditions and changes over time. Establish markers (e.g., steel pins or rebar) for reference points (photo points) so these can be found in the future. Prepare documentation about photo points, including directions for relocation, and indicate the direction (compass heading)

the photographer is facing from the photo point. See “For more information,” page 32, for sources of detailed information about photo monitoring.

Other monitoring techniques

Various techniques have been developed to monitor riparian projects; see sources in “For more information,” page 32, for details.

Most riparian monitoring will focus on project implementation:

did the planted trees survive, and are they healthy and vigorous? What problems require immediate attention?

These questions can be addressed largely through periodic visual inspections. More intensive monitoring techniques can be used to provide quantitative information that is objective, repeatable, and statistically valid. These approaches are important for evaluating project effectiveness

but are expensive and time consuming to implement.

Regardless of the technique used, it’s important to follow a consistent format for recording measurements and taking notes on project conditions.

Appendix 5 (page 31) gives examples of common monitoring questions, objectives, and techniques.

Appendix 1. Key riparian functions, supporting vegetative conditions, and riparian buffer design considerations

Riparian functions	Vegetation conditions and functions supported	Riparian buffer design considerations
Shade to keep water cool.	Shrubs and trees on the sunny side of the stream. <i>Provide foliage to block sunlight.</i>	South and west sides of streams are most critical for plantings. Buffer size depends on stream size, slope, and orientation.
Stabilize stream bank to prevent erosion.	Trees and shrubs on the stream bank and (on small streams) in the active channel. <i>Roots hold soil, and stems slow water to reduce erosive force.</i>	A stream bend’s inside bank requires a smaller buffer; its outside bank requires a larger buffer to account for channel migration. Most of a buffer’s stabilization effect comes from vegetation within 25 feet of stream channel.
Filter nutrients and sediments to maintain high-quality water.	Trees and shrubs at the upland edge of the riparian zone. <i>Vegetation cover slows and filters water flowing from adjacent uplands. Plant roots take up nutrients from the soil solution.</i>	Sediment filtration depends greatly on slope, soil type, and other factors. A 50-foot buffer can provide substantial filtration of sediment from overland flow. Larger buffers may be needed to take up soluble nutrients and pesticides.
Retain gravel in the stream bed for spawning and formation of pools for fish.	Large trees falling into stream. <i>Woody debris lodged in stream bed slows and diverts water, causing gravel to accumulate. Water plunging over and circulating around woody debris forms and maintains pools.</i>	Most debris comes from trees directly adjacent to the stream channel. Landslides and debris flows also can provide significant debris inputs, depending on landscape conditions beyond the riparian area.
Input nutrients to enrich aquatic system.	Vegetation overhanging the stream. <i>Deposits leaves and twigs. Insects fall from vegetation into the water.</i>	Most benefits come from vegetation hanging over or directly adjacent to the channel.
Habitat for nesting, roosting, foraging, and other wildlife activity.	Dense areas of shrubs for nesting and hiding cover. Large live trees and dead trees (snags) for cavity nesters. Closed-canopy forest. <i>Provides a corridor for wildlife passage.</i>	Buffer width needs depend on habitat and species of concern. Large buffers needed if they are to serve as corridors.

Appendix 2. Factors to consider in site selection

The key factors to consider in selecting a site are stream size, stream channel characteristics, soil moisture and fertility, competing vegetation, and potential for animal damage.



Figure 26.—Channel stability is important in site selection. Here, an overly steepened bank was cleared of dense blackberry cover, then planted. That winter, high stream flows washed away about 10 feet of bank along with most of the planted trees. Several years later, as seen here, parts of the bank were still eroding.

Stream size

The ability to significantly influence riparian functions diminishes as stream size increases. For example, riparian plantings offer little shade on a river. Techniques suitable for small streams (e.g., planting close to the water) may not be feasible on larger streams and rivers due to channel instability and the potential for flooding.

Stream channel characteristics

Very wide channels may be unstable and subject to frequent floods that either wash away plantings or bury them in sediment (Figure 26). Such sites are

often poor candidates for riparian planting. Many streams in southwest Oregon, as elsewhere, have been channelized (straightened out), which has caused them to entrench (Figure 27). Establishing trees often is difficult on these sites. Options frequently are limited to planting next to the stream, where seedlings easily can be uprooted by floods, or planting on top of the terrace high above the stream, where plantings must be irrigated or limited to drought-tolerant species.

Plantings on steep banks often do poorly because of bank erosion or unfavorable soil conditions. The ratio of slope length to height should be 2:1 or greater on sites selected for planting. Steep banks can be regraded to lower angles and natural meander patterns can be restored, but this is very costly. Bioengineering techniques such as placement of

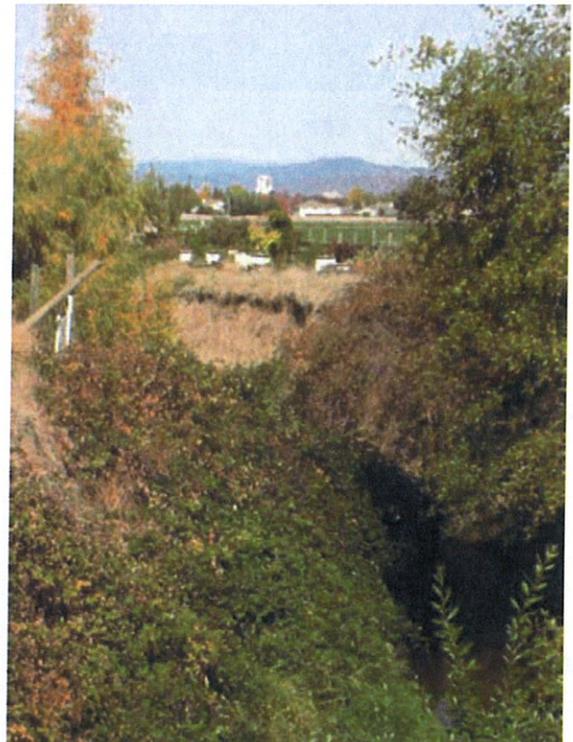


Figure 27.—An entrenched stream channel in an agricultural area on Jackson Creek, in Jackson County, dominated by Himalayan blackberry and reed canarygrass, with a lone alder at left. This is a tough site for a riparian planting because the top of terrace is very dry, the banks are too steep to plant, and plantings next to the stream are subject to frequent storm flows. Note the actively eroding cutbank.

brush or woody debris to deflect or slow water may also be appropriate on these sites.

On ideal planting sites, there will be enough time between heavy storm flows for vegetation to become established but still enough soil moisture and access to ground water to favor riparian species (Figure 4, page 4).

Soil moisture and fertility

Many riparian plantings in southwest Oregon are on extremely coarse soils that are droughty despite being close to water and are low in fertility (Figure 28). Planting in these soils may require using larger stock, summer irrigation, or both. Soil amendments, fertilization, or inoculation of planting stock with mycorrhizae (beneficial symbiotic root fungi) also may be appropriate.

Competing vegetation

Common weeds on southwest Oregon riparian sites include reed canarygrass and other grasses, forbs such as poison-hemlock and purple loosestrife, and Himalayan blackberry, a woody shrub. These and other weeds can overrun plantings easily if site preparation and/or maintenance is inadequate.

Potential for animal damage

Beaver and other rodents clip or girdle unprotected tree seedlings. Elk and deer browse unprotected seedlings. Sites with evidence of current animal use or a history of heavy use may not be good candidates for planting projects unless intensive protection measures are used.



Figure 28.—A low-gradient floodplain channel on Little Butte Creek in Jackson County. Challenges for riparian planting include coarse, droughty soils, channel instability, and low summer flows due to water withdrawals.

Appendix 3. Project design features and considerations

Buffer width – “Every little bit helps”

There is no one-size-fits-all buffer width. Wider buffers generally provide more benefits, but beyond a certain size there may be relatively little increase in benefit for a relatively large increase in buffer width.

Varying buffer widths are needed to support different riparian functions. For some functions, such as stream bank stability, relatively narrow buffers suffice. For others, such as uptake of soluble nutrients from farm land runoff, wide buffers may be required (Appendix 1, page 25).

Consider a variable-width buffer. Good places to have a wider buffer are on the outside bank of a stream bend, so that when the channel migrates the whole buffer isn't lost; and on low terraces and low-gradient reaches, to enhance bank stability and off-channel habitat where flooding is more frequent.

Buffer width on forest lands is dictated by the Oregon Forest Practice Act. On agricultural lands, there are no specific buffer-width requirements; owners must comply with local water-quality management plans established under Oregon Senate Bill 1010. Contact your local Soil and Water Conservation District to learn about local water-

quality management plans. City or county jurisdictions may have ordinances dictating buffer width.

Location

Providing shade on the south and west sides of the stream is particularly important for moderating water temperatures (Figures 29a–b). Trees on both sides of a stream are best for most other riparian objectives.

Access requirements

Provide access and adequate space between trees for any machinery to be used. Regular rows with adequate row spacing (6 to 10 feet) are needed for tractors and ATVs. Closer spacing and irregular tree distribution are OK if using smaller mowers, backpack sprayers, or hand tools.

Fencing and other livestock and wildlife controls

Both standard woven wire and electric fencing are adequate for domestic livestock, but they need to be maintained to prevent and repair breaches (Figure 30, page 29). Very carefully managed rotational livestock grazing can be compatible with riparian planting without fencing out the entire riparian area (but cross-fencing to establish multiple pastures is key).



Figures 29a–b.—Before (above left) and after (above right) installation of a riparian stream buffer on Beaver Creek, in Lincoln County. Trees were planted on the south side of the creek to maximize shading and to minimize loss of grazing land.

Deer and elk can jump easily over livestock fencing, so 8-foot or higher fencing is needed if you intend to protect plants from these animals. This can be prohibitively expensive; individual tree protectors often are used instead.

A chickenwire fence 18 inches high, placed between the stream and planted stock, keeps out most beaver and nutria.

***In-stream structures (rock, wood, other)
to direct water flow and prevent stream bank erosion***

Locate plantings in the specific areas that you expect will be protected by in-stream structures.

Species selection and mix

Plant trees and shrubs in the appropriate moisture zone (see Table 1, page 6). Normally, fast-growing hardwoods such as willows, cottonwoods, and alder will be planted close to the stream, and conifers and other upland species will be planted on higher terraces. The hardwoods will grow quickly to provide short- to medium-term shade, while the conifers will provide longer term shade and large woody debris.

Not much is known about the merits of planting clumps of each species versus uniform mixtures of species. However, if growth rates of two adjacent trees are greatly different, this may pose problems down the road as the slower growing species is shaded out. For this reasons, clumps of one species may be simpler logistically to install and manage. Plant conifers at least 15 feet from fast-growing hardwoods.

Spacing and distribution

Typical upland spacings of 10 x 10 feet and 12 x 12 feet probably are appropriate for riparian tree plantings. To account for possible mortality, more than one tree is sometimes planted in one spot. Closer spacings also are used to ensure more rapid dominance of planted trees over other vegetation, but this also will require early thinning. Shrubs can be planted much more closely than trees.



Figure 30.—Riparian buffer installed next to a farm field. A stream is at left, outside the photo frame. In this case, livestock fencing (at right in photo) is essential to the success of the buffer planting.

Appendix 4. Promoting natural regeneration

Promoting natural regeneration can help establish desired vegetation with less expense and effort than planting seedlings.

Other advantages of natural regeneration are that the species are genetically adapted to local conditions and, especially with vegetative reproduction, are set for rapid growth.

Greater reliance on natural regeneration also can increase the cover of desirable riparian plants without having to use intensive, soil-disturbing ways to control invasive species. However, conditions must be right for natural regeneration to occur. Natural regeneration alone generally cannot be relied upon to meet tree establishment goals for species composition or stocking.



Figures 31a–b.—Two seasons after cutting back Himalayan blackberry on this site (upper photo), sandbar willow (*Salix exigua*) has made a good recovery (lower photo).

Favorable conditions for regeneration of woody species include:

- Abundant soil moisture
- Freedom from excessive flooding
- Temporary freedom from vegetative competition
- Available sources of seed

Conditions for natural regeneration are most favorable after a major disturbance such as a flood. Floods can remove streamside vegetation and deposit fresh sands and gravels, which are ideal for germinating seeds of many riparian species.

Many riparian species also regenerate vegetatively, including resprouting from the root crown, root suckering, layering, and sprouting from stem fragments.

What can be done to enhance natural regeneration?

1. Protect plants from livestock or other animal damage by fencing or individual tree protection.
2. Release existing plants from competition. Killing or cutting back competing vegetation gives desirable plants more growing space, and they can respond rapidly. Often, more desired woody plants are in riparian zones than first meet the eye. These may need to be flagged before contract crews or volunteers begin cutting.
3. Stimulate root suckering, layering, and sprouting by cutting back competing vegetation twice per year. Black cottonwood (*Populus trichocarpa*) and sandbar willow (*Salix exigua*) both sprout vigorously from underground shoot buds on lateral roots. A temporary reprieve from competition can help these species move rapidly into previously unoccupied areas (Figures 31a–b).
4. Minimize cover of competing vegetation to stimulate germination and rapid early growth of seedlings of desirable species. A “rain” of seed often falls into riparian zones, but new plants can regenerate only under favorable conditions. Note that it isn’t important to eliminate invasives entirely, just to reduce their cover to low levels while desirable species get established.

Appendix 5. Sample monitoring questions, objectives, and techniques

Monitoring question	Objective	Technique
How many trees planted? Where?	Documentation for project funders, etc.	Include in project documentation and monitoring plan.
Are the planted trees threatened by weeds or animal damage?	Address any immediate threats to tree vigor and survival.	Visual inspection of planting area. Most critical time is spring after planting. Inspect at least once per season.
Are the planted trees vigorous?	Evaluate success of planting. Vigor is one criterion.	Visual inspection (qualitative) or intensive measurement (quantitative). Indicators of vigor include plant size, leaf size, bud size, needle length, leaf length, and foliage color. Timing: during the growing season.
Did the planted trees survive?	Implementation—determine overall success of planting.	Visual inspection (qualitative) or intensive measurement (quantitative). This can be simply walking the site to get a general sense of tree survival or can involve tallying every tree or a representative sample of trees to determine survival rate. Flagged tree locations can be very helpful at this stage. Timing: end of the growing season. The first growing season is often an important benchmark since most mortality is in the first year.
How fast are trees growing?	Implementation—determine overall success of planting. Also, determine how growth varies by planting site, species, treatment, and other variables.	Visual inspection (qualitative) or intensive measurement (quantitative) such as tree height and diameter. Height is less sensitive to effects of vegetative competition than is diameter. Thus, differences in diameter often are used to evaluate treatment effects, such as different site preparation methods.
Are the trees “free to grow”?	“Free to grow” is an important benchmark for project success. At this stage, trees can be expected to dominate the site without further intervention.	Free-to-grow trees are vigorous, not threatened by competing vegetation, and poised for further growth and site dominance without additional interventions. Determining whether a tree is free to grow is somewhat subjective in borderline cases. Timing: usually 3–5 years, or more, but is very site specific.
Are trees doing better in one area than another? Areas may differ ecologically (e.g., soils, drainage) or in treatments (e.g., site preparation).	Implementation—determine success of planting in each section. Also, learn about factors affecting plants on the site and what might be done differently next time.	Visual inspection or intensive measurement. Comparisons could be made on the basis of tree survival, vigor, and/or growth (height, diameter, stem volume).
What are the major reasons trees died?	Learn about factors affecting plants on site and what might be done differently next time.	Visual inspection or intensive measurements. Note any evidence of trees’ dying from overtopping/encroachment of competing vegetation, lack of water, lack of nutrients, animal damage, etc.
Is the riparian condition trend positive (e.g., is cover of desirable vegetation increasing)?	Effectiveness in meeting riparian objectives.	Photo monitoring or intensive measurement.
Did the project increase shade to the stream?	Effectiveness at meeting riparian objectives.	Photo monitoring may show increases in stream cover. Intensive measurements—e.g., with a solar pathfinder or fish-eye lens—are needed to quantify increases in shade.
Did the project reduce nitrate input to streams from adjacent farm lands?	Effectiveness at meeting riparian objectives.	Intensive measurements.

For more information

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