July 21, 2010

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RE: Willamette River Habitat Protection and Restoration Program 2010 – 2015

Dear Mr. Merrill and Independent Scientific Review Team Members:

The Independent Scientific Review Panel (ISRP) review of the Willamette River Habitat Protection and Restoration Program proposal (Program) has helped us focus our proposal. We have altered the proposal and describe the changes in this letter. Please consider the explanations and revised proposal in light of your review.

The following response is divided into two parts: the three issues raised in the cover letter, and 16 concerns and questions noted in the review. If you have further questions, we would be pleased to discuss them with the panel.

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1. You have asked for "***A more complete description of how existing habitat projects have been implemented and how successful they have been in the mainstem Willamette River, including biological responses, if known***."

The Willamette Special Investment Partnership (SIP) is relatively new and we have a limited group of projects to demonstrate the full potential of the effort. Attached are five project applications that have been reviewed by the RRT (Attachments A-E) and approved for MMT and OWEB funding. These projects represent a good part of the range of applications to be funded by this proposal. We have amended the proposal to provide additional information on funded projects (see pages 35-37 and Appendix I).

In brief, the number of restoration projects that have been implemented on the mainstem Willamette over the last decade is small. The Willamette SIP was established in 2008. Prior to that time, the most significant habitat protection effort along the mainstem Willamette was the Willamette Greenway Program. This was an effort to purchase riverfront properties that began in the 1970's and continued until it became politically unpopular in the 1980's. In 2005, the State of Oregon updated the vision for the Willamette Greenway Program to include habitat restoration and protection (http://www.oregon.gov/OPRD/PLANS/docs/Greenwaystrategy10-05.pdf).

Following establishment of the Greenway Program, only a handful of mainstem restoration projects were completed – most attempting to restore native vegetation or redirect flows primarily to stabilize banks. Few of these projects would have met the SIP criteria, and few have been maintained over the years. During this same time period, however, the State began to

address serious adverse impacts to the river. In 1973, the legislature created the State Land Use Program under which – for the first time – cities and counties were required to have building setbacks from the river and its tributaries. Many of the resulting city and county ordinances have subsequently been amended with the listing of fish species under the Endangered Species Act.

Later in the same decade, following passage of the federal Clean Water Act in 1972, the State became serious about addressing the impacts of point-source pollution, and dramatically reduced toxic inputs from industrial sources. Non-point sources of pollution were not addressed in earnest until the Oregon Plan for Salmon and Watersheds was passed by the legislature in 1997, calling for the development of basin scale water quality management plans and water quality plans for farms. In addition to these efforts, the Oregon Plan led to the creation of 25 watershed councils in the Willamette Basin designed to address watershed function in the tributaries. Finally, a series of lawsuits led to the completion of Total Maximum Daily Load (TMDL) plans in the basin to establish – and ultimately enforce – limits to pollution allowed in the river.

Since 2000, the Oregon Watershed Enhancement Board (OWEB), the Bonneville Power Administration (BPA), and several land trusts have combined forces to acquire properties along the mainstem with significant restoration potential. One of the best examples of this cooperative effort is the Green Island project. This project helped crystallize the need for a Willamette partnership that is ready to take advantage of conservation opportunities as they arise. Green Island is a 1000-acre tract of land located immediately downstream from the confluence of the McKenzie and Willamette Rivers. It provides critical habitat for many listed and non-listed species, including the osprey, beaver, spring Chinook, winter steelhead, great blue heron, western pond turtle, red-legged frog, and a myriad of migratory songbirds and waterfowl. It is also home to the only known population of Oregon chub that thrives in a back-channel river habitat. The McKenzie Land Trust (MLT) used funds from OWEB and BPA to acquire Green Island in 2003. Subsequently, MLT developed a management plan for the island and has actively pursued restoration of the island. They have partnered with the Environmental Protection Agency on a four-year study using 50 shallow wells to better understand groundwater movement. They are examining groundwater in a variety of locations ranging from young to old riparian systems, including agricultural areas of the island that are still protected by levees. Water quality parameters, water levels, and temperature data will be used to construct a water flow model for the island. To restore the island's native vegetation, they have planted more than 50,000 trees, and converted more than 200 acres to native floodplain forest. In 2007, they began the removal of flood control levees and revetments to allow greater inundation of island habitats, and have plans to remove additional levees this year. Finally, after working incrementally on restoration over the last seven years, they are just now beginning to see active restoration of channel complexity. The river moved hundreds of yards of sediment across the island in flood events in 2006 and 2009, demonstrating that floodplain function can indeed be restored in some places along the Willamette River without causing economic harm to manmade structures.

Since the acquisition of Green Island, the Willamette SIP has provided funding for four additional projects that specifically target improving mainstem habitat. These projects are Stephens Creek Confluence Enhancement (Attachment A), Tryon Creek Confluence Enhancement (Attachment B), Mission Slough Channel Reconnection (Attachment C), and Buford Park Channel Reconnection (Attachment D). Two of these projects are being

implemented this summer (Tryon Creek and Buford Park), one was completed last year (Stephens Creek), and one is on hold pending resolution of legal issues (Mission Slough). Since these projects are still in development, we do not yet have information on biological responses.

Stephens Creek enters the Willamette within the City limits of the City of Portland. Not atypical of urban streams, Stephens Creek was highly altered and provided limited habitat for anadromous fish. The confluence had been affected by road, railroad, and residential construction. The result was a straight, armored channel paralleled by a concrete-encased sewer line. The confluence with the Willamette (River Mile 16.2) had no off channel habitat for juvenile fish. The project was designed to improve habitat complexity and provide resting sites for juvenile fish during high flows. The project included installation of multiple large wood and snag structures that have accumulated drift following winter high flows since being installed. The concrete-covered pipeline was removed, the channel was meandered, and the floodplain was revegetated with native species. The City of Portland implemented the project and is monitoring fish use, structural stability, and native plant establishment.

The purpose of the Mission Slough Channel Reconnection Project is to increase the duration and frequency of flows into an oxbow of the Willamette mainstem. The oxbow is within the Mission State Park, a 1600-acre property just upstream from the Wheatland Ferry (River Mile 74-72). This project would include vegetation removal and the removal of flow barriers to link a warm water “lake” to the mainstem. Unfortunately, the project is on hold due to landowner concerns that we have been unable to satisfy.

The remaining two projects approved by the Restoration Review Team (RRT) are Buford Park Channel Reconnection and Tryon Creek Confluence Enhancement. Tryon Creek flows from a 645-acre park created by Governor Tom McCall in 1970. The creek enters the mainstem Willamette in the middle of the metropolitan area of Portland, where the water from the creek is two degrees cooler than the mainstem. The purpose of this project is to increase the quality and quantity of habitat at the confluence to provide a respite for anadromous fish headed to tributaries higher in the system. Buford Park is a remarkable area between the confluence of the Coast and Middle Forks of the Willamette. The South Meadow site is part of a 38-acre floodplain restoration project to increase the frequency and duration of flows to side channels in the meadow and to restore native floodplain vegetation.

More recently, the RRT has reviewed several projects that promise to meet the intent and criteria of the Willamette BiOp and SIP: acquisition of land and perpetual conservation easements at Harkens Bend, and conservation easements at Horseshoe Lake (Attachment E). These projects appear to provide a major biological benefit to the target Program species. They also represent a major turning point in the willingness of landowners along the Willamette to undertake floodplain reconnection. Both the Harkens Bend and Horseshoe Lake projects appear to signal the beginning of significant interest in protecting surrounding reaches, thanks to the enthusiasm and cooperation of these landowners.

2. You have asked for: "***Details about the objectives, work elements, methods, and metrics. In particular, more details about the specific criteria that will be used to prioritize projects."***

The activities we anticipate funding include:

- Land acquisition to ensure habitat protection and long-term restoration benefits
- Floodplain reconnection and restoration
- Side-channel reconnection and restoration
- Restoration of floodplain forest and other native vegetation

In order to achieve the large-scale results we are seeking on the mainstem, we want to identify multi-reach/multi-landowner projects. The recently proposed Harkens Bend and Horseshoe Lake projects mentioned above (described fully in Attachment E) rate highly using the RRT criteria. You will note that both projects include the acquisition of land – or land rights – for the purpose of restoration. Harkens Bend has a well-developed restoration concept that was featured in the Willamette Planning Atlas more than eight years ago (Atlas, p 147).

The RRT criteria (from Attachment C of the proposal) that are directly relevant to this project include:

Threshold Criteria —Protecting Habitats

- The project protects or restores high quality habitat for UWR Chinook salmon, UWR steelhead, bull trout and/or Oregon chub
- Habitat is at imminent risk of being lost
- Potential to improve river dynamics and floodplain connectivity

The work elements address conservation land transactions, completing an environmental site assessment, property appraisal, and reviewing title of the property to assure that conservation actions can proceed. These elements are reviewed by technical experts (Oregon Department of Environmental Quality reviews environmental site assessments for OWEB; OWEB also has a professional appraiser review property appraisals). The RRT evaluates the proposed projects against the criteria, and OWEB staff prepares findings against the criteria for presentation to decision makers in the state (i.e. the OWEB Executive Director). The WATER group makes the final recommendation to BPA for funding.

In order to better understand how the selection criteria are applied to specific projects, we have evaluated the recent application for Harkens Bend against the selection criteria. This document is available for review in Attachment F. If projects do not consistently achieve a high score across the RRT, then discussions will occur with project proponents to improve the proposal or to seek alternate funding sources.

3. You have asked for ***"Site specific details about the BiOp RM&E plan… monitoring plans for two or three candidate sites (could be) presented. These could include monitoring protocols tailored to individual sites and indicate how these results would be rolled up to judge program effectiveness at larger spatial scales."***

The Program proposal was developed in conversation with the drafters of the BiOp Monitoring Plan to ensure overlap does not occur, and the two efforts appear to be compatible and complimentary. In addition, one member of the RRT also participates on the BiOp Monitoring Team. At this point we have developed two monitoring approaches that do not replicate what the BiOp RM&E Team has been discussing. As the RM&E Plan develops, we will work to assure compatibility.

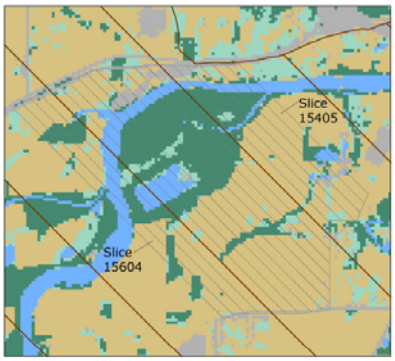
We understand that the approach we have developed – and funded – to systematically assess changes in land use and habitat across a large riparian system has not been used before. On the other hand, our search for an effective approach currently in use has turned up nothing. Further, we are informed by recent research Kibler *et al.*[1] (2010) that the more typical before/after/control approach may not be well suited for evaluating large-scale restoration actions. In the view of our team of scientists, the approach proposed will give us the best view of overall trends in river health.

At the same time, the two monitoring approaches we have developed have not been cross-walked, nor have the scales been "rolled up to judge program effectiveness." More specifically, we have not attempted to equate our broad-scale land use monitoring ("slices") with specific biological objectives at the Site, Reach, or River scales as presented in Table 4. To our knowledge, this sort of crosswalk has never been attempted, and could prove useful. At this point the State and the University are discussing how to develop this crosswalk, and we will share these results with the ISRP. (See Program additions page 31.)

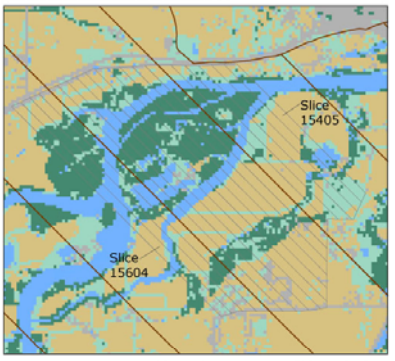
Finally, you have asked for an example of how the broad-scale land use and habitat monitoring would be conducted, and how the results would be presented. Figure 1, below, illustrates the type of display we anticipate. We have funded the University of Oregon and the River Design Group to evaluate flood storage along the river, and have also funded Oregon State University to provide information on cold-water habitats and native fish diversity.

[1] K. M. Kibler, D. D. Tullos and G. M. Kondolf. 2010. Learning from Dam Removal Monitoring: Challenges To Selecting Experimental Design And Establishing Significance Of Outcomes. River Research and Applications.

Land use/land cover ca. 2000



Land use/land cover 2050
(PNW-ERC Conservation Scenario)



Ecosystem Services Functional Matix
for 100m slices 15405-15604

	LULC 2000	**Conservation 2050**
Floodplain Forest	388 acres	389 acres
Channel complexity (surface area of water)	137 acres	195 acres
Flood storage	??	??
Fish richness	??	??
Cold water refuge	??	??

Figure 1: Monitoring reporting format

Responses to Specific Concerns and Questions

1. **The proposal lacks specific scientific details and sufficient description of restoration activities by location.**

We have attached specific examples of approved projects (Attachments A-E) that are in various stages of completion. If it would be helpful to provide further description or analysis of the proposals, please let us know.

2. **We request a summary of what has been learned from the existing habitat projects.**

Two projects that have been completed on the Willamette (Stephens Creek under the Willamette SIP and Green Island prior to the SIP) taught us much about the relatively slow response of a large river system. Projects on a large river system require more engineering, more work with up and downstream landowners, and cost more money than tributary projects. We have noted a similarity between large river restoration and baseball: long periods of boredom and little change are punctuated by moments of panic and excitement. The Willamette has been slow to produce results – but when it does, the results are substantial. In two high flow events at Green Island, the Willamette moved hundreds of cubic yards of material in its path, and continues to change the shape of the riverbed each month.

Since projects in the mainstem are a "higher stakes" game (greater cost, potentially greater benefits and/or liability), we believe it is important to place projects in the areas of greatest potential benefit. Toward that end, we have hired a consulting firm (River Design Group) to help us identify high benefit sites. We are looking for sites within our identified anchor habitats where riparian habitat can be substantially expanded by opening old side-channels or oxbows, and where lowlands can be inundated. If more water can be "stored" for short periods of time on these landscapes, we can ultimately increase river flows from the Willamette Projects without bumping into the "pinch points" that cause damage to man-made structures. Since the Corps of Engineers has not yet complete two, five, or ten-year floodplain maps for the Willamette, we are attempting to create them using LiDAR and river bathymetry. We have attached our initial scope of work with the River Design Group (Attachment H) so that the ISRP can see where we are headed.

We have also learned a number of painful lessons over the first two years of the SIP. It has not been easy to get high value mainstem projects in the pipeline for funding for several reasons. We have seen that watershed councils focus on tributaries where projects can be designed and implemented at lower cost, and liability is small. We have also noted that urban projects are costly where land is expensive, and in these areas biological benefits may not be great. This is apparent from projects at Stephens, Johnson, and Tryon Creeks in the Portland area. At the same time, providing a series of cool-water respite to migrating fish in the relatively warm urban corridor may be important – a hypothesis that needs further testing. The water coming from the Tryon Creek watershed is on average two degrees cooler than the Willamette mainstem at that

site. This in itself has provided another interesting lesson: that water-cooling can come from a variety of sources, including urban parks and hyporheic flows.

We have learned that permitting can be so slow that a project may die on the vine, either as a result of landowner impatience or agency (or private landowner) concerns over the project. The Mission Slough back-channel reconnection project (Attachment B) – which we thought could be covered under a general permit – was initially hung up in the regulatory permitting process, and has now stalled completely as a result of opposition from a neighboring landowner. This project demonstrates that a thorough science review and agency vetting of a project does not assure implementation, and – interesting in itself – that it will sometimes be easier to complete a project on private lands than public.

Perhaps the most significant lesson we have learned through the Willamette SIP is the realization that reintroducing channel complexity to the mainstem runs counter to more than a century of practice, policy, and understanding. Since the flood plain is dominantly privately owned and managed for agricultural production, working patiently and persistently with willing landowners and conservation land trusts is vital to our success. Initially, we found insufficient capacity among the land trust community to find and engage willing landowners, and through our partner the Meyer Memorial Trust (MMT) we increased that capacity. The next hurdle we encountered was that no conservation organization had the experience and capability to conduct multiple floodplain restoration projects on a large river system like the Willamette. To overcome this hurdle, once again the MMT invested in the capacity of local organizations to manage more and larger scale projects.

Finally, we have confirmed through Harkens Bend and Horseshoe Lake projects that having ready partnerships and flexible sources of funding are critical to being able to capitalize on opportunities as they arise.

3. **The review presumes the RRT has a significant role in project development (bottom of page 2).**

ISRP comments regarding independence of the RRT have given us pause for reflection. Mainstem restoration has been hampered by the capacity and success of efforts to engage landowners, as discussed in greater detail below. OWEB has a written policy on conflict of interest directed for use by grant application reviewers (Attachment G). In attempts to solicit high quality projects, several members of the RRT have indeed been involved in meeting with landowners to help them understand the benefits of habitat restoration.

Most RRT members are agency representatives that bring specific expertise to the table to assist in the review. Most of these agency representatives are not involved in project development or implementation. On the other hand, several of the managers – and on occasion several scientists – have been involved in meetings with landowners to help them understand the biological benefits of a potential project. In the future, we will draw this line more distinctly to avoid even the perception of a conflict of interest. In addition, we are currently rethinking the configuration

of the RRT; while we will continue to encourage funding entities such as BPA and the Corps to attend the RRT, they will attend as non-voting members.

4. **ISRP concerns about the RRT:**

    a. **Will reviews be based on scientific merit or other criteria?**

The project review is based first on scientific merit (see Attachment C of the proposal). We have other considerations as well, such as consistency with funding authorities, project readiness, the capacity of the organization to implement, and community support (or at least non-objection). We are not likely to proceed with projects that have scientific merit but are not supported in the local community; if we do, we may win the battle but lose the war. Yet we most assuredly will not proceed with projects that satisfy only local interests and do not satisfy ecological criteria.

    b. **How will potential conflicts of interest be avoided?**

OWEB has developed a conflict of interest disclosure policy for grant application reviewers (Attachment G). The policy will be provided to all reviewers and potential conflicts will be identified and discussed prior to developing recommendations. Given the make-up of the RRT, it would be unusual to have a project applicant among them, but should that situation arise, we have a policy in place to address it.

    c. **How will results of reviews be reported and disseminated?**

To date, the RRT reviews have been written and filed at OWEB along with decision documents for each project. In the future, decisions will also be posted on the OWEB website and made available to the public. (See Program changes pages 20 and 32.)

    d. **"It was unusual to see a BPA employee as a reviewer"**

While it may be unusual for a BPA employee to be involved in project review, we believe it is important for the fiscal management agency to understand the process and deliberations that go into a funding recommendation. This coordination will lead to a more efficient process in the long term. As stated earlier, we have created two tiers among the RRT similar to the approach used by OWEB, where some members have voting status, while others participate in the process but do not vote. (See Attachment A of Program proposal.)

5. **Concern about the different roles of ISRP and RRT, possibility of overlap and disagreement.**

We do not see a significant potential for overlap or disagreement between the ISRP and RRT because the scale of review is different. The ISRP is an excellent resource when it comes to scientific principles and guidelines, the breadth of what is known about fish and wildlife species in the Northwest, and models for all aspects of a project – from design through monitoring –

from across the Columbia Basin. The RRT is fortunate to also have top-notch scientists driving the review process. They know the specific fish and wildlife species and their needs in the Willamette Basin, the dynamics and history of the river. The RRT members know which species are already listed and which are likely to be listed if we do not take action soon. They understand research needs in the basin, and what the agencies and universities are doing about them. (Recently the Corps of Engineers organized a Willamette Research Symposium, where nearly 100 scientists spent two days discussing what is known about Willamette fish species.) Unlike smaller basins, where conservation practitioners may have responsibilities covering multiple regions, many of the RRT members have spent their entire careers working in the Willamette Basin. They are familiar with the restoration projects that have been completed, why they were (or were not) successful, and which others are being contemplated. For these reasons, our proposal assumes ISRP review of the criteria and process rather than individual projects.

Our proposal may differ from others under consideration of the ISRP in our ability to match state and private funds with federal assistance. In addition, we are building on twenty years of research and guidance – the compilation of which is set forth in the Willamette Planning Atlas. Several of our RRT members were primary authors of the Planning Atlas, and are uniquely qualified to screen the projects that help implement actions to address the Willamette Biological Opinion utilizing the Atlas as a guide.

We agree that reporting results to the ISRP is desirable to ensure the Program remains robust, that we understand the broader Columbia Basin context, and to share lessons learned. Our proposal has been modified to schedule an annual review of activities and monitoring results with the ISRP to engage in a review of progress, processes, and outcomes. (See Program changes page 32.)

6. **ISRP has suggested some general review principles in the past including that project proponents use project selection criteria that have been reviewed by ISRP, monitoring is conducted and results are reported.**

This recommendation seems to be directed at NPCC staff as a way of ensuring that programmatic proposals comply with basic standards. We applaud the concept, and encourage NPCC staff to move forward in developing guidance.

Regarding the development of project selection criteria, the Program partners started with the Lower Columbia River Estuary Partnership (LCREP) criteria that had been reviewed and approved by the ISRP. We incorporated and built on the LCREP criteria. Our approach does diverge some from that of LCREP, in part because we felt that a strict numeric rating system was too rigid for our purposes. The Habitat Technical Team (HTT) and the RRT have agreed to favor large projects (as reflected in the selection criteria), and thus will have funding for only a few projects each year. Given this dynamic, we anticipate that most recommendations for Program funding will be unanimous or close to that. If they are not, we will not proceed with them. We have also established a set of guidelines and a process (see proposal pages 20, 21) to ensure that both reviewers and applicants understand the process.

We agree with the ISRP that the overall scope and scale of project review in an umbrella project such as ours presents a policy issue. We would hope that the Council could address that issue and define the role of local and ISRP review. Let us offer a possible method for the conduct of those reviews. The RRT will serve as a local screen for projects implementing the SIP and the Biological Opinion. Projects clearly not meeting either set of criteria will fail at the RRT level. Projects meeting on SIP criteria and, therefore, not receiving any Program funding will also have only RRT review. Projects the RRT and HTT believe meet criteria to implement the Biological Opinion and receive Program funds will move forward through the system, and we will conduct an annual review of progress with the ISRP. (See Program changes page 32.)

7. **The specific RPA's should be listed in the narrative.**

The specific RPA's were mentioned in the proposal on pages 2, 10, 15, 16, and 19 where the specific purpose of the project is tied to the two RPA's. We will add the following language to the proposal from the Biological Opinion:

"7.1 Willamette River Basin Mitigation and Habitat Restoration: The Action Agencies will plan and carry out habitat restoration programs on off-site lands. Existing programs will continue (7.1.1); a comprehensive program will be established (7.1.2); and additional projects will be done (7.1.3). The purpose of the program will be to protect and restore aquatic habitat to address limiting habitat factors for ESA-listed fish.

7.1.1 The Action Agencies will continue to carry out the projects listed in Table 9.7-1 (below).

Table 9.7-1 Ongoing Habitat Restoration Projects in the Willamette Basin

Project/Program	Water Body	Description
Willamette Basin Mitigation (BPA 199206800)	Mainstem Willamette	Integrative mitigation program that protects, conserves, and restores areas containing diverse habitats that assist the life history needs and resources for multiple terrestrial and aquatic species in the Willamette Basin.
Delta Ponds (Section 206, USACE)	Mainstem Willamette near Eugene	Construction initiated in 2005 with the City of Eugene, and will continue. The project is providing floodplain and hydraulic connectivity to the Willamette River through a series of old gravel pits.
Springfield Millrace (Section 206, USACE)	Middle Fork Willamette near Springfield	Construction initiated 2008 with the City of Springfield. The project will restore historic millrace and mill pond and creation of wetlands, fish passage and water quality improvements.
North Santiam Gravel Study (Planning Assistance to States, USACE)	North Santiam River	This study was initiated in 2008 and will assess the need and potential locations for gravel placement in the North Santiam River.

7.1.2 The Action Agencies will develop and carry out a comprehensive habitat restoration program, in collaboration with the Services, which will include funding for carrying out habitat restoration projects during the term of this Opinion. The Action Agencies will work with the Services to pursue authorization, if necessary, and appropriations to carry out the habitat restoration program.

The Action Agencies will work closely with the Services to accomplish the following:

1. Develop project selection criteria aimed specifically at addressing factors limiting the recovery of Willamette basin ESA-listed fish populations, focusing on, but not limited to, those factors caused at least partially by the Willamette Project. These criteria should be informed by regional plans including Willamette Basin Recovery Plans for anadromous salmonids (ODFW 2007b), Willamette Aquatic Habitat Assessment (unpublished, see RPA measure 7.5), Willamette Subbasin Plan (WRI 2004), Willamette River Basin Planning Atlas (Hulse et al. 2002), and the COP evaluation (measure 4.13).

2. Identify proposals for habitat restoration projects.

3. Forward those proposals that meet project selection criteria to NMFS for review and determination if they are consistent with improving survival and recovery.

4. Fund priority projects, through applicable programs and processes (see Table 9.7-2), that NMFS and FWS determine to be consistent with recovery plans for their respective ESA-listed species.

Table 9.7-2 Authorities/Programs to Facilitate Implementation of Habitat Restoration Projects in the Willamette Basin

Program	Water Body	Description
Columbia River Basin Fish and Wildlife Program	Columbia Basin (including Willamette)	The Northwest Power Act of 1980 directs the Council to develop a program to protect, mitigate and enhance fish and wildlife of the Columbia River Basin that have been impacted by hydropower dams, and make annual funding recommendations to the Bonneville Power Administration for projects to implement the program. The Bonneville Power Administration then decides which projects to fund and implements the selected projects.
Continuing Authorities Program (CAP); (USACE Sections 206 & 1135 Programs)	Oregon	Continuing Authorities Program funds small restoration projects that address a variety of water resource and land related problems. A description of the CAP program is provided in section 3.5.2.3 of the Supplemental BA (USACE 2007a)
General Investigation Program (GI); USACE)	Oregon	Authority to conduct complex, large-scale, multiple purpose water resource projects. Applicable existing GI studies are described in Section 3.5.2.2 of the Supplemental BA and include: the Willamette River Floodplain Restoration Study; Eugene-Springfield Metro Area Watershed Feasibility Study, Lower Willamette Ecosystem Restoration Feasibility Study
Planning Assistance to States (PAS); USACE)		Authority to work with non-Federal sponsor to study and evaluate water and related land resource problems. Current study of North Santiam Gravel under this authority
Upper Willamette Watershed Ecosystem Restoration Authority (USACE Sec 3138 program)	Willamette watershed upstream of Albany	New authority from WRDA 2007 to conduct ecosystem restoration studies for the upper Willamette basin to protect, monitor, and restore fish and wildlife habitat.
Ecosystem Restoration and Fish Passage Improvement Authority (USACE Sec 4073)	Oregon	New authority in WRDA 2007 to conduct studies for ecosystem restoration and fish passage improvement on rivers throughout Oregon. Emphasis on fish passage and restoration to benefit species that are ESA listed. In conjunction with study, pilot project to demonstrate effectiveness of actions is authorized.
Sustainable Rivers Partnership with The Nature Conservancy	Willamette Basin	Cooperative agreement between USACE and The Nature Conservancy to assess and implement dam operational changes to better mimic natural river flows in the Willamette basin

7.1.3 By 2010, the Action Agencies will complete at least two of the highest priority projects that should result in significant habitat improvement for listed fish species. The Action Agencies will complete additional habitat projects each year from 2011 through the term of this Opinion. Alternatively, larger projects that might require several years to complete could be funded over a multi-year period instead of funding individual, smaller projects each year. NMFS will inform the Action Agencies whether they agree with the decision to fund and carry out these projects."

8. **Add Pacific lamprey, reduce non-native species, address water quality (at least consider it).**

Using the recent guidance developed by the U.S. Fish and Wildlife Service (see http://www.fws.gov/pacific/Fisheries/sp_habcon/lamprey/index.html), OWEB will consider the effects of restoration projects on lamprey. Due to the extreme scarcity of scientific information available currently on lamprey habitat preferences, restoration project effects on Pacific lamprey can be difficult to ascertain or quantify at present; however, lamprey will be considered as part of project selection and guidance. (See Program change to Appendix C, page 53.) Since the Biological Opinion focuses on four species affected by the main stem flood control project, our focus will remain with those species.

Comment [mjk1]: This is a problem the Tribe is encountering in other restoration efforts.

The concern about non-native species is shared by Program proponents. We are aware of the continuing relationship between non-native species and water temperature in the Willamette[2] and believe that efforts to secure and restore appropriate habitat for native species will assist in the recovery. Our proposal is to protect and restore habitat; we will leave species management to others.

Water quality is addressed in Question 16, below.

9. **Details on work elements or methods. Plans should lay out the background and justification for the projects, the target species to be benefited, the methods to be used to achieve the objectives for the site, the implementation schedule and the monitoring plan.**

We concur that project plans should include justification, target species, methods, an implementation schedule, and a site-scale monitoring strategy. We hope that by including specific applications that we have approved so far, the ISRP will be satisfied that these criteria have been met. In regard to reach, river, and broad-scale land use monitoring, these will be conducted by Willamette SIP staff and partners rather than project proponents. (Project applications have been included here in Attachments A-E; they are included in the Program proposal as Appendix I.)

10. **The ISRP would like to see a specific connection between project objectives and fish population recovery.**

Program proponents concur. Projects implemented under the criteria identified in the Program are expected to support fluvial processes that will result in habitat improvements and fish population recovery. At the scale of the entire Willamette basin, we expect that each project will provide small but important incremental benefit to fish population recovery. Channel morphology, water quality, resident fish use, and benefits to migratory Chinook and steelhead

[2] LaVigne, H.R., R.M. Hughes. R.C. Wildman, S.V. Gregory, and A.T. Herlihy. 2008. Summer Distribution and Species Richness of Non-native Fishes in the Mainstem Willamette River, Oregon, 1944-2006. Northwest Science 82(2): 83-93.

will be evaluated in the context of overall population viability. The UWR Steelhead and Chinook Recovery Plan (in final review now), will be used to guide the population focus, prioritizing both those reaches with the populations most expected to contribute to the overall recovery, and those reaches with a high number of populations benefitting. Several members of the RRT and HTT also participate in development of the Willamette Steelhead and Chinook Recovery Plan to ensure the recovery plan guidance is carried into the Program.

11. Why the new approach would succeed where previous efforts have been unsuccessful.

While we note in the proposal that many fish and wildlife species continue to decline, that is likely the result of factors not extensively discussed in this proposal. First, the Willamette River Basin covers more than 7.3 million acres and is home to 2.7 million people. The Willamette mainstem itself is more than 200 miles long. The number of restoration projects needed to reverse the decline of species in this basin is – without a doubt – greater than the number that has been undertaken to date. As the ISRP is aware, restoration of fish habitat may commence with completion of a project, but may take 20 years or more to realize a substantial benefit.

Thus it is not that this project will succeed where others have failed; rather, this project will supplement those that have been completed. It is targeted at the mainstem, where projects have been slow to emerge. It establishes a restoration strategy of anchor habitats that partners will work together to implement. It will also for the first time attempt to measure the overall success or failure of our collective attempts to restore the health of the mainstem, and ultimately tie this broad-scale monitoring to the monitoring of key program objectives.

12. Experimental management approach (treatment-control) was not the focus of the project. ISRP believes such an approach would be appropriate.

The Monitoring Program has been modified to include a structured experimental approach to access channel change, habitat conditions, and fish use. (See Program proposal pages 23 to 25.) We have the capacity to apply a randomized Geospatially Referenced Tessellated Stratified (GRTS) status and trend monitoring for the Willamette at the basin scale. The GRTS selection of sample sites can be linked to the nearest “slice” to evaluate status and trend in channel morphology and riparian condition.

Reach or Project scale effectiveness monitoring can be developed from the “slices” analysis used to identify potential sites. Reaches with appropriate characteristics will be evaluated using a Before and After Control Impact (BACI) design for higher resolution habitat evaluations such as ODFW’s Aquatic Inventory protocols, to document use by migratory fish, and to characterize resident fish populations.

Application of a BACI design to the complete set of reaches prioritized for acquisition and habitat improvement will continue long enough to document changes in key monitoring parameters. We intend to compare reaches with similar geomorphic characteristics such as river

confluences or reaches with high potential for floodplain connectivity; however, as projects are developed over time, and as we learn more about how restoration occurs, we may need to consider including some of the control reaches as candidates for potential treatment.

13. How would monitoring take place in the event of a large-scale event (flood, etc.)?

In the event of a large scale flood disturbance, the "slices" approach would continue to provide the information needed to assess channel impacts. Additional LIDAR analysis might be needed to document areas with significant erosion or deposition of sediment. However, we believe that large scale floods may have less impact channel forming processes than the frequency and duration of bank-full flow events. We expect that the greatest amount change in side channel and off channel habitats will occur during high water events up to bank-full flows. These changes will be well documented using both the "slices" approach and by evaluation of the reaches included in the BACI design.

A particular note on Oregon chub: changes in fish community structures resulting form large flood events will be evaluated based on existing monitoring for Oregon chub to document establishment of new habitats and to determine if the flood event resulted in introduction of non-native predators to chub habitat.

14. The biological metrics that relate to overall project goals should be more completely described (i.e. fish recruitment).

We agree, and will continue to develop standard metrics for evaluating fish recruitment and other biological objectives through our work on the BiOp RM&E Oversight Team, and in tying broad-scale land use monitoring to program objectives.

15. Recommend consideration of using LiDAR.

OWEB has invested $1.5 million to ensure LiDAR coverage for the Willamette floodplain is complete. The Oregon Department of Geology and Mineral Industries organized a LiDAR consortium to partner with others to obtain coverage of other areas of the state. While this information is available now for project design and analysis, MMT recently contracted with River Design Group to make the LiDAR data more easily manipulated by watershed councils, SWCDs, and others who may lack the large computer capacity needed to make the LiDAR useable. OWEB and MMT have also contracted with the University of Oregon to populate the Willamette River "slices" with flood storage values being calculated from the LiDAR data. All of the projects will have relatively accurate elevation data for project planning and preliminary design.

16. Water quality monitoring should be expanded.

Our original application fails to mention that both the Oregon Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA) are major partners in the Willamette SIP (See additions to proposal pages 17, 18, and 19). DEQ participates on both the RRT and HTT, and EPA was an original partner in the Willamette Atlas project and continues to participate on research at Green Island. In addition, OWEB has recently hired (through an Intergovernmental Agreement) an EPA hydrologist from the Corvallis Research Lab to work on the Willamette SIP.

The DEQ record of water quality monitoring in the Willamette Basin was constructed from a network of fixed sampling sites in both the mainstem and major tributaries. For a list of DEQ programs and monitoring studies that address Ambient Water Quality Monitoring in the Willamette Basin, refer to this website: http://www.deq.state.or.us/lab/wqm/docs/09-LAB-008.pdf. For a description of the Total Maximum Daily Load (TMDL) for Temperature, Bacteria and Mercury reductions in the Willamette, refer to this website: http://www.deq.state.or.us/wq/tmdls/willamette.htm.

These studies document the trends in Oregon's water quality over time, determine whether there is too much pollution in a water body, and set limits of how much pollution a water body can safely receive. Principles for improving water quality in the Willamette Basin under these programs parallel concepts contemplated in the Willamette SIP (e.g., expansion and protection of natural areas to improve natural functions, and creating cold water refugia for aquatic species).

DEQ's most recent December 2009 *Willamette Basin Rivers & Streams Assessment (*http://www.deq.state.or.us/lab/wqm/assessment.htm) summarizes information collected over a decade by DEQ monitoring staff, watershed councils, municipalities, EPA, university researchers, and EPA contractors in the Willamette. OWEB provided funding for publication of this assessment. The assessment provides information on watershed conditions facing threatened salmon, and concludes that actions to protect and restore streams are likely to improve the biological health of the Willamette Basin River and will help improve water quality and reduce water quality temperature and sediment inputs. The report also provides a set of baseline conditions which can be used to measure changes in the status of biological, chemical, and habitat conditions (e.g., water temperature, dissolved oxygen, habitat conditions, turbidity).

We agree with the ISRP comment pertaining to expanding water quality monitoring, and have amended the proposal to include protocols that are tailored to the baseline conditions and match the time period for the applicable fish life stage (see Program proposal, page 24). We expect that the proposed projects will reduce stream temperatures, sediment runoff, nutrients, and improve water quality overall. This monitoring will occur at the project scale. In the future, we believe that the proposed monitoring for this program will provide the foundation for interpreting the effectiveness of the cumulative effects of protection and restoration at a larger scale, and can be used to assist with future decisions pertaining to population growth, land use conversions, and emerging water quality issues.

As for monitoring pharmaceuticals and personal care products and assessing wastewater treatment plant impacts near potential project sites to determine their impacts on fish health and human fish consumption risks, we believe these are beyond the scope of the Program. Monitoring and implementing strategies are already underway and covered under DEQ's Toxics Reduction Strategy (http://www.deq.state.or.us/lab/wqm/toxics.htm), and Senate Bill 737 Implementation for Priority Persistent Pollutants (http://www.deq.state.or.us/wq/SB737/index.htm). In areas such as the Lower Willamette/Portland Harbor, key interagency source control strategies are in place for toxic chemical source control, reduction, and management. Where possible, we will continue to rely on the efforts and findings under the above agency and partner programs to improve the effectiveness of the Program proposal, while maintaining our intended focus on restoring aquatic habitat for the target species.

Improving riparian conditions and reconnecting the Willamette to the floodplain will play a role in the toxics reduction strategy by creating buffers to prevent airborne and land-applied chemicals from getting into rivers and streams and attenuating flows on the mainstem to reduce erosion of sediment laden with toxics, respectively. Additionally, while the Program is not intended to focus on toxics in the Willamette Basin, it does include the monitoring and assessment of surrogates for the potential loading pathways for such parameters as mercury and other heavy metals, and pesticides.

In conclusion, we appreciate the opportunity to clarify specific points in the Program proposal. To facilitate translation from this letter to actual changes in the proposal, we have attempted to provide page number references. In addition, we have attached a revised version of the full proposal using "track changes" for easier reference. If other information would be helpful, do not hesitate to contact us.

Sincerely,

/S/

Ken Bierly
Deputy Director, OWEB
On behalf of Project Applicants

Attachment A – Stephens Creek Application and Funding Memo
Attachment B – Tryon Creek Application and Funding Memo
Attachment C – Willamette Slough Application and Funding Memo
Attachment D – Friends of Buford Park Application and Funding Memo
Attachment E – Harkens Bend and Horseshoe Lake Application
Attachment F – Site Selection Criteria Applied to Harkens Bend
Attachment G – OWEB Conflict of Interest Policy
Attachment H – Contract with River Design Group
Attachment I – Revised Willamette River Habitat Protection and Restoration Program

Section I
APPLICANT INFORMATION

Type the information for Sections I and II **USING ONLY the pages provided** (or reproduce the pages on your computer **using the spacing and layout shown, NOT TO EXCEED 2 PAGES)**

Sections I and II must accompany your application
THE FIRST 2 PAGES ARE NOT THE PLACE TO DESCRIBE YOUR PROJECT IN DETAIL

Name of project: Lower Willamette River Off-Channel Habitat Restoration at the confluence of Stephens Creek

OWEB dollars requested: $200,000.00 **Total cost of project**: $973,190.29

Project location:

This project occurs at (check one): ☒ **A single site** ☐ **Multiple sites**

Willamette and Stephens Creek
Watershed(s)

Multnomah
County or counties

1S1E22DB
Township, Range, Section(s)

45.28.13N,122.40.11W
Longitude, Latitude (if available)

Applicant: City of Portland Environmental Services

Official Contact (if different): Paul Ketcham

Email: paul.ketcham@bes.ci.portland.or.us Phone: 503.823.5549 Fax: 503.823.6995

Street: 1120 SW 5th, 10th Floor City: Portland Zip: 97204

Technical Contact (if different): Jennifer Goodridge

Email: Jennifer.goodridge@bes.ci.portland.or.us Phone: 503.823.4899 Fax: 503.823.6995

Landowner (see Instructions): The property is owned by the City of Portland

Fiscal Officer (if different): Andi Gresh **Affiliation:** City of Portland

Email: andig@bes.ci.portland.or.us Phone: 503.823.7623 Fax: 503.823.6995

Street: 1120 SW 5th, 10th Floor City: Portland Zip: 97204

Section II
PROJECT INFORMATION

1. **Abstract.** In the space provided, and in 150 words or fewer, state 1) the problem, 2) the proposed solution, 3) other partners involved, and 4) how OWEB funds will be used.

The proposed project at the confluence of Stephens Creek and the Willamette River seeks to sustain the River's biological integrity with deliberate focus on enhancing Willamette River shoreline habitat. The project reverses the trend of habitat loss and alteration by enhancing existing historic floodplain wetland habitat and potential juvenile rearing habitat available to juvenile salmon of the Willamette basin. Problems to be addressed are floodplain connectivity, habitat diversity, shoreline complexity, off-channel habitat and the need for continued public involvement. Federal, state and regional governments and non-profit organizations recognize the need and importance of reclaiming and restoring lost habitats in the lower Willamette River. OWEB's involvement in this partnership includes investing in bank restoration and off-channel construction, installing shoreline complexity, removing invasive plants and revegetating wetland and riparian areas. In addition to OWEB, project partners include LCREP, Willamette Riverkeepers, South Portland Neighborhood Association, and ODEQ

2. **Was this application submitted previously?** ☒ Yes ☐ No
   If yes, what was the application number? **208-3036**

3. **Is this project a continuation of a previously OWEB-funded project(s)?** ☐ Yes ☒ No
   If yes, what was the application(s) number?

4. **Project Partners.** In the table below, show all anticipated funding sources (do not include OWEB) and indicate by checking in the appropriate box the nature of their contribution. Be sure to provide a dollar amount or value for each funding source. If participation is in-kind, briefly describe the nature of the contribution in the first Column.

Funding Source (if in-kind, briefly describe the nature of the contribution)	Cash (X)	In-Kind (X)	Secured (X)	Pending (X)	Amount/Value
City of Portland	X		X		$259,438.34
City of Portland		X	X		$199,742.95
TNC	X		X		$14,000.00
LCREP/BPA	X		X		$253,309.00
NOAA/FishAmerica	X			X	$42,200.00
Oregon Dept of Env'l Quality VIA-volunteer planting/weed control events		X	X		$4,500
Total Estimated Funds (add all amounts in the far-right Column):					$773,190.29

5. **Have any conditions been placed on other funds that may affect project completion?**
   ☒ Yes ☐ No

If yes, explain: As a public entity, the City of Portland approves budgets each year to authorize expenditure of public funds. This project is a high priority and is in the Bureau of Environmental Services five year plan.

Attachments — Complete and attach to the back of your application:

☐ *Project Maps: 1) Provide a vicinity map showing township, range, and section (TRS), and the project location. 2) On a USGS 7.5 min. topo quad map, or on an aerial photo showing TRS, locate the extent of your project and site-specific activities. **Provide maps on 8½" x 11"** pages and include a legend.

- ☐ *Preliminary Project Designs: Provide sufficient detail to allow a reasonable evaluation of the proposal and of the effect of the project on the site. The preliminary design should include reference to appropriate standards and guidelines.
- ☐ *Photographs: Provide photographs to aid in understanding the situation. If color photos are necessary to convey information important for application review, supply 25 copies of each photo. **Note: If your project is funded, pre-project photos will be required in the final report.**
- ☐ Letters of Support from project partners or others, as appropriate.

* **IMPORTANT:** Avoid color and detail that will not photocopy clearly. Otherwise, provide 25 color copies of any maps, photos, or project designs that you want OWEB reviewers to see in color. Multiple copies must be collated and stapled into separate packets for distribution to the reviewers. This is the only exception for the use of staples.

Section III
SPECIFIC RESTORATION PROJECT ACTIVITY

These essay questions and their answers are designed to step you and reviewers through a logical process from understanding and identifying the problem to "fixing" the problem and measuring for success.

Answer the questions in 12-pt type size, single spaced, on single-sided pages. Use bullets where appropriate. Use **bold face** and *italics* for emphasis only. If the project involves multiple sites, be specific for each. **Refer to the Instructions for clarification and helpful examples.**

R1. Contextual Overview

Provide a brief contextual overview of where the project will be implemented. Describe the key watershed issues. Describe the key water quality, water quantity, species, habitat, and resource management issues (physical or social) that are limiting conditions. Also briefly describe the process used to identify and prioritize restoration issues. DO NOT describe the project here; you will do so in question #R3.

The Lower Willamette River Off-Channel Habitat Restoration Project at the mouth of Stephens Creek is located at river mile 16.2 on the west side of the Willamette River between the Sellwood and Ross Island Bridges. The Stephens Creek watershed drains approximately 754 acres of southwest Portland, and enters the project area through two metal corrugated culverts (36" and 48") that pass under the greenway trail. This section of the Willamette is tidally influenced with average diurnal fluctuations of 2.4 feet per day; however the tidal fluctuations can range up to 8 feet per day. Portland-area urban activities such as channel deepening and straightening, bank hardening, removal of vegetation, and increases in impervious surfaces have impacted the habitat value along the banks of the Willamette River. Continued growth in the Willamette Basin and in Portland will exacerbate these trends.

The site provides critical rearing and refuge habitat for native, ESA-listed Chinook, coho salmon and steelhead. Additionally, the site provides habitat for rainbow and cutthroat trout, and Pacific and brook lamprey. ODFW sampling conducted in 2001-02 indicates that a diverse assemblage of juvenile salmon and other native fish use this segment of off-channel habitat in Stephens Creek as critical rearing and refuge habitat. Additional species that utilize the project area include neotropical migratory songbirds, bats, and native amphibians and reptiles.

The following factors limit the habitat on site:

- Non-native species dominate the understory vegetation
- An exposed concrete pipe forms approximately 80 feet of the bank along Stephens Creek and the pipe is exposed near the confluence of the Willamette River. This is causing streambank erosion, decreased shading to the stream, and it limits the connection between Stephens Creek and the adjacent floodplain wetland.

- The exposed pipe deflects stream energy to the opposite bank resulting in bank erosion and sediment deposits which increase the turbidity and impair water quality conditions in Stephens Creek.
- The shoreline of the Willamette River and Stephens Creek lacks habitat complexity
- Nearly 90% of off-channel habitat historically present has been eliminated from the lower Willamette River. According to the *Comprehensive Wildlife Conservation Strategy* (ODFW 2005). The off-channel habitat that remains is used for foraging and refuge by juvenile salmonids.

Although the site provides important off-channel habitat, the in-stream habitat within this section of Stephens Creek received a marginal habitat rating during an evaluation of the site conditions by Harza Engineering Company (Harza 2000). In their report, Harza notes that in stream habitat "was limited mostly by excessive amounts of fine sediment and lack of stable, complex in-stream cover." This report has been reviewed and accepted as a habitat condition assessment by the Willamette Watershed group.

In 2004, Portland Parks and Recreation conducted a Natural Area Vegetation Survey at the Willamette Moorage Park site. This assessment classified the site as deciduous woodland with poor ecological health due to the amount of invasive species cover. This report documents conditions within all parks natural areas and serves as the Parks Bureau accepted vegetation assessment.

With the potential to improve the in-stream habitat and on-site vegetation communities, this project is ranked as the highest priority project in the Stephens Creek Sub watershed Improvement Strategies Report (BES 2004). The sub watershed plan was developed to implement the Portland Watershed Management Plan (BES 2005).

R2. Problems to Be Addressed

Use a table similar to the example below to provide site-specific information for the project: a) The specific problem(s) you are addressing; and b) the *root cause(s)* of the problem(s). DO NOT describe the project here; you will do so in question #R3.

Specific Problem(s)	Root Cause(s) of the Problem
Limited floodplain connectivity	An exposed concrete pipe confines the northern boundary of Stephens Creek so that this segment of stream is currently disconnected from the adjacent floodplain wetlands. If this stream were not confined to its current location, then it would have a 3.5 acre floodplain wetland to meander through a naturally formed channel.
Lack of habitat diversity	The understory dominance of invasive plants limits the structural habitat complexity and wildlife habitat on site. In addition, the dominance by reed canary grass and impatiens is limiting the recruitment of new trees and shrubs on site.A heavy level of invasive plants is present and the project site is in poor ecological health (Portland Parks & Recreation Vegetation Survey, 2004).
Lack of shoreline complexity	Historically, the forested areas contributed large wood to the creek and river. Urbanization has greatly diminished the amount of large wood in the riparian area.

Specific Problem(s)	Root Cause(s) of the Problem
	This site has not accumulated large wood because the Willamette Moorage blocks or deflects some of the potential for large wood accumulation on the shoreline. Watershed development also limits the amount of large wood that might come from the upper watershed.
Lack of off-channel salmonid habitat	Off-channel habitat areas have been eliminated in much of the lower Willamette River; those that remain are used for foraging and refuge by juvenile salmonids (ODFW 2005). Nearly 90% of off-channel habitat historically present has been eliminated from the lower Willamette River. A number of species would benefit from the improved off-channel habitat on the Willamette River because these areas are used during winter months as rearing and refugia habitat. These habitats are also used for summer rearing, if they remain suitable, as they provide cool water refuge. Coho salmon, Chinook salmon, steelhead, and lamprey have been observed in the project area (ODFW 2003). Juvenile lamprey will use silt/sand deposition areas, such as those at the mouth of Stephens Creek, for filter feeding during their migration to the ocean (Kostow 2002).
Need for full involvement of public	Opportunities for public involvement are available but limited due to staffing and budget constraints. The demand for volunteer events and environmental education exceeds the capacity to meet the demand.

R3. Project Description

Use a table similar to the example below to describe the proposed action. The degree of detail should match the project complexity and technical difficulty to allow for full evaluation of the technical viability. For projects involving multiple sites, be sure to identify them separately, as appropriate. See the Application Instructions for definitions of "measurable objectives" and "practices," and as well as for helpful examples.

Specific Problem(s) (Repeat from #R2)	Measurable Objectives	Proposed Practices, Detailed Descriptions, and Root Causes
Limited floodplain connectivity	Remove the infrastructure that constricts stream channel movement through the adjacent floodplain	Proposed Practice: Remove a concrete pipe, regrade bank, and re-establish native plantings. Detailed Description: Design drawings are at 60% completion and they include a grading plan, erosion control plan, large wood placement plan, construction mobilization/phasing plan, and a revegetation plan. ODFW staff Michsa Connine and Tom Murtagh reviewed the draft Biological Assessment and support the proposed pipe removal, grading plan, and large wood placement, as well as the proposed work isolation plan, fish salvage,

Specific Problem(s) (Repeat from #R2)	Measurable Objectives	Proposed Practices, Detailed Descriptions, and Root Causes
		and sediment and erosion control measures. Local, State, and Federal permits are being prepared and information is being submitted to the City of Portland's Streamlining Team (comprised of agency representatives who have responsibility for permitting (more detail in appendix)). With permits in place and designs at 100%, the City of Portland will prepare construction bid documents, complete a public procurement process, award a contract, and initiate the notice to proceed with the selected contractor. Details about pre-construction activities and practices to be employed during construction are found in the appendix labeled, 4.0 Measures to Avoid and Minimize Impacts. The 280 foot long and 5' diameter concrete pipe will be removed. The top of the pipe is currently 1-6 feet below the existing ground surface. The side of the concrete pipe is currently exposed for approximately 80' long on the north bank of Stephens Creek. Approximately 10 feet of pipe is also exposed near the confluence with the Willamette River. In areas where the pipe is not exposed, a trench will be excavated at a 1:1 slope surrounding the concrete pipe and this removal will not involve earthwork below the OHW level. The pipe will be removed and hauled off-site for disposal at an approved upland confined facility. The trench backfill material will re-utilize material excavated from the remnant channel excavation on site. In the two areas where the pipe is exposed, the stream banks will be re-built at a 3:1 slope. Large wood, re-vegetation, and jute fabric will be installed to stabilize the banks and provide riparian habitat. To provide bank stability, soil lifts and a footer log (along the base of the slope) will also be installed on the northern bank of Stephens Creek. Throughout the entire restored channel section, streambanks restored to provide favorable planting surfaces for emergent and scrub shrub, riparian and floodplain plant communities. Areas impacted by construction and those adjacent to construction will be seeded and revegetated (details in habitat diversity objective).

Specific Problem(s) (Repeat from #R2)	Measurable Objectives	Proposed Practices, Detailed Descriptions, and Root Causes
Lack of habitat diversity	Enhance 3.5-acres of wetland and riparian areas with native plant vegetation and habitat elements	Proposed Practice: Restore wetland and riparian habitat through invasive species removal and revegetation. Detailed Description: Invasive species will be removed and native plants will be established in wetland, riparian and floodplain habitats. Planting will include installation of rooted cuttings, woody plantings and seeding of native herbaceous species. Revegetation will enhance functional habitats and will provide an immediate and long-term source of organic material along the Willamette River shoreline. In addition, revegetation will provide cover for fish to hide and rear, and will provide important shade and canopy cover. The project shall increase density of native trees, shrubs, and herbaceous ground cover species among existing stands of native hardwoods, which will reinforce native plant coverage of the site and help to exclude invasive plant species. The visibility of the site location makes it ideal for engaging volunteers to help restore the native plant vegetation. Citizen stewards will invest ~300 hours during two volunteer planting events along the riparian area of the project site. Revegetation will follow the City of Portland's Watershed Revegetation Program protocols for site preparation, native plant selection and installation, and plant establishment and monitoring. Project staff will consult the Oregon Aquatic Habitat Restoration and Enhancement Guide for guidance and considerations on freshwater wetland restoration and large wood placement. Steps followed include: Site restoration by the BES Watershed Revegetation Program and their contract crews will include revegetation to enhance the existing vegetated areas on site (approximately 3.5 acres) and to restore areas disturbed during project construction, which includes approximately 0.30 acres of wetland, 0.2 acres of streambank, and 0.15 ac of off-channel backwater habitat. Revegetation will include control of existing invasive plants and installation of native herbs, shrubs, and trees. The location of proposed plant communities and the plant species, size, and quantity that correspond to each plant community is found in the planting

Specific Problem(s) (Repeat from #R2)	Measurable Objectives	Proposed Practices, Detailed Descriptions, and Root Causes
		plan. Plant species were selected based upon existing vegetation on site and other species appropriate to Willamette River floodplain wetlands. The floodplain forest canopy is dominated by pacific willow (*Salix lasiandra*), some Oregon ash (*Fraxinus latifolia*), and some black cottonwood (*Populus trichocarpa*) in higher elevation areas. Wetland emergent plugs of *Leersia oryzoides* (rice cut-grass) will be installed in the off-channel backwater area, on one-foot spacing. The bank revegetation will include installation of willow (*Salix lasiandra* and *Salix fluviatilis*) and red osier dogwood (*Cornus sericea*) live pole cuttings in clusters of 10 spaced around the large wood installations. Bank slopes will be planted to an elevation of 10 feet and below this elevation it is anticipated that the banks will remain similar to existing conditions, which consist of unvegetated sand due to high water levels. Plants will be installed by the BES contract crews with an average density of 820 trees per acre and 820 shrubs per acre. Trees will be spaced on approximately 5.5-ft grid, while shrubs will typically be installed in clusters of 3 to 10 depending upon species, spaced a minimum of 10 ft between clusters. Plantings will be maintained and monitored to ensure full site occupancy of native plants within ten years. Monitoring data will be compiled annually as per the BES Revegetation Program Monitoring and Documentation Protocol. A complete list of species to be planted is found in the appendix. Structural habitat elements for wildlife use will be incorporated, such as utilizing the trees and brush removed during construction as brush piles for cover and structure for small mammals, birds, amphibians, and reptiles. Several snags have also been incorporated into the project design to provide perching and foraging habitat for birds on site. Bird and bat boxes will be installed. Placement and quantities of these boxes will be determined during final design. Site preparation and ongoing vegetation maintenance will be in accordance with the City of Portland Parks and Recreation Integrated Pest Management Plan (IPM) (2007). This plan outlines site management considerations that

Specific Problem(s) (Repeat from #R2)	Measurable Objectives	Proposed Practices, Detailed Descriptions, and Root Causes
		will be followed in order to select the vegetation maintenance methods.
Lack of shoreline complexity	Install large wood	Fourteen large wood complexes will be installed in Stephens Creek, the remnant channel, and the banks of the Willamette River. In total, approximately 57 logs with rootwads, 3 snags, 16 pin logs, and 28 logs will be placed on site (79 purchased, 25 removed by construction and reused). Each large wood complex will consist of 3-13 logs that vary in size and brush piles will also be incorporated into the complexes. The larger pieces of wood (a minimum of 18" in diameter) will consist of Doug fir (*Pseudotsuga menziesii*) or black cottonwood (*Populus balsamifera*) with rootwads intact. These larger pieces will be imported to the site to ensure that these key logs will be hard, intact, and undecayed. Smaller diameter wood will be from trees removed during construction or from wood imported to the site. The large wood complexes will be installed at a variety of elevations such that the wood will be exposed and underwater at a variety of water levels. Wood complexes will be buried into the stream banks for natural anchoring. In general, approximately 1/3 of the log will be exposed and 2/3 will be buried. Key logs and pin logs will also be used to anchor other pieces of wood. Large wood installed on the north bank of Stephens Creek will not extend south into the channel thalweg. Placement of large wood along the channel is being designed, permitted and installed by a private consultant, specifically a design engineer with experience placing wood complexes in large river systems, with collaboration and oversight by the City of Portland staff. Large wood structures in Stephens Creek will enhance the quality of this foraging and rearing habitat area, providing cover and local scour pools. Large wood structures in the historic channel will provide complex structure and cover for fish using these areas for refuge from Willamette River flows. The large wood structures, revegetation, and minor regrading proposed on the riverbanks will improve beach habitat across the entire site by introducing complex structure and providing overhanging vegetation.

Specific Problem(s) (Repeat from #R2)	Measurable Objectives	Proposed Practices, Detailed Descriptions, and Root Causes
Lack of off-channel salmonid habitat	Create off-channel habitat	Proposed practice: Create approximately 200 feet of off-channel habitat and install large wood complexes. Detailed Description: An existing remnant channel will be excavated to create off-channel habitat. Shallow excavation in the remnant historic Stephens Creek channel will provide off-channel backwater habitat for 25% of the rearing season. This area is currently accessible less than 12% of the rearing season. The proposed excavation will extend approximately 200 feet west into the remnant channel and excavation depths will range from less than 1 foot at the west end to almost 9 feet near the confluence, more than doubling the amount of time this area is accessible to fish. There is currently a berm near the confluence of the historic channel and the Willamette River which explains the nine foot excavation depth; most of this area will be excavated less than 4 feet. The side slopes within the excavation area will vary from 3:1 to 5:1, but all excavation will be within the existing channel to minimize disturbance to existing vegetation on the channel slopes. The width of the channel bottom will vary from 3-10 feet wide. This area will be re-vegetated (details in habitat diversity objective). The work isolation plan, fish salvage, and erosion and sediment control plan will also be implemented in this area.
Need for full involvement of public	Actively reach interested public through publications, media, meetings and planting events.	Proposed Practice: Actively inform and involve the public in the partnership with OWEB and others to restore watersheds. Detailed Description: Public outreach and involvement opportunities will aim to create community awareness and enhanced community support for this project, as well as other citywide watershed work. BES staff will coordinate public outreach and involvement for the project and will work closely with the partners listed above through the South Riverbank Project's CPT. Outreach activities (have included and) will include several events: ▪ Kick Off Event – introduce area residents to the project – March 2007. ▪ Community Design Review – invite interested community members to review the final (or 60%) design and provide feedback prior to permitting

Specific Problem(s) (Repeat from #R2)	Measurable Objectives	Proposed Practices, Detailed Descriptions, and Root Causes
		▪ Wrap Up Event – acknowledge and celebrate project completion It is anticipated that volunteers will assist with planting at the project site during the winter of 2009. o Community Planting Events – The Central Planning Team shall recruit and lead volunteers in native plantings at two events o Tours – The Willamette Riverkeepers shall host two guided tours of the restoration site.

R4. Other Related Plans/Efforts

a) Explain how the project complements other efforts under way or completed in the watershed; b) Explain how the project implements a local area plan (e.g., watershed assessment/action plan, TMDL, agricultural water quality plan). Provide the name and date of the plan(s), and where and how the plan(s) identifies as a priority the problem(s), which the project proposes to address; and c) Explain whether the project implements a regional plan (e.g., ESA Recovery Plan, Coastal Coho Assessment, OWEB Basin Priority Plan, NWPCC Subbasin Plan, and Groundwater Management Area). Provide the name and where and how the plan identifies as a priority the problem(s), which the project proposes to address. (See the Application Instructions for helpful links to various regional plans).

The proposed project at the mouth of Stephens Creek seeks to sustain the biological integrity of the lower Willamette River with deliberate focus on enhancing Willamette River shoreline habitat. The project seeks to reverse the trend of habitat loss and alteration by enhancing existing (but impaired) historic floodplain wetland habitat and by enhancing potential rearing habitat available to juvenile salmon of the Willamette basin. Federal, state and regional governments and non-profit organizations recognize the need and importance of reclaiming and restoring lost habitats in the lower Willamette River.

Historically, the Willamette River in the Portland area had an extensive and interconnected system of active channels, open slack waters, emergent wetlands, riparian forest, and adjacent upland forests on hill slopes and Missoula Flood terraces. Prior to settlement, the river was embedded in the regional forest network and intricately connected to the Columbia floodplains. Areas along the riverbank probably were difficult to distinguish from the surrounding green, forested environment. Significant dredging, diking, and channeling of the mainstem Willamette have altered many of these historical conditions. The mainstem has been narrowed and deepened and off-channel habitat has been virtually eliminated. The river's banks have been hardened, which precludes important naturally caused channel changes and minimizes the interaction between the river and riparian and floodplain vegetation. Habitat has been simplified and large tracts of riparian vegetation have been cleared. As a result of these actions, significant amounts of shallow water, floodplain, off-channel habitats have been lost, and fish access to resting and rearing sites along the Lower Willamette River is limited.

As stated in Chapter 3 (Assessment) of the Willamette Sub basin Plan (page 1-1 to 1-2) "Much of the native habitat upon which the focal species of the Willamette Sub basin Plan depend is no longer available, no longer accessible, or heavily degraded... Off-channel habitats such as alcoves and side channels have been reduced by 35 percent and 55 percent, respectively, on the mainstem Willamette River... Throughout the lower

Willamette River (through Portland), the channel has been deepened, narrowed and simplified; the banks have been hardened and lined. Floodplain and off-channel habitats have been filled or disconnected, and banks have been steepened; and a long history of urban and industrial uses has resulted in increased sediment, soil and water quality impairment".

Local (City of Portland, reference EDT analysis) and regional (Willamette Sub basin Plan 2005) analysis has shown that restoration of the complex network of shallow water habitats in the lower Willamette has the potential to **contribute significantly** as rearing habitat for tributary spawning populations such as those from the Clackamas. For all six populations combined, the Portland area had the second highest rank for restoration value.

The Northwest Power and Conservation Council's (2005) Willamette Sub basin Plan specifically identifies the Lower Willamette River as being significant for the restoration and protection of Upper Willamette River fish populations, notably those originating from the Clackamas, McKenzie, North and South Santiam and Middle Fork Willamette rivers.

Regionally, the Lower Columbia River Estuary Partnership (LCREP) identified *"loss of wetlands and habitat"* as the number one priority to be addressed in the Estuary (LCREP Management Plan - p. 46). A second priority is to reverse the "*decline and loss of species*". Completion of the project will help to address these two priorities. In addition, the project will meet multiple actions proposed by LCREP to address Habitat and Land use (1, 2, 4, 6, and 11) and Education and Management (14, 15, 18 and 20).

The Oregon Department of Fish and Wildlife (ODF&W), in its Comprehensive Wildlife Conservation Strategy (2005 Public Review Draft), identifies several statewide "Conservation Opportunity Areas" where restoration should be focused. Strategy notes that restoration of the Willamette floodplain has important implications not only for wildlife habitats, but also for the social and economic factors resulting from restoring ecological function such as flood control and improvement of water quality.

In 2002, Metro completed an inventory of regionally significant riparian and wildlife habitat resources, Metro Riparian Corridor and Wildlife Habitat Inventory. This document supports the need for invasive vegetation removal and restoration of the ecosystem to as near as possible historic healthy conditions. The report states, "*Each riparian corridor is important to enable a properly functioning network of streams and rivers to support fish and wildlife in the Metro region.*" Too, the Willamette River Planning Atlas (2002) recommends, *"(r) riparian areas are important habitat for many species of terrestrial wildlife and play a disproportionately large role in stream habitat quality...all forms of natural vegetation within riparian areas can be beneficial."*

R5. Project Design

a) Identify who will do the project design and include their qualifications and experience; b) Describe how project planning and design take into consideration extreme events (e.g., floods, fire, drought, etc.) known to be of concern in the area that have the potential to impact your project; and c) Provide a brief description of design alternatives considered and the reasons for choosing the one(s) proposed.

Three design alternatives were evaluated prior to selecting the proposed project (Hererra 2007). The first design alternative proposed removal of the pipe, bank restoration, and installation of large wood. This was the simplest of the three design alternatives considered because it did not involve earthwork in the floodplain adjacent to Stephens Creek. This design was not selected because it did not propose creation of off-channel backwater habitat. Opportunities for providing off-channel backwater habitat are limited along the Willamette River within the City of Portland. Therefore, two additional designs were considered.

The second design alternative considered excavation of an off-channel cove to the north of Stephens Creek and excavation within the Stephens Creek remnant channel. Both of these would provide off-channel backwater habitat for salmonids. This design alternative was not selected because during the review process the project team determined that channel excavation to the north would have resulted in a large disturbance area which would involve lots of tree removal. Therefore, a third alternative was developed.

The third design alternative involved removal of the pipe, bank restoration, installation of large wood, and creation of off-channel backwater habitat in the remnant channel of Stephens Creek. The project team considered whether or not to re-connect the remnant channel to the mainstem, however, due to the current elevation difference, this would have involved large volumes of excavation and it would have resulted in additional habitat disturbance and tree removal. During a June 28, 2007 site visit with Oregon Department of Fish and Wildlife staff Mischa Connine and Tom Murtagh, they recommended shallow excavation in the lower segment of the remnant channel to balance the objectives of providing off-channel backwater habitat while minimizing disturbance in the remainder of the site.

R6. Proposed Project Schedule

Use a table similar to the example below to show the anticipated schedule for the project. See the Application Instructions for clarification and an example.

Project Stage and Phases	Date	Description
Pre-Implementation	January 2007 – July 2008	Alternatives analysis, project design and permitting
Implementation	July – Nov 2008	Fish salvage, mobilization, large wood placement, bank/wetland grading, and erosion control to occur during the in-water window;
	August 2008 – February 2012	Remove invasive plant species and install and establish select native plants and seed on approx. 3.5-acres of wetland and riparian habitat.
	August 2008 – February 2010	Two volunteer planting events, two guided tours by Willamette Riverkeepers trips, community design review and wrap up events
Project Completion	February 2010 and ongoing	Native vegetation survival, fish absence/presence, sediment, floodplain connectivity

R7. Project Monitoring

YOU DO NOT NEED TO FILL OUT THIS SECTION IF YOU ARE NOT PLANNING ON DOING MONITORING ABOVE AND BEYOND WHAT IS REQUIRED BY OWEB GRANT AGREEMETNS (See R9).

If requesting funding to perform monitoring of this project above and beyond what is required as a part of OWEB grant agreements (See R9) use the table similar to the example below to show: a) measurable objectives (repeat from #R3) b) type of monitoring (see instructions for definitions); c) what will be monitored; d) the frequency and duration of monitoring; e) protocols to be used; and f) who will monitor (name, affiliation, phone number). Relate each monitoring activity to the objectives shown in #R3. Also provide a brief statement as to why it is important to monitor this restoration project above and beyond what is required in the OWEB project completion report and post- implementation status report (see R9). See the Application Instructions for clarification and an example.

Measurable Objectives (Repeat from #R3)	Type of Monitoring	Monitor for What?	Frequency and Duration of Monitoring	Protocols to be used	Who Will Monitor? (name, affiliation, phone)
Stabilize riverbank and enhance connection to the Lower Willamette River floodplain	Implementation	Presence of salmonids	Quarterly fish surveys performed by City of Portland	City of Portland	Cindy Studebaker City of Portland 503.823.5482
Enhance 3.5-acres of wetland and riparian areas with native plant vegetation and habitat elements	Baseline, Implementation and Effectiveness	Establishment of native plants and utilization of habitat elements	Monitor three times per year during growing season in perpetuity	City of Portland	Darian Santner City of Portland 503.823.5569
Create off-channel habitat and increase in-stream complexity to enhance juvenile salmonid rearing habitat at the mouth of Stephens Creek	Implementation and Effectiveness	Large wood movement	Twice per year, spring and fall	City of Portland	Cindy Studebaker City of Portland 503.823.5838
Actively reach interested public through publications, media, meetings and planting events	Implementation	Volunteer hours	During two volunteer planting events	City of Portland	Matt Burlin City of Portland 503.823.7863

R8. Educational/Public Awareness Opportunities

Explain whether and how you will educate and raise public awareness about the project (e.g., install a project partner sign, write an article for the local paper, lead a site tour for local citizens). See the Application Instructions for clarification of eligible education and outreach costs.

Public outreach and involvement opportunities will aim to create community awareness and enhanced community support for this project, as well as other citywide watershed work. BES staff will coordinate public outreach and involvement for the project and will work closely with the partners listed above through the South Riverbank Project's CPT. Outreach activities (have included and) will include several events:

- Kick Off Event – introduce area residents to the project – March 2007.
- Community Design Review – invite interested community members to review the final (or 60%) design and provide feedback prior to permitting
- Wrap Up Event – acknowledge and celebrate project completion

It is anticipated that volunteers will assist with planting at the project site during the winter of 2009.

- Community Planting Events – The Central Planning Team shall recruit and lead volunteers in native plantings at two events
- Tours – The Willamette Riverkeepers shall host two guided tours of the restoration site.

R9. Project Completion and Post-Implementation Status Reports

Use a table similar to the example below to indicate who will inspect and sign off on the completed project, as well as submit the Project Completion Report (Exhibit C) and required Post-Implementation Status Reports (Schedule D). Identify that person's affiliation and provide contact information for that person.

Name of Person Who Will....	Agency/Organization and Address	Telephone Number	Email Address
Inspect and sign off on the project	**Holly Walla City of Portland BES 1120 SW 5th, 10th Floor Portland, OR 97204**	**503-823-5335**	**hollyw@bes.ci.portland.or.us**
Submit the *Project Completion Report*	**Jennifer Goodridge City of Portland BES 1120 SW 5th, 10th Floor Portland, OR 97204**	**503-823-4899**	Jennifer.goodridge@bes.ci.portland.or.us

R10. Project Maintenance

Use a table similar to the example below to document how the project will be maintained over time. State who will maintain the project. Identify their affiliation and provide contact information.

Name of Person Agency/Organization	Telephone Number Email Address	What will be done and for how long?

and Addresses		
Darian Santner City of Portland BES 1120 SW 5th, 10th Floor Portland, OR 97204	503.823.5569 darians@bes.ci.portland.or.us	Vegetation establishment year one through five; Portland Parks & Recreation will maintain the property in perpetuity

Section IV

WATERSHED RESTORATION BUDGET-Stephen's Creek Confluence

IMPORTANT: Read the application instructions. Attach additional lines, if necessary

		A	B	C	D	E	F
	Unit	# Units	Unit Cost	In-Kind Match	Cash Match	OWEB SIP Funds	Total Costs
PRE-IMPLEMENTATION (1/15/07-04/14/08)							
Public Involvement Specialist	Hr	120	47.72				5,726.40
Design Engineer (design oversight)	Hr	340	51.77				17,601.80
Engineering Tech (environmental investigation)	Hr	160	40.28				6,444.80
Modeling (hydraulic & hydrologic)	Hr	80	90.00				7,200.00
CADD	Hr	80	30.00				2,400.00
Environmental Specialist (design input & permit writing)	Hr	220	40.28				8,861.60
Fish Biologist (design input)	Hr	65	46.62				3,030.30
Botanical Specialist II	Hr	80	40.86				3,268.80
Construction Manager	Hr	40	57.32				2,292.80
Construction Inspector (sewer line capping)	Hr	100	46.77				4,677.00
Design services-contract (Vigil Agrimis)	LS	1	111,019.30		111,019.30		111,019.30
Survey (topographic)	day	10	1,200.00				12,000.00
Alternatives analysis-contract (Hererra)	LS	1	13,135.00				13,135.00
Sewer line capping-contract (White Buffalo & Boart Longyear)	LS	1	38,916.00				38,916.00
Permit fees	LS	1	5,827.00				5,827.00
Sediment samples & analysis	Ea	6	1,600.00				9,600.00

SUBTOTAL:						
PROJECT MANAGEMENT (04/15/08-10/30/08)						
Construction Oversight (Vigil Agrimis)	ls	1	5,000.00	5,000.00		5,000.00
IN-HOUSE PERSONNEL (04/15/08-02/28/09)						
Construction Manager	Hr	235	57.32			13,470.20
Construction Inspector	Hr	1040	46.77			48,640.80
Design Engineer	Hr	45	51.77			2,329.65
Engineering Tech	Hr	80	32.60			2,608.00
Environmental Specialist	Hr	35	40.28			1,409.80
Botanical Specialist II	Hr	285	40.86			11,645.10
CONSTRUCTION SERVICES (07/15/08-03/30/09)						
*Mobilization/Demobilization	ls	1	44,000.00	32,000.00	12,000.00	44,000.00
*Exclusion zone fencing placement	lf	1075	2.00	2,150.00		2,150.00
*Forcemain bypass & replacement	ls	1	37,000.00		20,000.00	37,000.00
*Security fence & gates	ls	1	3,000.00	3,000.00		3,000.00
*Tempoary traffic control	l	1	4,000.00			4,000.00
*Tempoary traffic control-flagging	hr	400	55.00			22,000.00
*Temporary access road	sy	316	15.00			4,740.00
*Trail restoration & cleanup	ls	1	2,500.00			2,500.00
*Asphalt concrete paving	sy	1160	5.00			5,800.00
*Extruded curb (replacement)	lf	65	20.00			1,300.00
*Clearing and grubbing (includes brush pile placement)	ls	1	54,400.00	10,000.00	44,400.00	54,400.00

*Salvage timber & woody debris-SNAGS	ea	4	500.00		2,000.00	2,000.00
*Salvage timber & woody debris-single logs and site logs	ea	21	220.00	599.00	4,021.00	4,620.00
*Common excavation-grading	ls	1	53,000.00			53,000.00
*Common excavation-off haul	ls	1	30,000.00			30,000.00
*Pipe excavation-off haul	lf	240	65.00	3,600.00	12,000.00	15,600.00
*Contaminated soil handling & disposal	ton	400	46.00		18,400.00	18,400.00
*Stream bypass & dewatering	ls	1	20,400.00			20,400.00
*Sedimat (4'x10') & placement	ea	20	200.00		4,000.00	4,000.00
*Sediment fence & placement	lf	1120	2.50	2,800.00		2,800.00
*Straw wattle & placement	lf	80	8.00	640.00		640.00
*Erosion control blanket & placement	sy	1290	7.00	7,370.00	1,660.00	9,030.00
*Turbidity curtain & placement	lf	390	12.00	4,680.00		4,680.00
*Short-term maintenance of erosion control	ls	1	3,000.00	3,000.00		3,000.00
*Stream diversion and In-water isolation (industry equivalent to Portadam)	ls	1	24,000.00			24,000.00
*Removal of existing piers	ls	1	1,000.00	1,000.00		1,000.00
*Imported logs	ea	79	760.00			60,040.00
*Additional wood placement	ls	1	4,000.00	4,000.00		4,000.00
*Brush bundles	ea	110	110.00	12,100.00		12,100.00
*Soil wrapped wall bank treatment	lf	80	125.00		10,000.00	10,000.00
*Constructed streambed	ton	85	80.00		6,800.00	6,800.00
*Watering constructed bank plantings & seeding	ls	1	2,000.00	2,000.00		2,000.00

*Imported topsoil	cy	200	20.00	4,000.00		4,000.00
*Culvert replacement	ls	1	6,000.00	6,000.00		6,000.00
Survey (construction staking & as-built topo)	ls	1	39,500.00		39,500.00	39,500.00
Disposal costs (landfill fee)	ls	1	10,000.00			10,000.00
Tree limbing/pruning & invasive tree removal (tree crew rate)	Hr	48	202.73			9,731.04
Bare root installation	thou	3.5	218.80		765.80	765.80
Wetland plug installation	ea	400	0.40		160.00	160.00
Pole planting	thou	1.5	138.80		208.20	208.20
Staking	thou	3.5	98.00		343.00	343.00
Tubing	thou	1.5	292.00		438.00	438.00
Mulch application	thou	5.5	122.00		671.00	671.00
Cut maintenance (5 cuts on 3.5 acres)	ac	17.5	282.00		4,935.00	4,935.00
Herbicide app (5 treatments on 3.5 acres)	ac	17.5	142.00		2,485.00	2,485.00
SUPPLIES/MATERIALS (07/15/08-03/30/09)						
Herbaceous seed	ac	3.5	525.00		1,837.50	1,837.50
Native plants, bare root - initial and interplanting	thou	3.5	270.00		945.00	945.00
Wetland plants	ea	400	0.50		200.00	200.00
Native plants, containerized	ea	2000	3.00		6,000.00	6,000.00
Pole cuttings	thou	1.5	142.00		213.00	213.00
Rooted cuttings (4')	ea	500	8.00		4,000.00	4,000.00
Bamboo, Lg - initial and interplanting	thou	5	70.00		350.00	350.00
Bamboo, Sm - initial and interplanting	thou	1.5				

			40.00		60.00	60.00
Tubes - initial and interplanting	thou	1.5	170.00		255.00	255.00
Mulch wood	thou	5.5	75.00		412.50	412.50
EDUCATION/OUTREACH (07/15/08-03/30/09)						
Boat trips	Ea	2	200.00		400.00	400.00
Volunteer Hours	Hr	300	15.00		Non Cash Not 1616	4,500.00
Willamette Riverkeeper Coordinator	Hr	30	18.00		540.00	540.00
SUBTOTALS					**200,000.00**	
5-YR POST-IMPLEMENTATION STATUS REPORTING (04/01/09-03/30/14)						
Contracted fish monitoring	ls	1	3,000.00			10,000.00
Fish monitoring	Hr	400	46.62			18,648.00
Plant monitoring	Hr	325	40.86			13,279.50
Sediment monitoring	Hr	30	40.28			1,208.40
FISCAL ADMINISTRATION						
5% Administration						25,000.00
TOTALS				**214,958.30**	**200,000.00**	**973,190.29**

Excluded PS

Notes:

*** These items are included on a single construction contract with Brandt Construction for $479,000**
$214,958.30 cash is being claimed as "match" on this OWEB SIP grant application.
Other contributions (including grants and match to those grants) total $ 558,231.99.

MATCH FUNDING FORM

Document here the match funding shown on the budget page of your grant application

OWEB accepts all non-OWEB funds as match. An applicant may not use *another OWEB grant* to match an OWEB grant. However, an applicant who benefits from a pass-through OWEB agreement with another state agency, by receiving either staff expertise or a grant from that state agency, may use those benefits as match for an OWEB grant. (Example: A grantee may use as match the effort provided by ODFW restoration biologists because OWEB funding for those positions is the result of a pass-through agreement).

At the time of application, match funding does not have to be *secured*, but you must show that at least 25% of match funding has been *sought*. On this form, you do not necessarily need to show authorized signatures ("secured match"), but the more match that is secured, the stronger the application. Identify the type of match (cash or in-kind), the status of the match (secured or pending), and either a dollar amount or a dollar value (based on local market rates) of the in-kind contribution.

If you have questions about whether your proposed match is eligible or not, visit our website at http://www.oregon.gov/OWEB/GRANTS/grant_app_materials.shtml, or contact your local OWEB regional program representative (contact information available in the instructions to this application).

Project Name: Lower Willamette River Off-Channel Habitat Restoration at the confluence of Stephens Creek

Applicant: City of Portland

Match Funding Source	Type (one)	Status (one)*	Dollar Value	Match Funding Source Signature/Date*
City of Portland (includes grants from LCREP/BPA & TNC as cash to the City)	☒ cash ☐ in kind	☒ secured ☐ pending	$ 526,747.34 ($214,958.30 is portion of OWEB "match")	Dean Marriott 6/5/08
City of Portland	☐ cash ☒ in kind	☒ secured ☐ pending	$199,742.95 ($0 shown as OWEB "match")	Dean Marriott 6/5/08
NOAA/FishAmerica	☒ cash ☐ in kind	☐ secured ☒ pending	$42,200.00	
DEQ-VIA	☐ cash ☒ in kind	☒ secured ☐ pending	$4,500.00	See support letter

* **IMPORTANT:** If you checked the "Secured" box in the status Column for any match funding source, you must provide either the signature of an authorized representative of the match source in the final Column, or attach a letter of support from the match funding source that specifically mentions the dollar amount you show in the Dollar Value Column.

LAND USE INFORMATION FORM

This information is needed to determine if the proposed project complies with statewide planning goals and is compatible with local comprehensive plans (ORS 197.180). The form must be submitted before OWEB releases project funds. OWEB will release project funds only if the project either is not regulated by, or is compatible with, the local comprehensive plan and zoning ordinance. If a project is regulated by the local comprehensive plan and zoning ordinance, OWEB will void grant agreements for projects the county determines to be incompatible with the local comprehensive plan and zoning ordinance. If the county requires additional local approvals for a project regulated by the local comprehensive plan and zoning ordinance, OWEB will not release project funds until these conditions are satisfied.

1. TO BE COMPLETED BY THE APPLICANT/GRANTEE

Applicant/Grantee Name: City of Portland, BES

Project Name: Lower Willamette River Off-Channel Habitat Restoration at Stephens Creek confluence

2. TO BE COMPLETED BY CITY/COUNTY OR TRIBAL PLANNING OFFICIAL

Complete this section only after section 1, above, has been completed. Check the box below that applies:

☐ This project is not regulated by the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is compatible with the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is not compatible with the local comprehensive plan and zoning ordinance.

☑ Compatibility of this project with the local planning ordinance cannot be determined until the following local approvals are obtained:

____ Conditional Use Permit	✓ Development Permit
____ Plan Amendment	____ Zone Change
✓ Other Greenway Review	

An application has ___ has not ✓ been made for the local approvals checked above.

KG
Signature of Local Official

9 October 2007
Date

Print Name: Kate Green

Phone: 503 823 5868

Title: City Planner

Email: kgreen@ci.portland.or.us

**Must be an authorized signature from your local City/County or Tribal Planning Department, regardless of which box is checked above.*

LANDOWNER/APPLICANT CERTIFICATION

Monitoring Information from Participating Private Lands is Public Record

OAR 695-005-0030 (4) states that "All applications that involve physical changes or monitoring on private land must include a landowner signature signifying their approval and understanding that all monitoring information obtained on their property is public record. An explanation must accompany the application if any of the information required on the application cannot be provided. The landowner's signature will be required prior to the release of the grant agreement if the application is approved for funding."

Therefore, EITHER the applicant must sign and date in the "For the Applicant" section below, OR all private landowners participating in the project must complete this form at the application stage (use additional pages, if necessary) by signing in the "For the Landowner(s)" section below.

The project will occur on (check one):

☒ Public land only (STOP: No need to complete the rest of the form)

☐ Private land only ☐ Public & private land (If you check either of these boxes, complete either of the boxes below)

EITHER

For the Applicant: I am unable to secure all landowner signatures at this time as not all landowners have been identified at the time of application. I understand that should OWEB fund this project, that OAR 695-005-0030 (4) requires me to secure all participating landowner signatures prior to the release of an OWEB grant agreement for this project.

Applicant Signature _____ Date _____

OR

For the Landowner(s): By my signature below, I certify my understanding and approval that should the Oregon Watershed Enhancement Board fund part, or all, of this proposal, that all monitoring information obtained on my property as a result of this project is public record. I understand that if I refuse to comply with the terms of this form, I will jeopardize my ability to receive OWEB compensation for my participation in this project.

Landowner Signature _____ Date _____

Landowner Signature _____ Date _____

Landowner Signature _____ Date _____

Landowner Signature _____ Date _____

Landowner Signature _____ Date _____

Landowner Signature _____ Date _____

LEGAL REQUIREMENTS FORM

AGREEMENTS:

I/we, City of Portland of Portland, Oregon, hereby make application for financial assistance under the terms and conditions of the Oregon Watershed Enhancement Board in the amount of $200,000.00. The total cost of the project is $973,190.29, as shown in Section I of the application and on the budget page.

I/we understand that if this proposal is funded, I/we will in most cases be required to:

- Sign a Grant Agreement containing the terms and conditions upon which funds will be released (work on the grant may not begin until all parties have signed the Grant Agreement);
- Submit a Cooperative Agreement between the Project Sponsor (Grantee) and the Landowner(s) addressing issues of site access, monitoring, and maintenance;
- Certify that the project complies with state, federal, and local regulations;
- Submit copies of all applicable permits and licenses from local, state, or federal agencies or governing bodies, or written evidence that permits and licenses are not needed;
- Submit a report at the completion of the project, and subsequent periodic reports as required in the Grant Agreement, on the project's performance;
- Resolve any and all outstanding issues from previous grants with OWEB.
- Agree that educational products and monitoring information resulting from projects are public domain;
- Complete the Oregon Watershed Restoration Reporting form; and
- Certify that the work to be accomplished will comply with the *Oregon Aquatic Habitat Restoration and Enhancement Guidelines*.

Signed: Dean C Marriott Date: 6/5/08

Print Name: Dean C. Marriott
Title: Director

RESTORATION METRICS FORM

OWEB receives a portion of its funds from the federal government and is required to report how its grantees have used those funds. Complete both sections of the form below as they apply to your project. The information you provide is used for federal reporting purposes.

Section 1 Project Overview

Answer all six questions below, even if you have answered a similar question in a previous section in the grant application.

1. **Land Use Setting: CHECK ONE BOX ONLY.**

☒ **Urban/Suburban/Exurban** *(Projects located within urban growth boundaries or rural residential areas)*	☐ **Rural** *(Projects located outside urban growth boundaries or rural residential areas.)*

2. **Dominant Watershed Setting: CHECK ONE BOX ONLY.** Example: Your project involves managing erosion in the upland area with some erosion control extended to the riparian area. Because most of the work is to occur in the upland area, you would check only the Upland box below.

☐ **Estuary** *(where freshwater meets and mixes with saltwater of ocean tides.)*	☐ **Riparian** *(adjacent to a water body, within the active floodplain.)*
☒ **Instream** *(below the ordinary high-water mark or within the active channel — includes fish passage.)*	☐ **Upland** *(above the floodplain.)*
	☐ **Groundwater** *(Projects that recharge groundwater or primarily affect the subsurface water table.)*
☐ **Wetland** *(areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated conditions.*	

3. **Total Acres Treated:** 3.5 acres **Total Stream Miles Treated:** 0.16 (847 feet)

4. **Project Priority Identification:** Name the primary watershed/subbasin plan or assessment in which this project type is identified as a priority. **See Application Section III, question #R4.**

This project was determined the highest priority project in the Stephens Creek Sub-Watershed Plan

5. **Project Limiting Factor(s):** Watershed and/or habitat limiting factor(s) identified in the above plan addressed by the project. Check as many boxes as apply. **See Application Section III, question #R1.**

☒ Bank stability	☐ Nutrients	☒ Stream complexity
☒ Channel morphology	☒ Off-channel habitat	☐ Substrate conditions
☐ Estuarine habitat	☐ Over-wintering habitat	☐ Summer habitat
☒ Excessive sediment/erosion	☐ Rearing habitat	☐ Unscreened water diversions
☒ Exotic species	☐ Reduced habitat capacity	☐ Upland habitat diversity
☐ Fish passage	☒ Riparian habitat	☐ Water quantity
☒ Floodplain connectivity	☒ Shade	☐ Water quality
☐ Large wood	☐ Spawning habitat	☐ Water temperature
☐ Other (explain):		☒ Wetland habitat

6. Project Monitoring: Identify the type of monitoring. Check as many boxes as apply. **See Application Section III, question #R7.**

☒ Fish presence/absence/abundance/distribution survey(s)	☒ Riparian vegetation (Presence/Absence)
☒ Instream Habitat surveys	☐ Spawning surveys
☐ Macroinvertebrates	☐ Upland vegetation (Presence/Absence)
☒ Noxious weed (Presence/Absence)	☐ Water quality
☒ Photo points	☐ Water quantity
☒ Other (explain): Sediment accumulation, if any, in the remnant channel	

Section 2 Project Activities

Provide values for each Project Activity applicable to your application. Leave blank any Project Activity or metric line that is not appropriate to your application. All data are pre-project and are therefore proposed, not completed.

Fish Passage Improvement Projects: *Projects that affect or provide fish migration. For partial barriers, include total miles made accessible by the project.*

☐ Install fish passage structure *(e.g., fish ladder, fishway, etc.)*	☐ Removal of stream crossings
☐ Remove/replace culverts	☐ Removal of irrigation/push up dams
☐ Other (explain):	

_____ Number of fish passage blockages removed or improved

_____ Estimated miles of stream made accessible by removal of barriers *other* than culverts

_____ Estimated miles of stream made accessible by the improvement or removal of culverts (i.e., record the miles of stream to the next barrier or the extent of fish use)

Water Quality Projects: *Projects that result in an improvement of water quality parameters.* Check all boxes that apply:

☐ Bacteria	☐ Nutrients (name):	☐ Temperature
☐ Dissolved Oxygen	☐ Pesticides	☐ Toxics
☐ Heavy Metals (name):	☐ pH	☐ Turbidity
☐ Nitrates	☐ Phosphorus	
☐ Other (explain):		

Instream Habitat Projects: *Projects that increase or improve the physical conditions within the stream environment to provide needed habitat conditions.* Check all proposed activities.

☒ Bank stabilization	☐ Channel reconfiguration	☒ Large wood placement
☐ Boulder placement	☐ Deflectors/barbs	☒ Off-channel habitat
☐ Carcass placement	☒ Floodplain connectivity	☐ Spawning gravel placement
☐ Other (explain):		☐ Weirs/grade control

625 Pieces of wood per mile. (100 Pieces of wood installed over 0.16 miles)

0.04 Estimated number of miles of streambank to be stabilized (i.e., to be bioengineered or engineered to resist the erosive forces of flowing water). Add the length treated on both sides when both sides are to be stabilized; add one side when just one side is to be treated. (200 feet)

0.12 Estimated number of miles of stream to be treated that **are not** bank stabilization. Count one side of the stream only. (647 feet)

Riparian Habitat Projects: *Projects above the ordinary high-water mark of the stream and within the floodplain of the stream.* Check all proposed activities for the riparian area.

☐ Beaver management	☐ Manage nutrient inputs	☐ Riparian habitat protected
☐ Conservation grazing management	☐ Manage sediment inputs	☐ Vegetation management (specify):
☐ Exclusion fencing	☒ Non-native/noxious plant control	☐ Voluntary tree retention
☒ Floodplain nurse log placement	☒ Planting riparian species	☐ Water gap development
☐ Off-stream livestock water development		
☐ Other (explain):		

0.23 Estimated total acres of streambank to be treated. (1200 feet)

1.7 Estimated total acres to be planted.

0.23 Estimated total acres of streambank to be treated for non-native/noxious plant species. (1200 feet)

0.23 Miles of streambank to be treated. Add the length treated on both sides when both sides are to be treated; add one side when just one side is to be treated. (1200 feet)

Upland Habitat Projects: *Projects implemented above the floodplain.* Check all proposed activities for the upland area:

☐ Conservation tillage	☐ Reduction of fuels	☐ Sediment control basins
☐ Grazing management	☐ Reduction of nutrient inputs	☐ Terracing
☐ Non-native/noxious plant control	☐ Restore historic natural habitats	☐ Upland erosion control; planting/seeding
☐ Protect natural habitats	☐ Upland livestock water development	
☐ Vegetation management (e.g., juniper control)		
☐ Other (explain):		

_____ Estimated total acres of upland habitat to be treated for non-native/noxious species.

_____ Estimated total acres of upland habitat to be treated.

Estuarine Habitat Projects: *Projects that result in improvement or increase in the availability of estuarine habitat.* Check all proposed activities for the estuary.

☐ Dike breaching/removal	☐ Estuarine habitat creation	☐ Removal of existing fill material
☐ Estuarine channel modification	☐ Non-native/noxious plant control	☐ Tide gate modification
☐ Protection of estuarine habitat	☐ Tide gate removal	
☐ Other (explain):		

_____ Estimated total estuarine acres to be treated for non-native/noxious plant species.

_____ Estimated total acres to be reconnected to the estuary.

_____ Estimated total estuarine acres to be treated.

Wetland Habitat Projects: *Projects designed to create or improve wetland areas.* Check all proposed activities in the wetlands.

☐ Manage nutrient inputs	☐ Vegetation planting	☒ Wetland habitat enhancement
☐ Manage sediment inputs	☐ Wetland creation (from upland)	☐ Wetland protection
☒ Non-native/noxious plant control	☐ Wetland restoration (reestablishment of hydrology)	
☐ Other (explain):		

1.8 Estimated total wetland acres to be treated for non-native/noxious plant species (Most of the floodplain riparian area is also wetland)

_____ Estimated total wetland acres created

_____ Estimated total wetland acres to be treated (improvement, enhancement, restoration and planting)

Road Projects: *Projects designed to improve road impacts to watersheds.* Check all proposed activities.

☐ Road drainage system improvements	☐ Road sediment and delivery control
☐ Road obliteration/decommissioning	☐ Road surface improvement
☐ Road reconstruction	☐ Other (explain):

____ Estimated miles of road to be treated.

Water Management Projects: *Projects designed to improve water efficiency, quantity, and timing within the watershed.* Check all proposed activities.

☐ Convert gravity diversion to pumps or infiltration galleries	☐ Irrigation systems for improved water conservation	☐ Recharge groundwater/aquifer
☐ Create off-channel flood storage	☐ Irrigation systems for improved water quality	☐ Reduce water loss in irrigation delivery
☐ Install storm water runoff treatment	☐ Protect instream flow	☐ Other (explain):

____ Estimated amount of water (cubic feet per second) returned during the critical water period, April-October.

APPLICATION CHECKLIST

Instructions: Use this form as an important cross-check to ensure that your application is complete. An incomplete application will jeopardize your application's review. After you have checked all the boxes, return the checklist with your completed application.

General

- ❑ Only one copy of the application is included with the packet (other applications should be sent separately)
- ❑ The application and attachments are on 8 ½ x 11" paper
- ❑ The application and attachments are single-sided and single-spaced
- ❑ The application and attachments are not stapled or bound (sets of color photos and color maps excepted; see check box immediately below)
- ❑ Where color photos or color maps are provided, I have included 25 copies of each, and if there are multiple sets, they are collated and stapled (no other documents or attachments are stapled).

Section I – Applicant Information

- ❑ All questions in this section have been answered
- ❑ The OWEB Dollars Requested and the Total Project Cost mirror the totals shown on the budget page
- ❑ The project location is complete
- ❑ All contact information — for the applicant and fiscal agent — is complete and current

Section II – Project Information

- ❑ All questions in this section have been answered

Section III – Specific Restoration Project Activity

- ❑ All questions in this section have been answered

Section IV - Budget Page

- ❑ I have read the application instructions for completing the budget page
- ❑ Columns A and B have been completed, where appropriate
- ❑ Fiscal Administration does not exceed 10% of the OWEB subtotal (subtotal row, Column E)
- ❑ The totals shown in the last row add up and are accurately reflected in Section I of the application

Required Forms

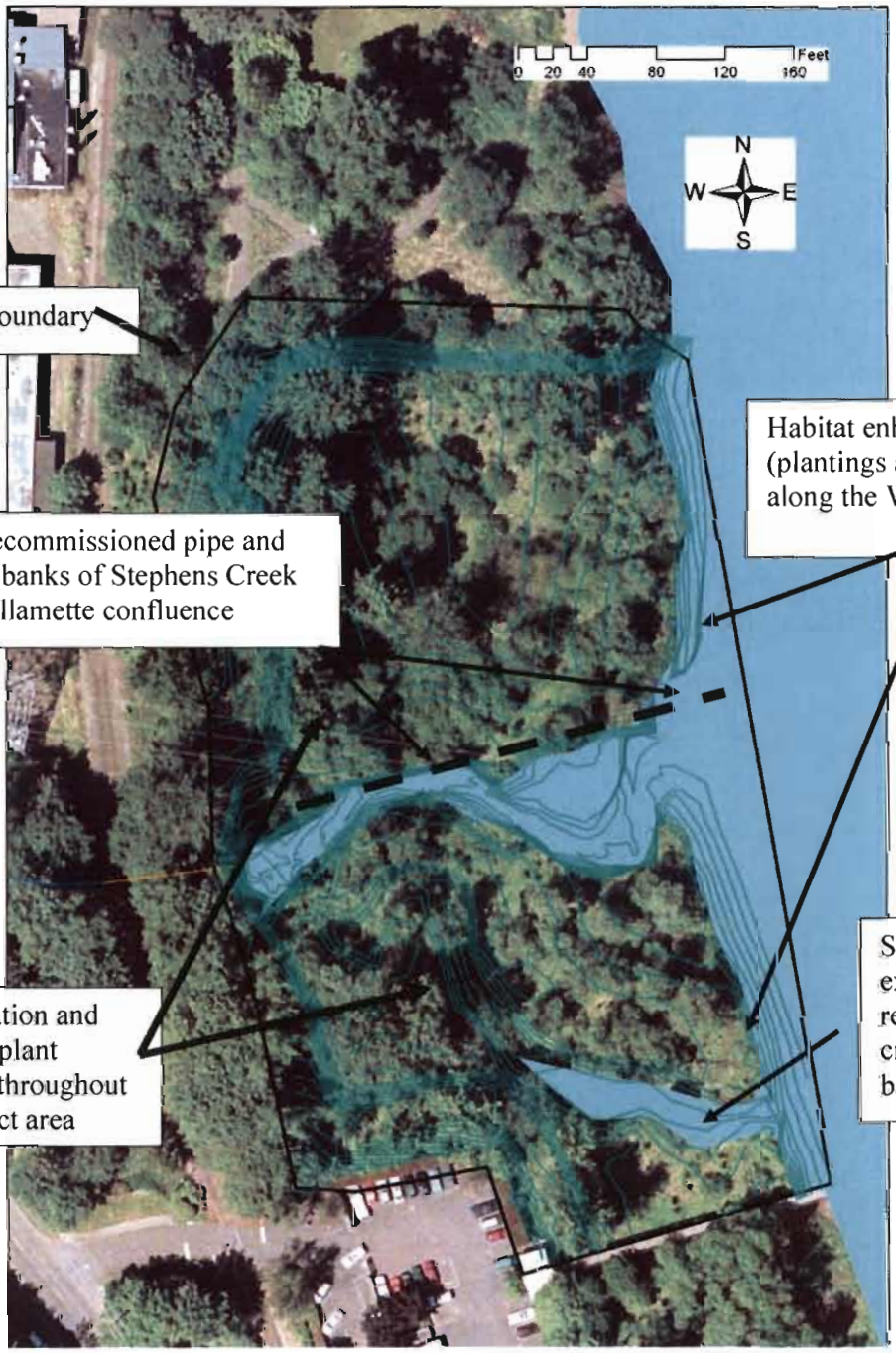
- ❑ Match Funding form – show that at least 25% match has been sought (authorized signatures are not required at the application stage, but are strongly encouraged)
- ❑ Land Use form (required only for applications involving on-the-ground activities to ensure compatibility with the local comprehensive plans and zoning ordinances) — completed as relevant, signed, and dated by local official
- ❑ Landowner/Applicant Certification form – completed, signed, and dated by all participating landowners
- ❑ Legal Requirements form – completed, signed, and dated by the applicant
- ❑ Restoration Project/Activity Types form — completed, as relevant
- ❑ Restoration Metrics form — completed, as relevant

Attachments (see page 3 of the application for details)

- ❑ Project Maps
- ❑ Preliminary Project Designs
- ❑ Photographs
- ❑ Letters of Support from key project partners or others, as appropriate.

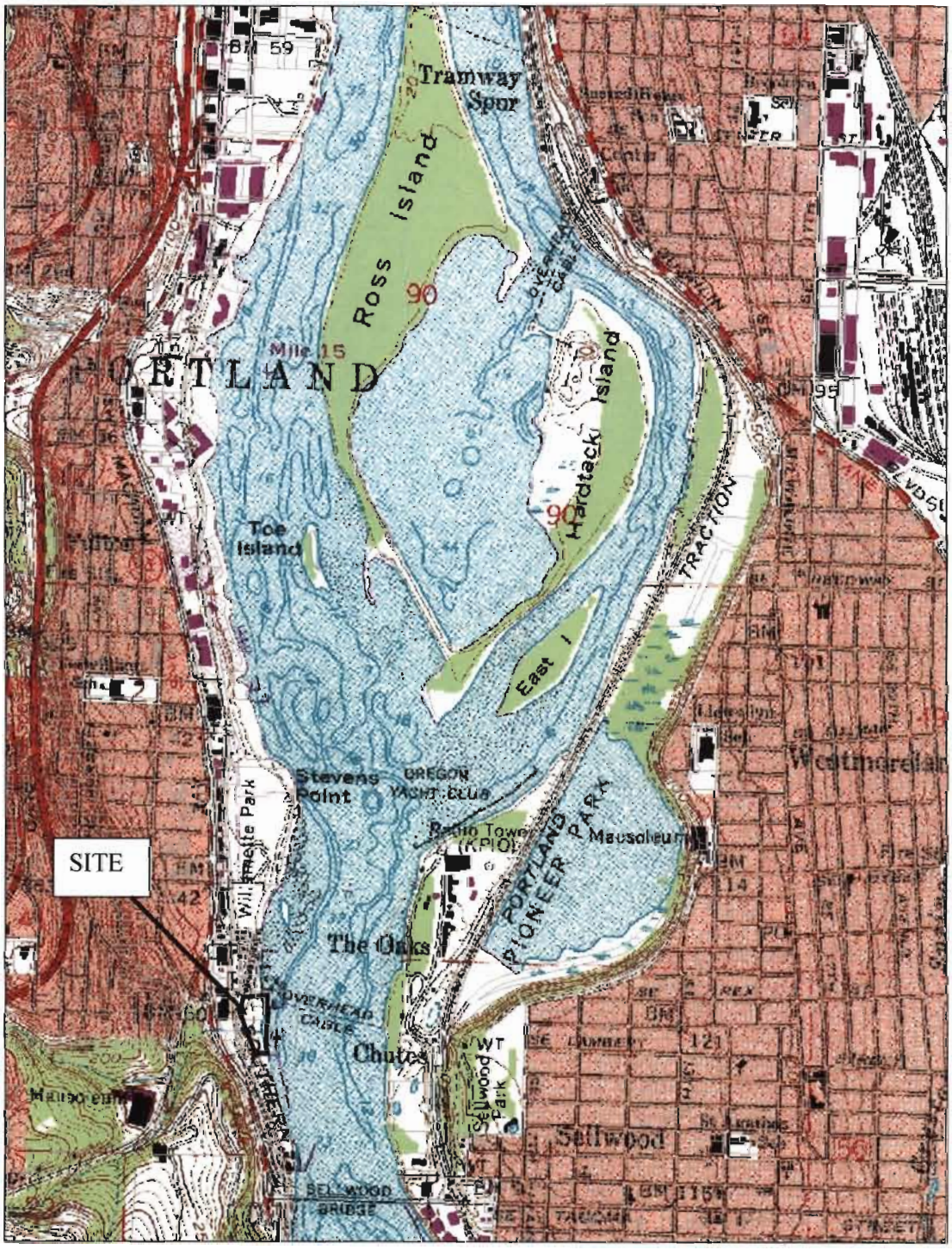
Lower Willamette River Off-Channel Habitat Restoration Project at the mouth of Stephen's Creek
Appendices

Table of Contents



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

Lower Willamette River Off-Channel Habitat Restoration at Stephen's Creek confluence project in Portland, Oregon
TRS: 1S1E22DB



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

USGS topography map for the Stephens Creek confluence project in Portland, Oregon (Lake Oswego quadrangle, source City of Portland GIS database, 1S1E22DB).

Photo 1

Photo 2

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

Photodocumentation at the Stephens Creek Confluence. Photo 1 depicts the Stephens Creek channel from the trail looking east. Photo 2 depicts the exposed pipe along the north bank of Stephens Creek. Both photos taken May 23, 2007.

Photo 3

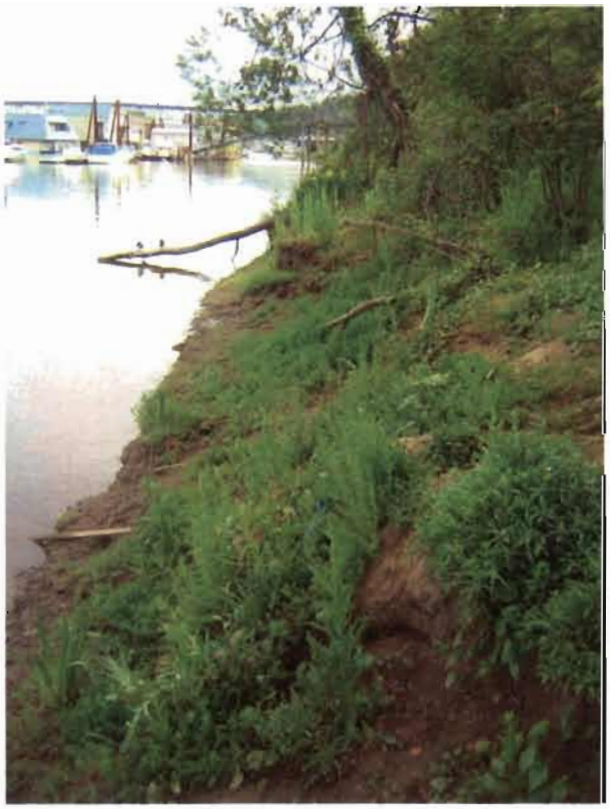


Photo 4

ENVIRONMENTAL SERVICES
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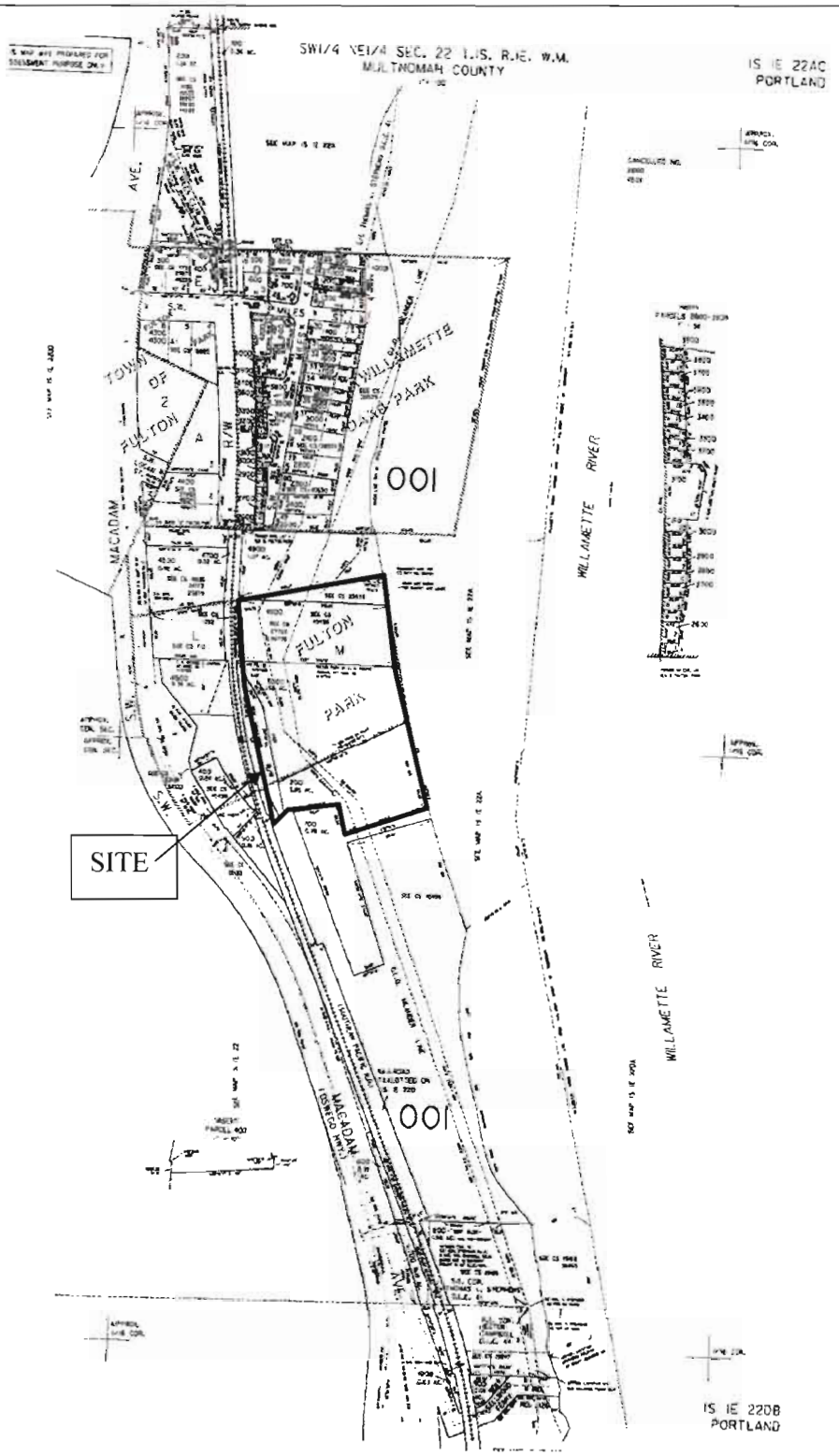
working for clean rivers

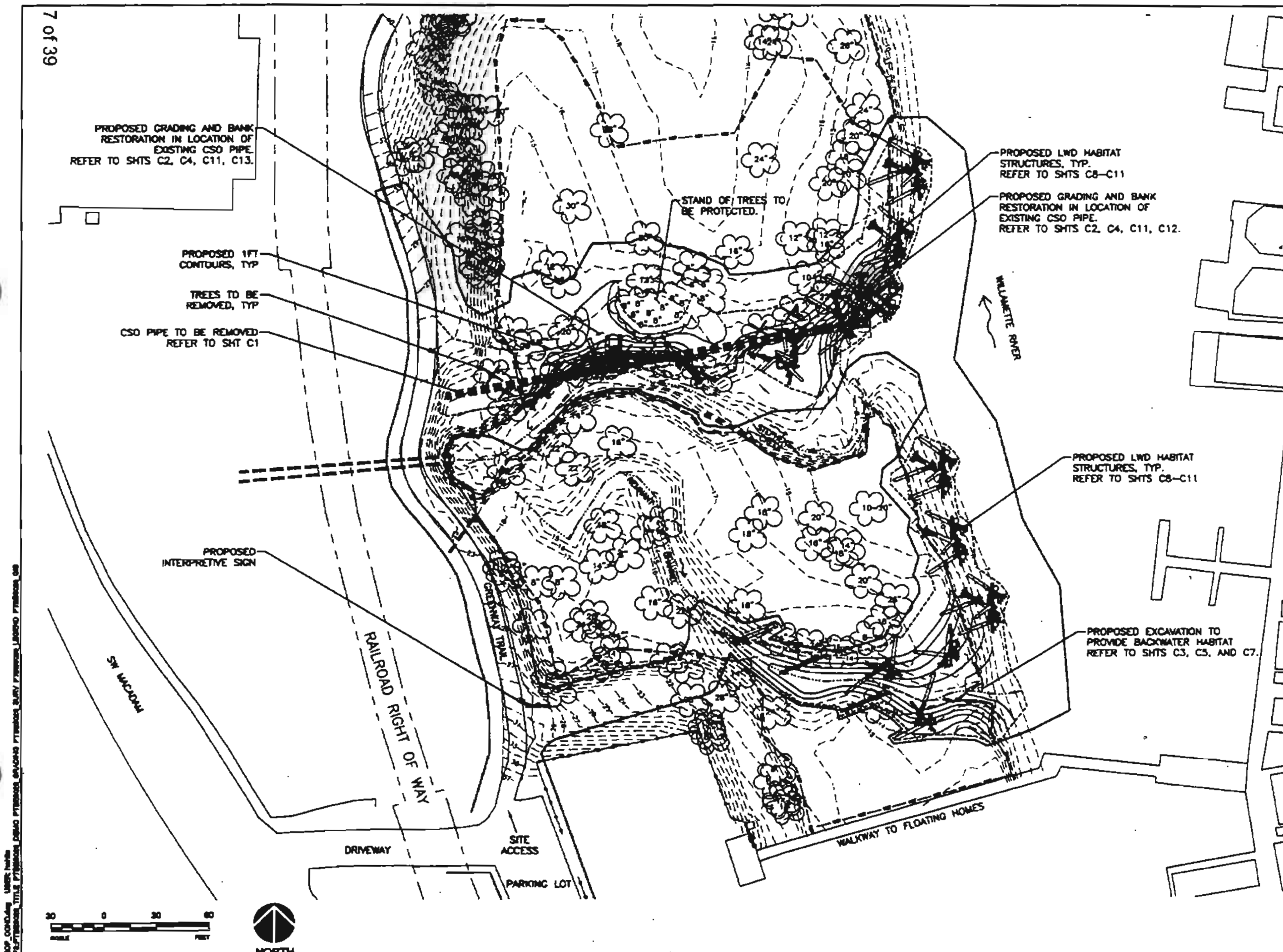
Photodocumentation at the Stephens Creek Confluence. Photo 3 depicts the exposed pipe at the confluence of Stephens Creek and the Willamette River. Photo 4 depicts the OHW boundary of the Willamette River which is just below the break in slope in this photo. Photo 3 was taken at low tide on 9/23/07 and Photo 4 was taken 5-23-07.



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

Tax lot maps for the Stephens Creek confluence project in Portland, Oregon (Source: The Oregon Map http://www.ormap.org).

FIGURE 2



LEGEND

- TREES
- TREES TO BE REMOVED BECAUSE OF SITE GRADING
- CSO TO BE REMOVED
- GRADING AND EARTHWORK LIMITS
- CREEK THALWEG
- ORDINARY HIGH WATER EL=12.8'
- EXISTING WETLAND
- EXCLUSION ZONE/PROJECT LIMITS
- PROPOSED WOOD PLACEMENT

NOTES:

1. REFER TO SHTS EC1–EC4 FOR EROSION AND SEDIMENTATION CONTROL MEASURES.

PRELIMINARY
60% DESIGN

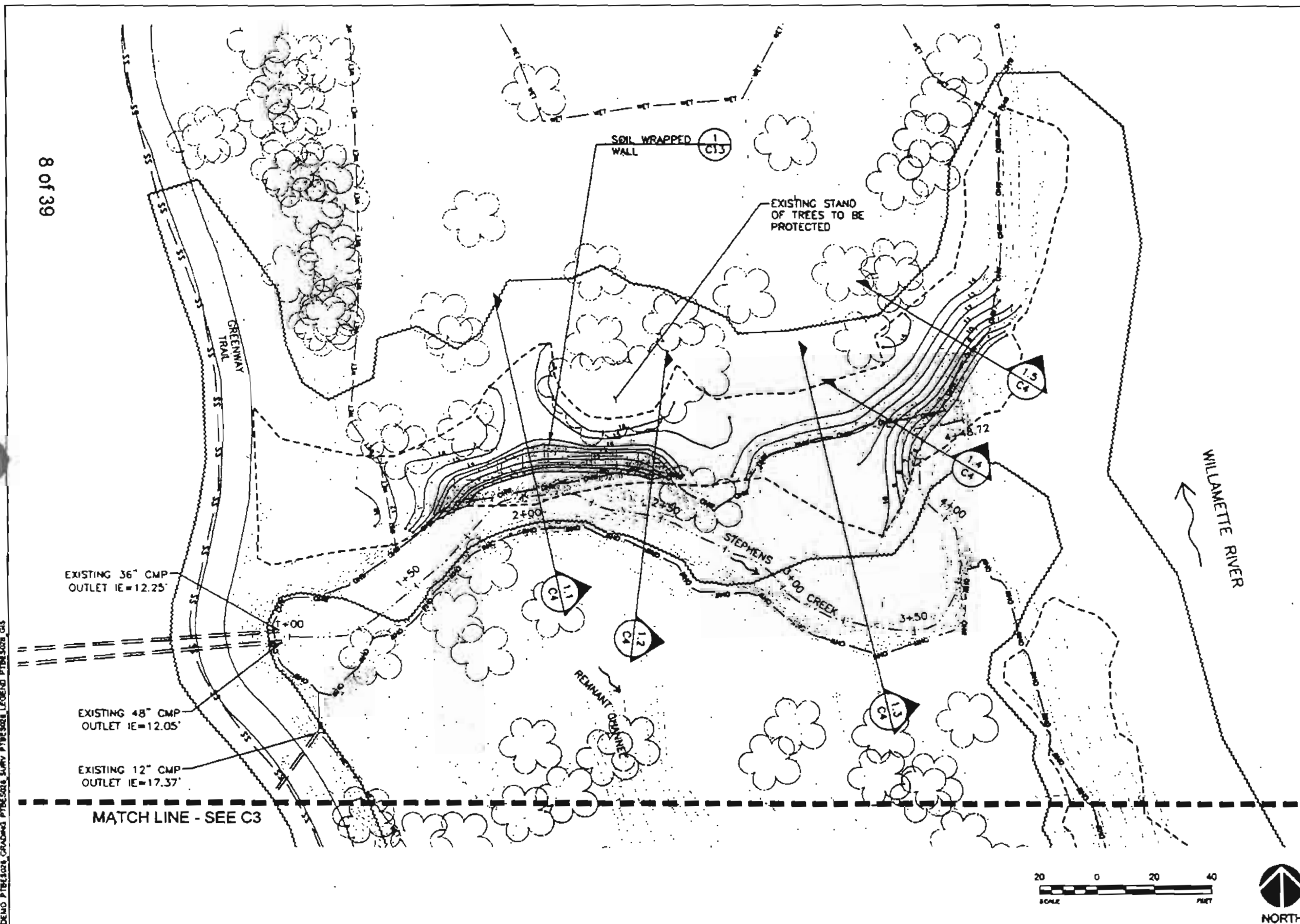
CITY OF PORTLAND
ENVIRONMENTAL SERVICES
SAM ADAMS COMMISSIONER
BILL RYAN, P.E. CHIEF ENGINEER
APPROVAL

VIGIL AGRIMIS design professionals

STEPHENS CREEK CONFLUENCE HABITAT ENHANCEMENT PROJECT
PROPOSED CONDITIONS SITE PLAN

FINAL MAP DATA 9/17/07
REVISION

8471
G6
6 of 24



LEGEND

- TREES
- CREEK THALWEG
- ORDINARY HIGH WATER EL=12.8'
- EXISTING WETLAND
- 4" SANITARY FORCE MAIN
- EXCLUSION ZONE/PROJECT LIMITS
- GRADING AND EARTHWORK LIMITS
- PROPOSED 1' CONTOURS
- EXISTING 1' CONTOURS

NOTES:

1. GRADING ACTIVITIES TO BE COORDINATED WITH THE PLACEMENT AND INSTALLATION OF HABITAT AND LWD STRUCTURES. REFER TO SHTS C6 AND C7 FOR LWD PLACEMENT.

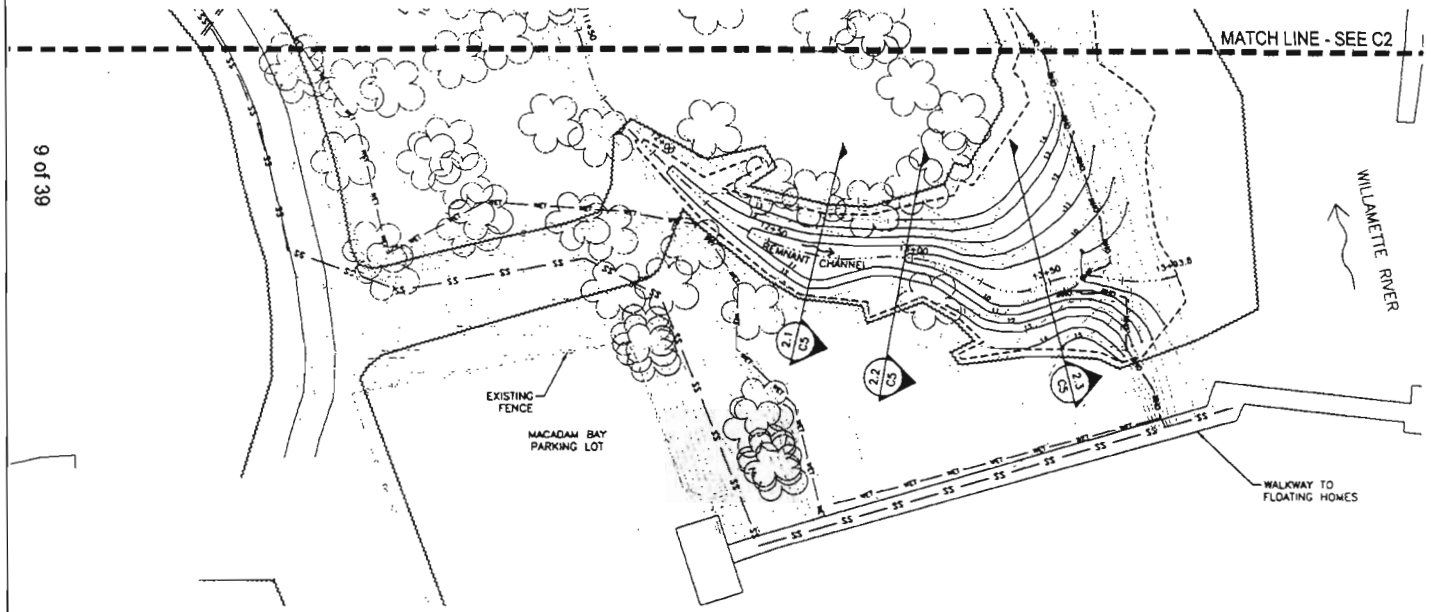
PRELIMINARY
60% DESIGN

CITY OF PORTLAND
ENVIRONMENTAL SERVICES
SAM ADAMS COMMISSIONER
APPROVAL
BILL RYAN, P.E. CHIEF ENGINEER

VIGIL AGRIMIS design professionals

STEPHENS CREEK CONFLUENCE HABITAT ENHANCEMENT PROJECT
STEPHENS CREEK GRADING PLAN

XREF(S) USED: XREF
ROTATION ANGLE: ROTATION
FINAL MAP DATA 9/17/07
REVISION



REMNANT CHANNEL HABITAT ENHANCEMENT

SCALE: 1" = 20' (FOR 22X34" SHEETS)

20 0 20 40
SCALE FEET

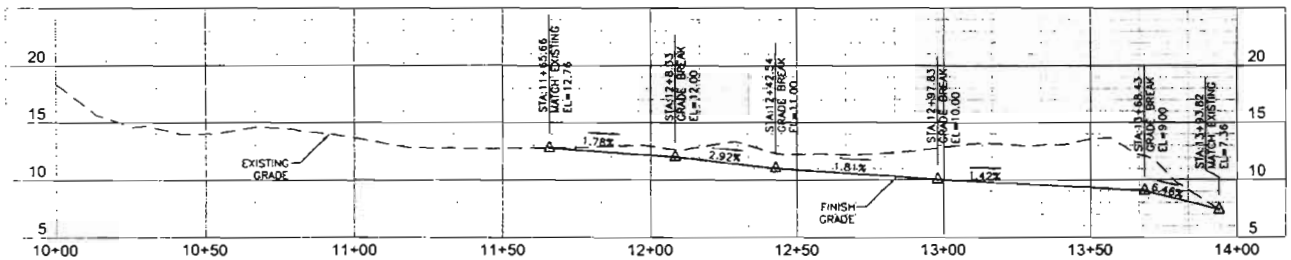
NORTH

LEGEND

- TREES
- CREEK THALWEG
- ORDINARY HIGH WATER EL=12.8'
- EXISTING WETLAND
- 4" SANITARY FORCE MAIN
- EXCLUSION ZONE/PROJECT LIMITS
- GRADING AND EARTHWORK LIMITS
- PROPOSED 1' CONTOURS
- EXISTING 1' CONTOURS

NOTES:

1. GRADING ACTIVITIES TO BE COORDINATED WITH THE PLACEMENT AND INSTALLATION OF HABITAT AND LWD STRUCTURES. REFER TO SHTS C6 AND C7 FOR LWD PLACEMENT.



REMNANT CHANNEL PROFILE - AT THALWEG

HORIZONTAL SCALE: 1"=20' (FOR 22X34" SHEETS)
VERTICAL SCALE: 1"=5' (FOR 22X34" SHEETS)

PRELIMINARY
60% DESIGN

NO	DATE	DESCRIPTION	APPD.
		REVISION	

BREF(S) USED: XREF
ROTATION ANGLE: ROTATION
CONSTRUCTED BY:
PROJECT COMPLETED:
MAP CORRECTED BY: CHECKED BY:
FINAL MAP DATA
9/17/07

DESIGNED BY: DATE APPD.
DRAWN BY: PRODUCTION WORK
CHECKED BY: CONSTR. WORK
DESIGN WORK

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COMMISSIONER
BILL RYAN, P.E.
CHIEF ENGINEER
APPROVAL
ENVIRONMENTAL SERVICES CHIEF ENGINEER
REG. PROF. ENGR. NO. 8327

VIGIL AGRIMIS
design professionals
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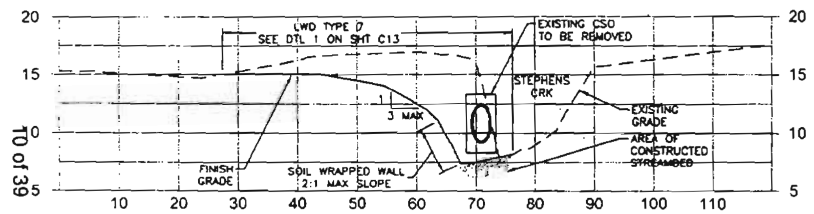
503-274-3024
www.vigilagrimis.com

STEPHENS CREEK CONFLUENCE
HABITAT ENHANCEMENT PROJECT
REMNANT CHANNEL
GRADING PLAN AND PROFILE

1/4 SECTION 04
JOB NO. 8471
SHEET NO. C3
14 OF 24



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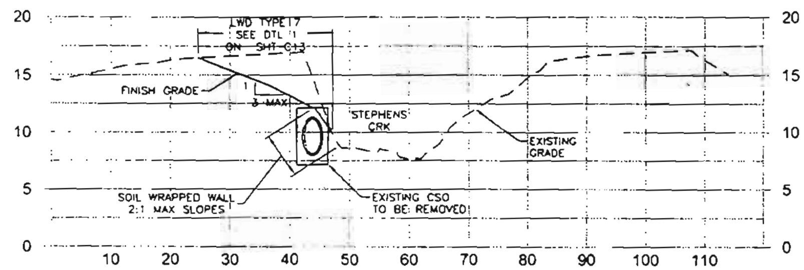

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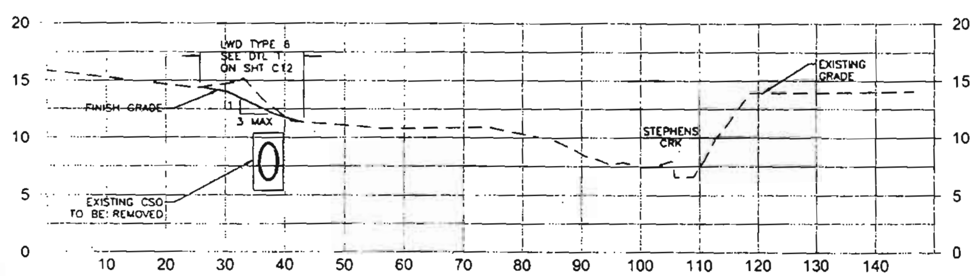

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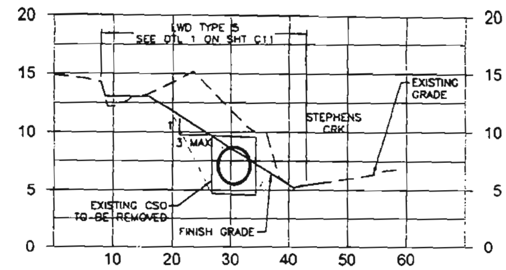

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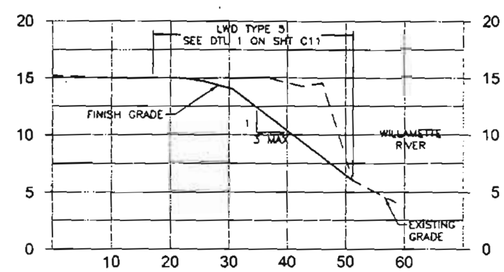

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VERTICAL SCALE: 1"=5' (FOR 22X34" SHEETS)

NOTES:
1. ALL SECTIONS REFERENCED LOOKING DOWNSTREAM AND ARE VERTICALLY EXAGGERATED 2X.
2. COMBINED SEWER OVERFLOW (CSO) IS A 33" PIPE INCASED IN REINFORCED CONCRETE TO FORM A 60" X 60" BOX.

PRELIMINARY
60% DESIGN

XREF(S) USED: XREF
ROTATION ANGLE: ROTATION
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY / CHECKED BY
FINAL MAP DATA
9/17/07

NO. | DATE | DESCRIPTION | APPD.
REVISION

DESIGNED BY | DATE APPD.
DRAWN BY | PROGRAM MGR.
CHECKED BY | CONST. MGR.
DESIGN MGR.

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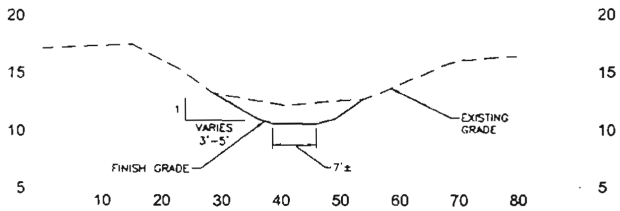
REG. PROF. ENGR. NO. 9327

VIGIL AGRIMIS
design professionals

STEPHENS CREEK CONFLUENCE
HABITAT ENHANCEMENT PROJECT
STEPHENS CREEK
CROSS SECTIONS

NOTES:
1. ALL SECTIONS REFERENCED LOOKING DOWNSTREAM AND ARE VERTICALLY EXAGGERATED 2X.



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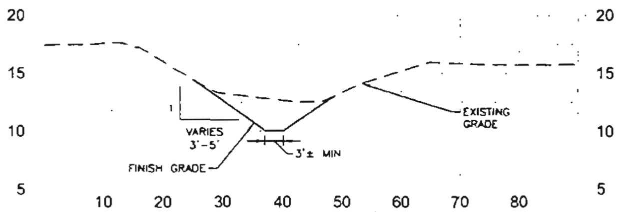

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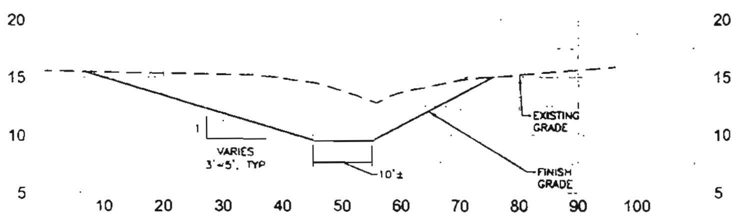

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PRELIMINARY
60% DESIGN

XREF(S) USED: XREF
ROTATION ANGLE: ROTATION
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY — CHECKED BY
FINAL MAP DATA
9/17/07

NO | DATE | DESCRIPTION | APPD.
REVISION

DESIGNED BY ASE | DATE APPD.
DRAWN BY RDS | PROGRAM MGR.
CHECKED BY KDW | CONST. MGR.
DESIGN MGR. | MGR.

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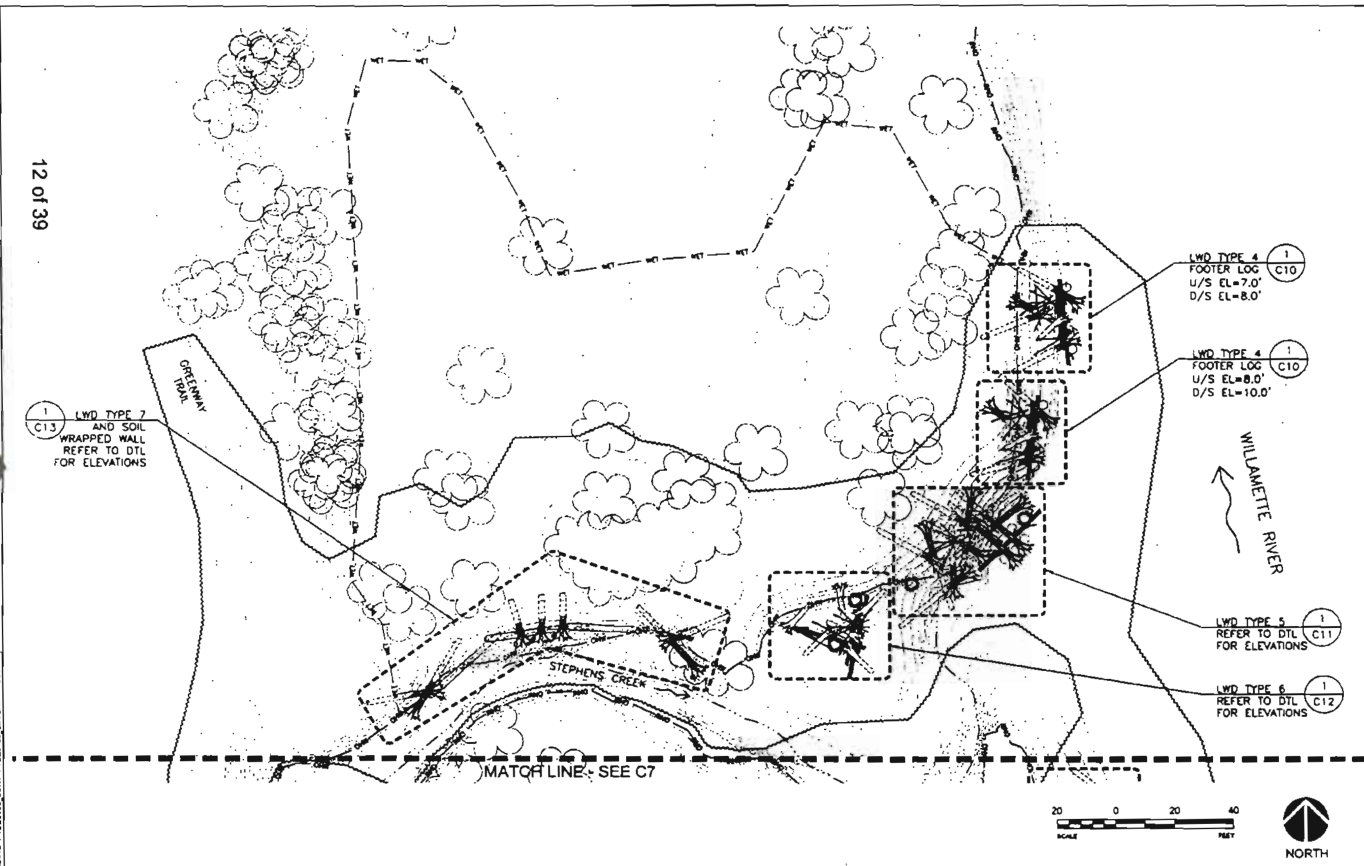
ENVIRONMENTAL SERVICES CHIEF ENGINEER
REG. PROF. ENGR. NO. 8327

VIGIL AGRIMIS
design professionals

STEPHENS CREEK CONFLUENCE
HABITAT ENHANCEMENT PROJECT
REMNANT CHANNEL
CROSS SECTIONS

1/4 SECTION 0#
JOB NO. 8471
SHEET NO. C5
16 of 24



LEGEND

- TREES
- CREEK THALWEG
- ORDINARY HIGH WATER EL=12.8'
- EXISTING WOOD TO REMAIN IN PLACE
- EXCLUSION ZONE/PROJECT LIMITS
- EXISTING WETLAND
- PROPOSED LWD - LOG WITH ROOTWAD/PARTIALLY BURIED
- PROPOSED LWD - LOG WITHOUT ROOTWAD
- PROPOSED LWD - SNAG
- PROPOSED LWD - PILE LOG
- PROPOSED BRANCHES AND BRUSH BUNDLES

NOTE:

1. THE IN-WATER WORK PERIOD FOR THIS PROJECT IS FROM JULY 1 THROUGH OCTOBER 31. IN-WATER WORK IS DEFINED AS ALL CONSTRUCTION ACTIVITIES THAT OCCUR BELOW THE ORDINARY HIGH WATER ELEVATION OF 12.8' (CITY OF PORTLAND DATUM). THESE CONSTRUCTION ACTIVITIES INCLUDE: EARTHWORK, GRADING, PLACEMENT OF WOOD AND PLANT MATERIAL, AND INSTALLATION OF PERMANENT EROSION AND SEDIMENT CONTROL MEASURES.
2. THE PLACEMENT OF LWD STRUCTURES TO BE ISOLATED FROM THE WILLAMETTE RIVER AND STEPHENS CREEK. INSTALL IN-WATER ISOLATION BARRIERS AND DEWATER AS NECESSARY. REFER TO SHEETS EC1 AND EC2.
3. PLACEMENT OF BRUSH PILES, SLASH, LWD, AND EXISTING FALLEN WOOD TO BE PER THE DIRECTION OF THE OWNER'S REPRESENTATIVE.
4. REFER TO SHT C2 AND C4 FOR SITE GRADING PLAN.

PRELIMINARY
60% DESIGN

NO	DATE	DESCRIPTION	APPD.
		REVISION	

XREF(S) USED: XREF
ROTATION ANGLE: ROTATION
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY CHECKED BY
FINAL MAP DATA
9/17/07

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DRAWN BY RAM | PROGRAM MGR.
CHECKED BY JOW | CONST. MGR.
DESIGN MGR. MGR.

CITY OF PORTLAND
ENVIRONMENTAL SERVICES
SAM ADAMS
COMMISSIONER
APPROVAL
BILL RYAN, P.E.
CHIEF ENGINEER
ENVIRONMENTAL SERVICES CHIEF ENGINEER
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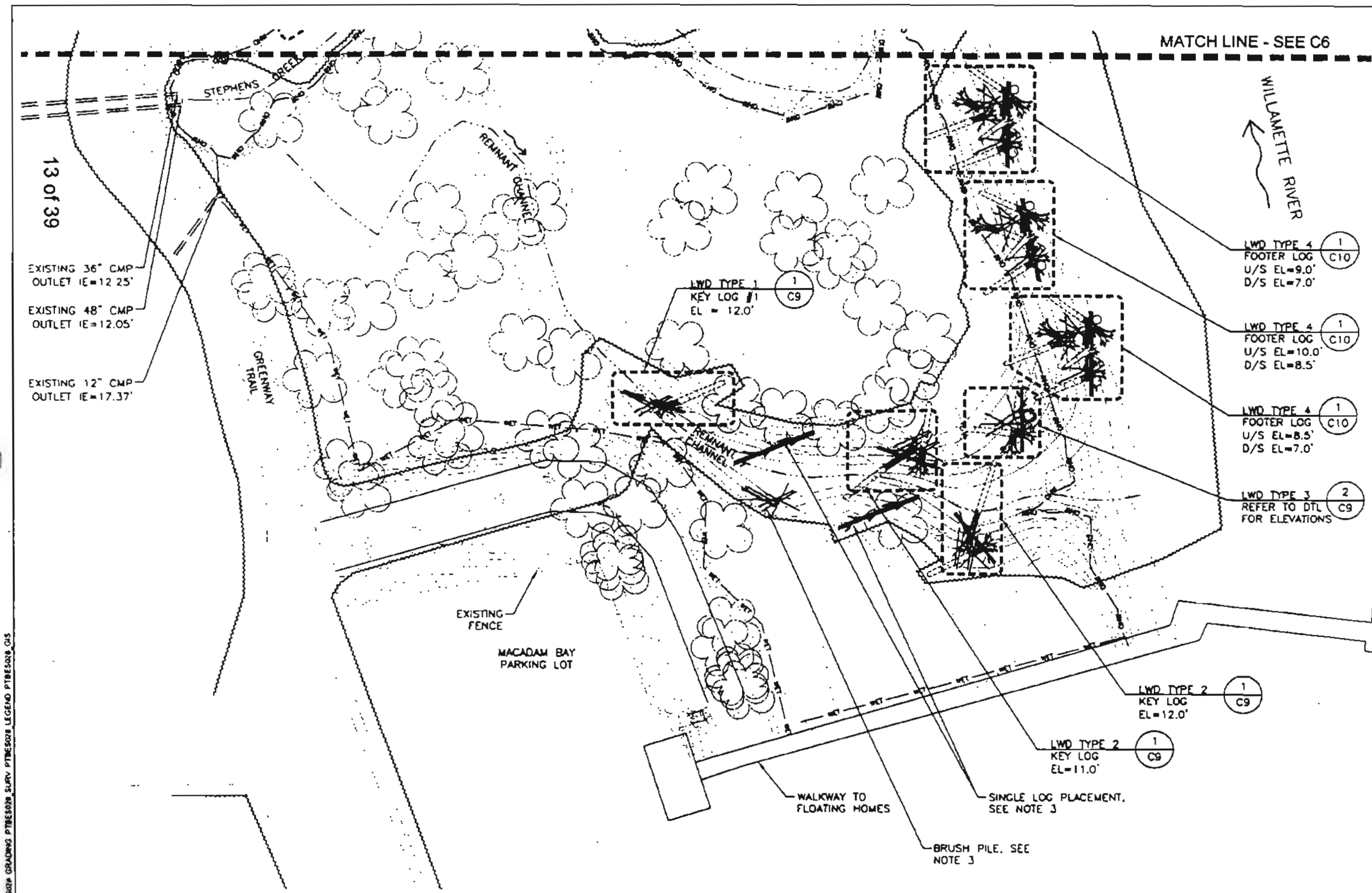
STEPHENS CREEK CONFLUENCE
HABITAT ENHANCEMENT PROJECT
STEPHENS CREEK LWD
PLACEMENT AND LAYOUT PLAN

Q#
8471
C6
17 of 24

DWG: Y:\PTBES028\CAD\CD\C6-C7_LAYOUT_PL... DATE: Sep 17, 2007 1:23pm XREFS: PTBES028_... PTBES028_DEMO PTBES028_GRADING PTBES028_SURV PTBES028_LEGEND PTBES028_GIS



LEGEND

- TREES
- CREEK THALWEG
- ORDINARY HIGH WATER EL=12.8'
- EXISTING WOOD TO REMAIN IN PLACE
- EXCLUSION ZONE/PROJECT LIMITS
- EXISTING WETLAND
- PROPOSED LWD – LOG WITH ROOTWAD/PARTIALLY BURIED
- PROPOSED LWD – LOG WITHOUT ROOTWAD
- PROPOSED LWD – SNAG
- PROPOSED LWD – PILE LOG
- PROPOSED BRANCHES AND BRUSH BUNDLES

NOTE:

1. THE IN-WATER WORK PERIOD FOR THIS PROJECT IS FROM JULY 1 THROUGH OCTOBER 31. IN-WATER WORK IS DEFINED AS ALL CONSTRUCTION ACTIVITIES THAT OCCUR BELOW THE ORDINARY HIGH WATER ELEVATION OF 12.8' (CITY OF PORTLAND DATUM). THESE CONSTRUCTION ACTIVITIES INCLUDE: EARTHWORK, GRADING, PLACEMENT OF WOOD AND PLANT MATERIAL, AND INSTALLATION OF PERMANENT EROSION AND SEDIMENT CONTROL MEASURES.
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3. PLACEMENT OF BRUSH PILES AND EXISTING FALLEN WOOD TO BE PER THE DIRECTION OF THE OWNER'S REPRESENTATIVE.

PRELIMINARY
60% DESIGN

REVISION | DATE | DESCRIPTION | APPD

XREF(S) USED: XREF
ROTATION ANGLE: ROTATION
CONSTRUCTED BY
PROJECT COMPLETED
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FINAL MAP DATA
9/17/07

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BILL RYAN, P.E., CHIEF ENGINEER
APPROVAL
ENVIRONMENTAL SERVICES CHIEF ENGINEER REG. PROF. ENGR. NO. 9327

VIGIL AGRIMIS design professionals
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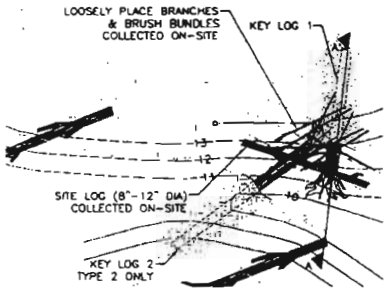
503-274-2010
503-274-2024

STEPHENS CREEK CONFLUENCE HABITAT ENHANCEMENT PROJECT
STEPHENS CREEK LWD PLACEMENT AND LAYOUT PLAN

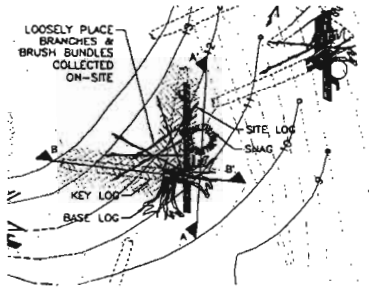
1/4 SECTION Q#
JOB NO. 8471
SHEET NO. C7
18 of 24



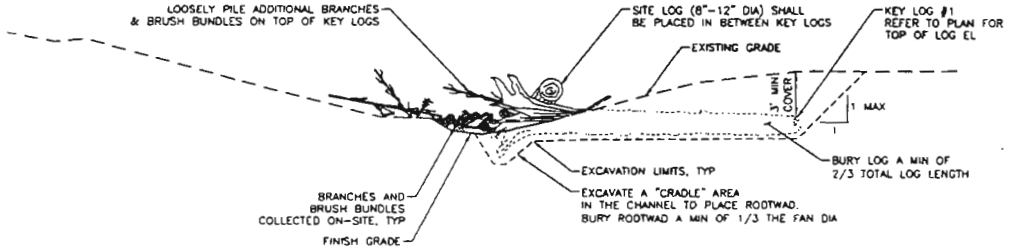
1 LWD TYPE 1 & 2 TYPICAL - PLAN
SCALE: 1" = 10'

NOTES:

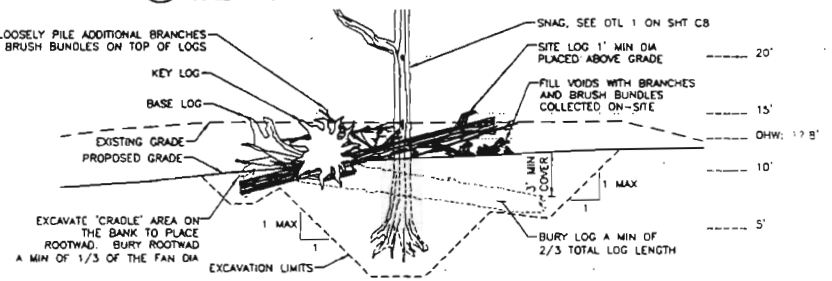
1. ROOT WADS SHALL CONSIST OF STOUT ROOT STRUCTURES THAT ARE AT LEAST 2" IN DIAMETER.
2. MEASURMENT OF LOG DIAMETER FOR LOGS COLLECTED ON SITE SHALL BE AT BREAST HEIGHT FOR THE STANDING TREE. MEASURMENT OF LOG DIAMETER FOR IMPORTED LOGS SHALL BE AT THE NARROWEST POINT ALONG THE LOG.
3. MEASUREMENT OF LENGTH FOR LOGS WITH ROOT WADS SHALL NOT INCLUDE THE ROOT WAD.
4. LOGS AND ROOT WADS SHALL CONSIST OF CONIFEROUS SPECIES THAT ARE FREE FROM ROT OR DECAY AND WERE LOGGED WITHIN THE LAST TWO YEARS.
5. SITE LOGS ARE TO BE COLLECTED ON SITE BY OWNERS REPRESENTATIVE.



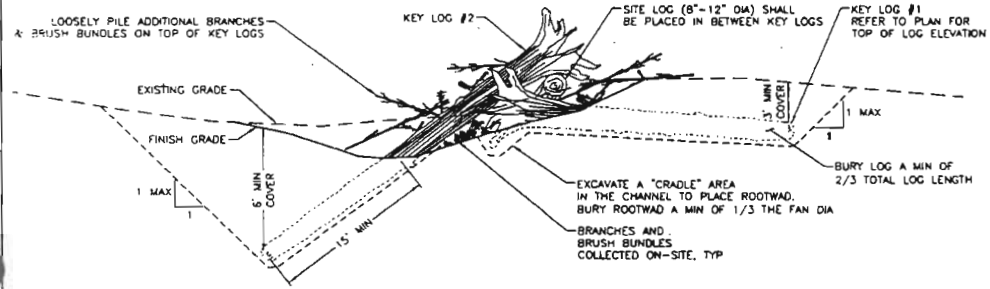
2 LWD TYPE 3 - PLAN
SCALE: 1" = 10'



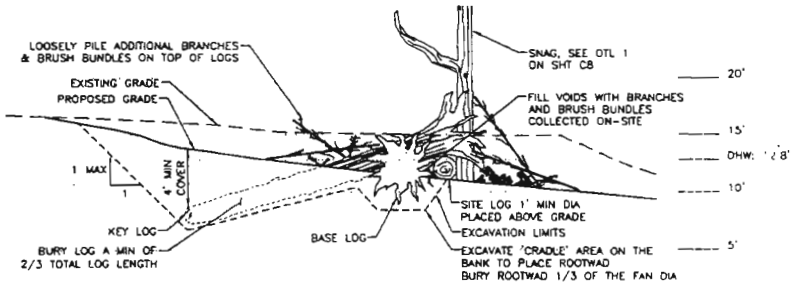
LWD TYPE 1 - SECTION A-A'
SCALE: 1" = 5'



LWD TYPE 3 - SECTION A-A'
SCALE: 1" = 5'



LWD TYPE 2 - SECTION A-A'
SCALE: 1" = 5'



LWD TYPE 3 - SECTION B-B'
SCALE: 1" = 5'

PRELIMINARY
60% DESIGN

NO.	DATE	DESCRIPTION	APPD.
		REVISION	

XREF(S) USED:
ROTATION ANGLE: ROTATION
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY: CHECKED BY:
FINAL MAP DATA
9/17/07

DESIGNED BY | DATE APPD.
DRAWN BY | PROGRAM MGR.
CHECKED BY | CONST. MGR.
DESIGN MGR.

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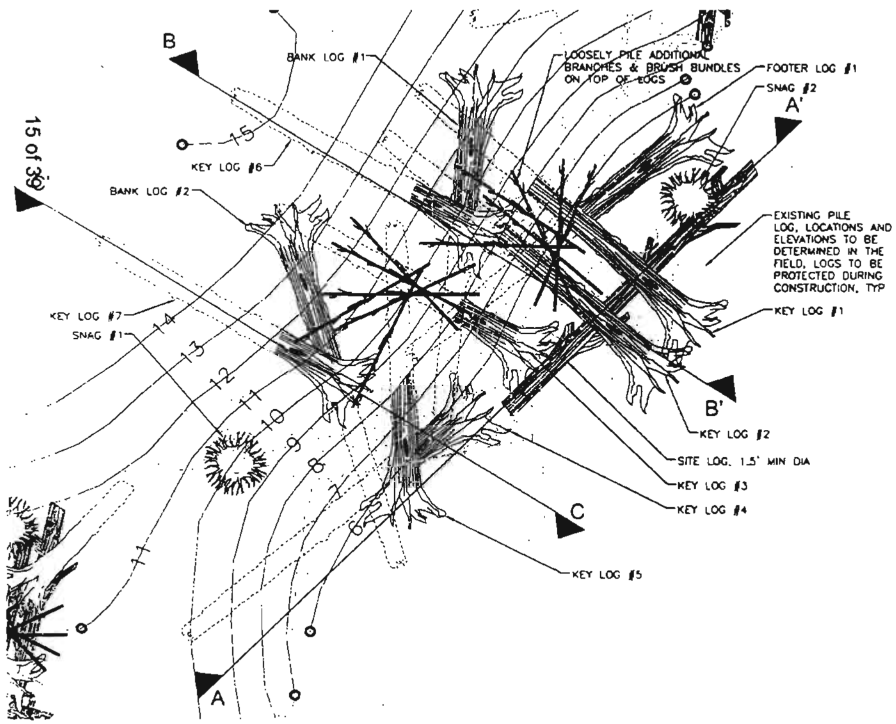
STEPHENS CREEK CONFLUENCE
HABITAT ENHANCEMENT PROJECT
HABITAT ENHANCEMENT
DETAILS 2

SECTION: Q#
JOB NO.: 5471
SHT. NO.: C9
20 OF 24

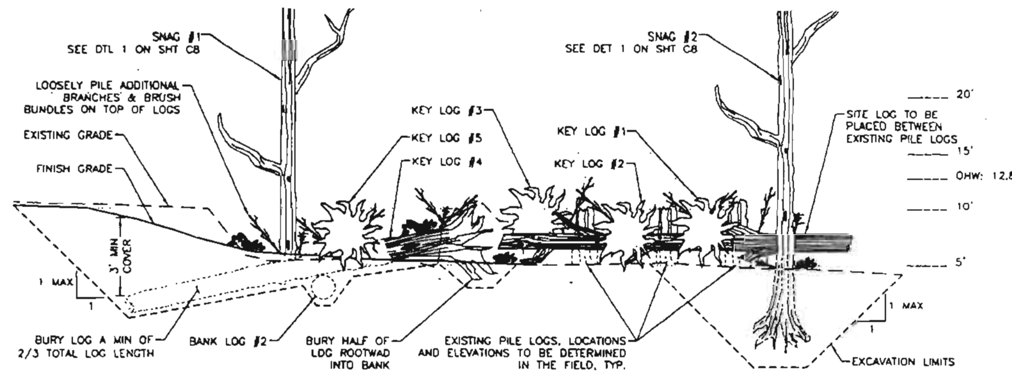


1 LWD TYPE 5 - PLAN

SCALE: 1" = 5'

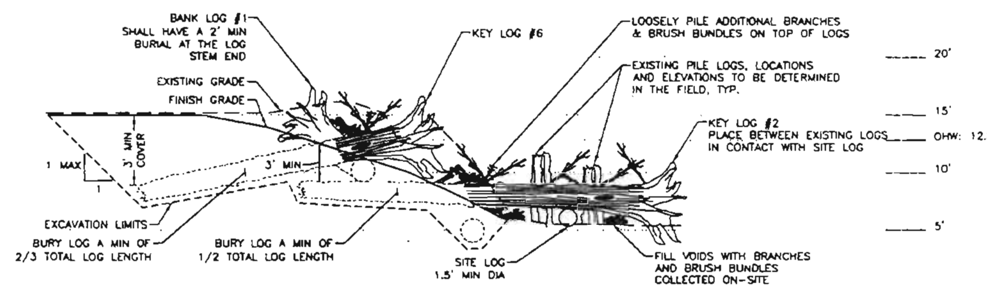
NOTES:

1. ROOT WADS SHALL CONSIST OF STOUT ROOT STRUCTURES THAT ARE AT LEAST 2" IN DIAMETER.
2. MEASURMENT OF LOG DIAMETER FOR LOGS COLLECTED ON SITE SHALL BE AT BREAST HEIGHT FOR THE STANDING TREE. MEASURMENT OF LOG DIAMETER FOR IMPORTED LOGS SHALL BE AT THE NARROWEST POINT ALONG THE LOG.
3. MEASUREMENT OF LENGTH FOR LOGS WITH ROOT WADS SHALL NOT INCLUDE THE ROOT WAD.
4. LOGS AND ROOT WADS SHALL CONSIST OF CONIFEROUS SPECIES THAT ARE FREE FROM ROT OR DECAY AND WERE LOGGED WITHIN THE LAST TWO YEARS.
5. SITE LOGS ARE TO BE COLLECTED ON SITE BY OWNERS REPRESENTATIVE.



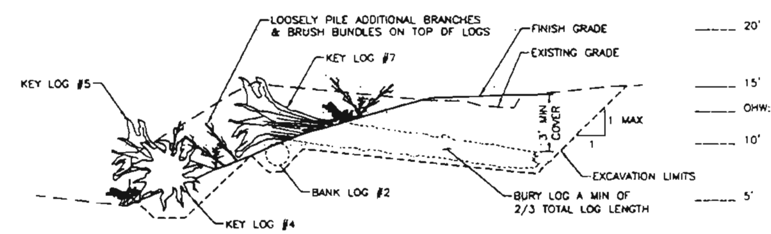
SECTION A-A'

SCALE: 1" = 5'



SECTION B-B'

SCALE: 1" = 5'



SECTION C-C'

SCALE: 1" = 5'

PRELIMINARY
60% DESIGN

NO	DATE	DESCRIPTION	APPR.
		REVISION	

XREF(S) USED: XREF
ROTATION ANGLE: ROTATION
CONSTRUCTED BY
PROJECT COMPLETED
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FINAL MAP DATA
9/17/07

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APPROVAL
ENVIRONMENTAL SERVICES CHIEF ENGINEER
REG. PROF. ENGR. NO. 9327

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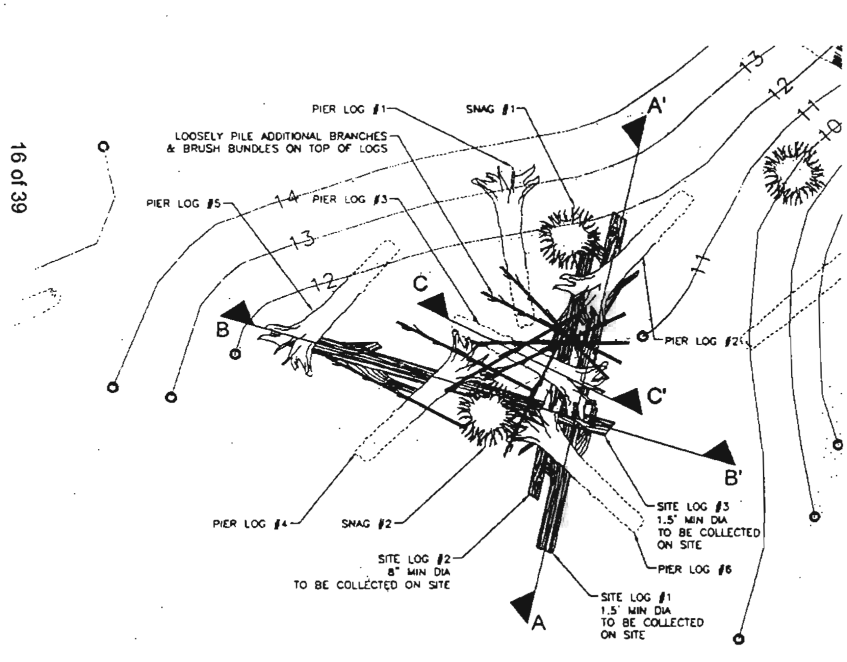
STEPHENS CREEK CONFLUENCE
HABITAT ENHANCEMENT PROJECT
HABITAT ENHANCEMENT
DETAILS 4

1/4 SECTION: Q#
JOB NO. 8471
SHEET NO. C11
22 of 24



1 LWD TYPE 6 TYPICAL - PLAN

SCALE: 1" = 5'

NOTES:

1. ROOT WADS SHALL CONSIST OF STOUT ROOT STRUCTURES THAT ARE AT LEAST 2" IN DIAMETER.
2. MEASURMENT OF LOG DIAMETER FOR LOGS COLLECTED ON SITE SHALL BE AT BREAST HEIGHT FOR THE STANDING TREE. MEASURMENT OF LOG DIAMETER FOR IMPORTED LOGS SHALL BE AT THE NARROWEST POINT ALONG THE LOG.
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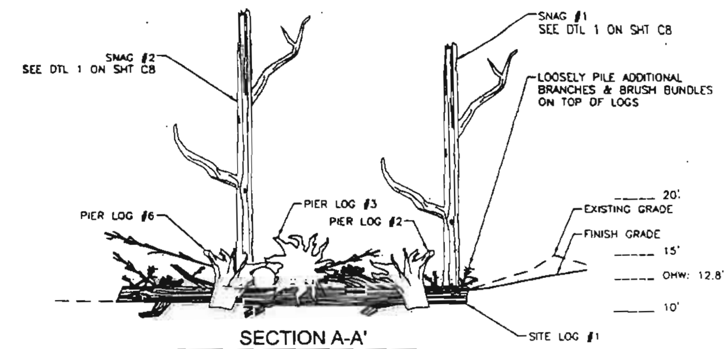
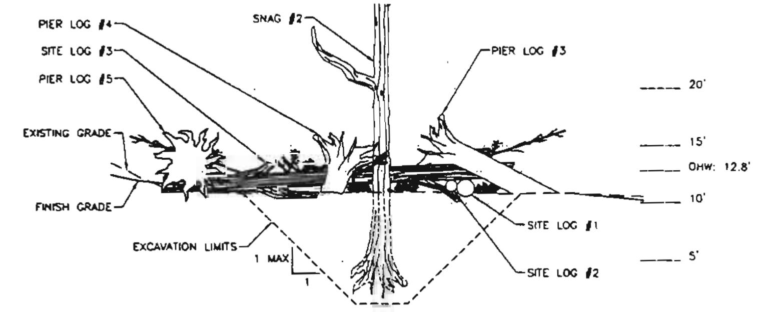
5. SITE LOGS ARE TO BE COLLECTED ON SITE BY OWNERS REPRESENTATIVE.



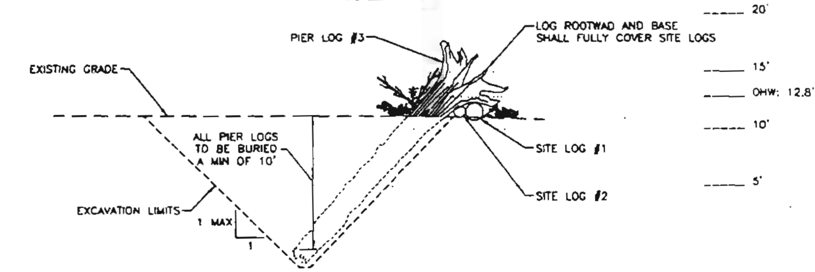
SECTION A-A'

SCALE: 1" = 5'



SECTION B-B'

SCALE: 1" = 5'



SECTION C-C' - PIER LOG TYPICAL

SCALE: 1" = 5'

PRELIMINARY 60% DESIGN

DATE Sep 17, 2007

NO.	DATE	DESCRIPTION	APPD.
		REVISION	

XREF(S) / SCALE: XREF
ROTATION ANGLE: ROTATION
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY — CHECKED BY
FINAL MAP DATA 9/17/07

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DRAWN BY | PROGRAM MGR.
CHECKED BY | CONST. MGR.
DESIGN MGR.

CITY OF PORTLAND
ENVIRONMENTAL SERVICES
SAM ADAMS COMMISSIONER
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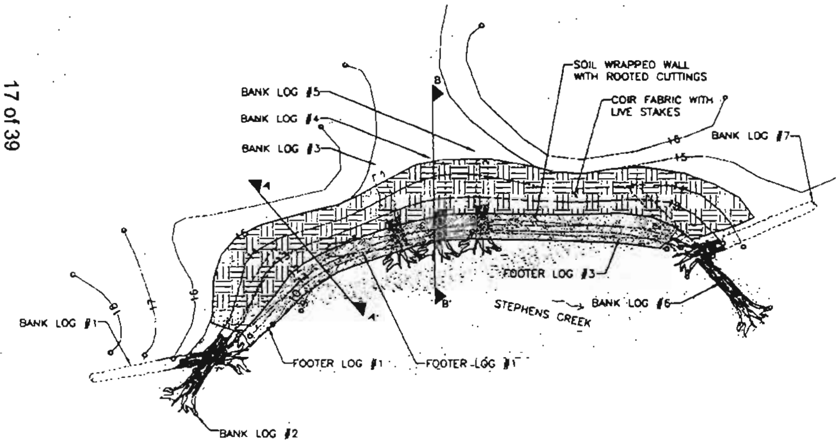
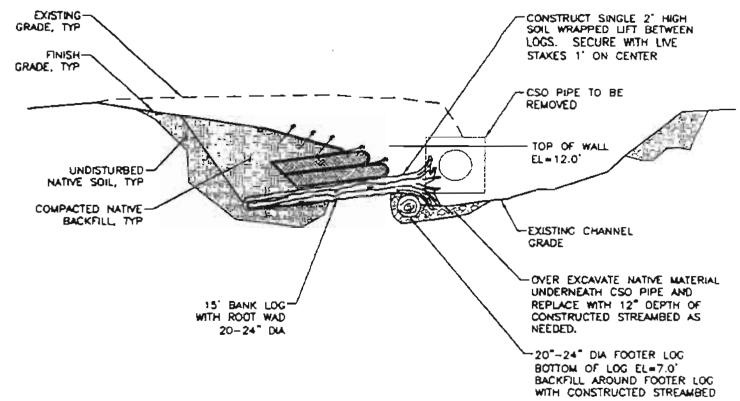
STEPHENS CREEK CONFLUENCE HABITAT ENHANCEMENT PROJECT
HABITAT ENHANCEMENT DETAILS 5

Q# | NO. 8471 | SHEET NO. C12 | 23 of 24



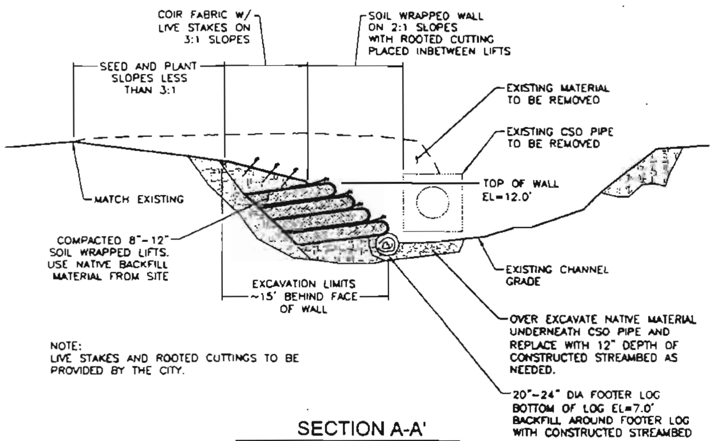
(1) LWD TYPE 7 AND SOIL WRAPPED WALL - PLAN

SCALE: 1" = 10'



SECTION B-B'

SCALE: 1" = 5'



NOTE:
LIVE STAKES AND ROOTED CUTTINGS TO BE PROVIDED BY THE CITY.

SECTION A-A'

SCALE: 1" = 5'

PRELIMINARY
60% DESIGN

XREF(S) USED: XREF
ROTATION ANGLE: ROTATION
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY CHECKED BY
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ENVIRONMENTAL SERVICES CHIEF ENGINEER REG. PROF. ENGR. NO. 9327

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STEPHENS CREEK CONFLUENCE
HABITAT ENHANCEMENT PROJECT
HABITAT ENHANCEMENT
DETAILS 6

1/4 SECTION 0#
JOB NO. 8471
SHEET NO. C13
24 OF 24

PORTLAND PARKS & RECREATION

Healthy Parks, Healthy Portland

September 21, 2007

Jennifer Goodridge
Portland's Environmental Services
1120 SW Fifth, 10th Floor
Portland, OR 97204

Dear Jennifer,

As Director of Portland Parks & Recreation, I am pleased to support the Bureau of Environmental Services grant application to improve fish habitat along the Lower Willamette River at the confluence of Stephens Creek.

The majority of replanting and restoration portion of the project will occur on Portland Parks and Recreation owned and managed property. The proposed project activities are in accordance with existing Parks plans, and representatives from Portland Parks & Recreation are involved with the planning, design, construction and monitoring of the project site.

Portland Parks & Recreation is committed to restoring and maintaining Parks properties to benefit current and future generations. I wish you luck on your efforts to seek funding for this very important project. Please let me know if Portland Parks & Recreation can assist in any other way.

Sincerely,

Zari Santner
Director

City Nature
1120 S.W. 5th Ave., Suite 1302
Portland, OR 97204
Tel: (503) 823-7529 Fax: (503) 823-6007

www.PortlandParks.org
Dan Saltzman, Commissioner
Zari Santner, Director

Volunteers in Action

Bringing DEQ employees together to exercise their passion for the environment through volunteer, community-based cleanup and restoration projects. –VIA Mission

September 18, 2007

Jennifer Goodridge, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at the Mouth of Stephens Creek Project

Dear Ms Goodridge,

Oregon Department of Environmental Quality Volunteers in Action (VIA) brings together employees and their families to do volunteer, community-based cleanup and restoration projects. VIA and its members are actively partnering with the City of Portland and community members to further the goals of the South Portland Riverbank Projects, including Stephens Creek. We will continue to build a broad volunteer base and develop educational outreach strategies to support this work. As a demonstration of this commitment, VIA supports Bureau of Environmental Services' (BES) grant application for the Stephens Creek Project.

This project area is VIA's first and important effort! With our multidisciplinary backgrounds, VIA core planning team will continue to work with project partners through the Central Planning Team (CPT) and its monthly meetings. Beyond participating in meetings and drafting or commenting on project documents, VIA members will continue to assist with project planning, community outreach, and on-the-ground volunteer labor for planting, mulching, and controlling invasive weeds. VIA's commitment is to contribute up to 300 hours of volunteer time, equal to $4,500 in-kind match to this project.

VIA fully supports BES in its pursuit of this critical grant funding for the Off-Channel Habitat Enhancement at the Mouth of Stephens Creek Project. If you have any questions or comments, you can reach me at (503) 229-5181 or e-mail volunteersinaction@deq.state.or.us.

Respectfully Submitted,

David Livengood, Planning Team Member
DEQ Volunteers in Action

cc. Andi Gresh

Willamette RIVERKEEPER®

September 13, 2007

Jennifer Goodridge, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at the mouth of Stephen's Creek Project

Willamette Riverkeeper is a non-profit 501©(3) organization. Our goal is to enable the Willamette to function more naturally, with cold, clean water, and provide healthy habitat for fish and wildlife. Further, we believe that a river with good water quality and abundant natural habitat is a basic right for all people. The Willamette River belongs to all of us, and should be protected as such. Our mission is to make the Willamette River Watershed healthy for fish and wildlife, and safe for fishing and swimming, forever and for all.

Willamette Riverkeeper pledges our support and commitment to the Bureau of Environmental Services grant application, Off-Channel Habitat Enhancement at the mouth of Stephen's Creek Project. This project is important to us because its goals are consistent with our mission. On this project, Willamette Riverkeeper shall participate by offering guided tours twice annually either by canoes or walking.

We look forward to collaborating with our partners on this project. We urge reviewers to give consideration to this important grant project.

Sincerely,

Amy Morrison
River Protection Coordinator

1515 SE Water Ave #102, Portland, OR 97214 • 503-223-6418 • www.willamette-riverkeeper.org

South Portland Neighborhood Association

Representing the Lair Hill, South Waterfront, Corbett, Terwilliger, John's Landing, and Fulton communities

P.O. Box 69567
Portland, OR 97239

September 24, 2007

Jennifer Goodridge, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at the mouth of Stephen's Creek Project

Dear Jennifer:

The South Portland Neighborhood Association would like to pledge our support for and commitment to the Bureau of Environmental Services for their grant application. The South Portland Neighborhood Association is the neighborhood association for the area just south of downtown including the mouth of Stephen's creek. There are approximately 3000 residents in our neighborhood. We are involved in many projects including the South Portland riverbank restoration project that we started and have been involved for many years We have been working closely with BES in this project as well as several others.

This grant will allow necessary work on the Willamette River to benefit multiple species of fish and wildlife to enhance the functional and aesthetic value of the ecosystem. The project engages citizens in a common effort to actively participate in environmental enhancement of the urban landscape.

The South Portland Neighborhood Association fully supports BES in its pursuit of this critical grant funding for the Lower Willamette River. I urge you to give consideration to this important grant project.

Sincerely,

Ken Love
President
South Portland Neighborhood Association

Oregon
Theodore R. Kulongoski, Governor

Department of Fish and Wildlife
Sauvie Island Wildlife Area
North Willamette Wildlife District
18330 NW Sauvie Island Road
Portland, OR 97231
503-621-3488
FAX 503-621-3025

September 24, 2007

Jennifer Goodridge, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at the mouth of Stephen's Creek Project

The Oregon Department of Fish and Wildlife (ODFW) would like to pledge our support for and commitment to the Bureau of Environmental Services (BES) for their grant application. ODFW is responsible for managing Oregon's fish and wildlife populations and provides technical expertise to the BES for projects that enhance fish and wildlife habitat.

The grant will allow necessary work on the Willamette River to benefit multiple species of fish and wildlife to enhance the functional and aesthetic value of the ecosystem. The project engages citizens in a common effort to actively participate in environmental enhancement of the urban landscape. The proposed habitat enhancement project will provide limited off-channel habitat for ESA listed species including coho salmon, Chinook salmon and steelhead trout. The proposed habitat enhancement project will also provide habitat for a variety of wildlife species that use the Willamette River corridor for movement, forage and cover.

The Oregon Department of Fish and Wildlife fully supports BES in its pursuit of this grant funding for the Lower Willamette River. On behalf of ODFW, I urge you to give consideration to this important grant project.

Sincerely,

Mischa Connine
Habitat Biologist
Oregon Department of Fish and Wildlife
18330 NW Sauvie Island Road
Portland, OR 97231
(503) 621-3488 ext 28

Planting Plan
Lower Willamette River Off-Channel Habitat Restoration at Stephens Creek

Two plant lists have been developed for restoration – for the 1) graded stream and river banks and backwater channel and 2) floodplain wetland forest (Table 1). These lists were developed based on the species currently present and managed for in the Willamette Moorage natural area, the Portland Parks & Recreation Desired Future Ecological Condition for the site, and the historic species composition according to the 1851 vegetation data.

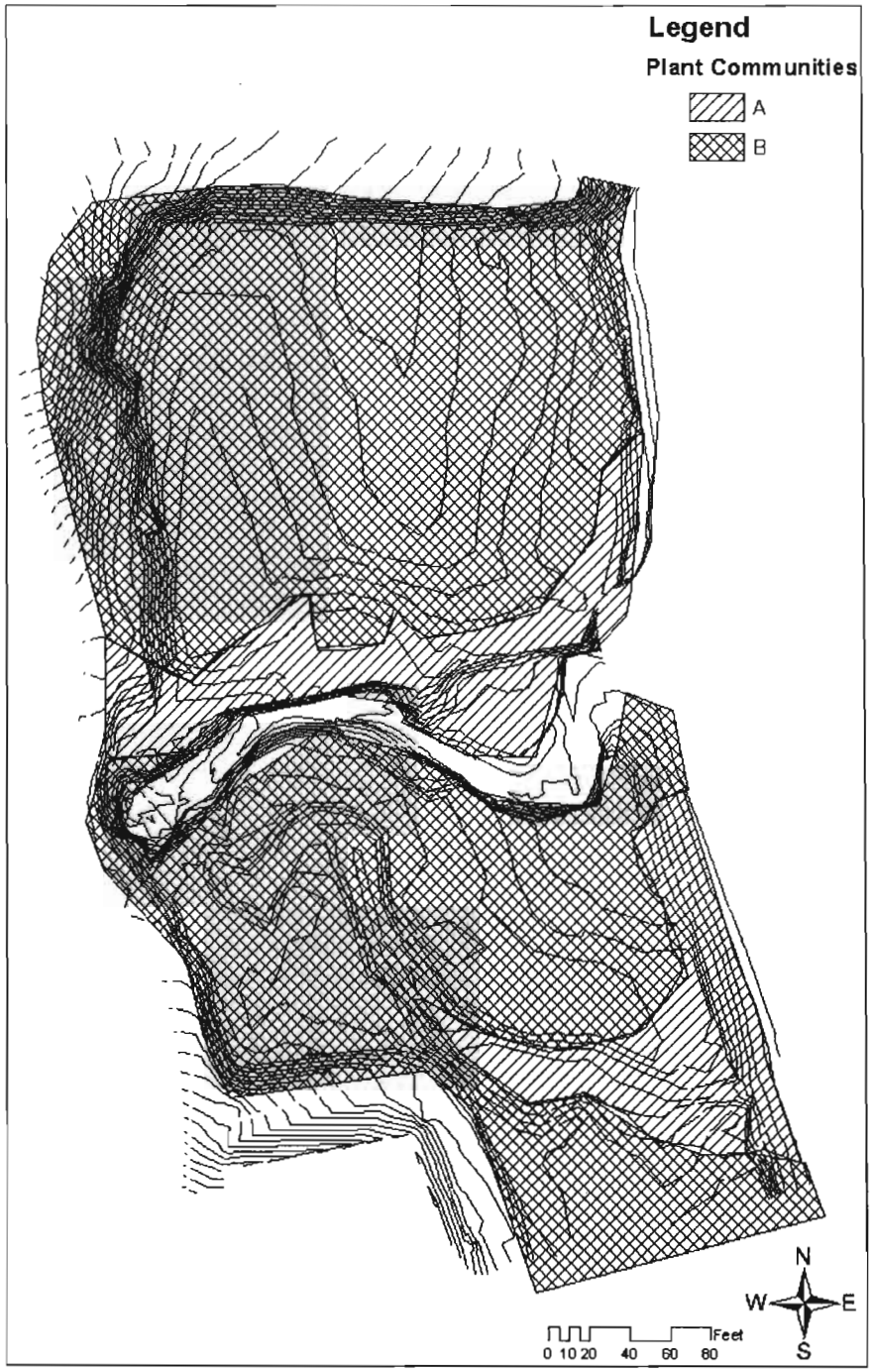
Application of Seed

BES will apply native seed to all exposed/disturbed soils within the project boundaries, including all graded areas, access roads, staging areas, and stockpile areas. Species composition of the native seed mix will be customized to each habitat type, and are shown in Table 1. All seed material will be collected and/or propagated from local seed sources (when possible) to help maintain local genetics and improve survival. Chewings fescue (*Festuca rubra* var. commutata) may be used along the access roads and staging areas as a non-native, non-aggressive cover crop used to encourage rapid shrub/tree development and discourage weed growth. Seed will be applied after construction activities in Summer/Fall 2008. Seed mix will be applied at a rate of approximately 25 lbs per acre.

Installation of Native Woody Trees and Shrubs

BES will provide and install all native woody plant materials, except the rooted cuttings which will be supplied by Portland Parks. BES will provide the rooted cutting material to the contractor for installation between engineered soil lifts specified for the north bank of Stephens Creek. Besides these rooted cuttings, materials will consist of native trees and shrubs in the form of bare root seedlings and live pole cuttings. When possible, plant materials are collected and/or propagated from a Portland metro area wild population/seed source. Installation of live pole cuttings will be after construction, in the fall of 2008. Installation of bare root trees and shrubs shall occur in January – February 2009. Trees will be installed on a 10 x 10 ft grid and each tree will be protected with a vexar mesh tube to reduce herbivore damage. Shrubs will be installed in clusters of three or ten, depending upon the species and they will be spaced at a minimum of 10 feet between clusters. Live pole cuttings will be installed in clusters of 10. The total number of trees and shrubs are depicted in the table and based upon planting density rates, however, the numbers of each species will be determined by the availability of plant stock. The following table lists the plant species and plant quantities.

Species	Common Name	Quantities
[redacted]		
ROOTED live pole cuttings btw soil lifts:		
Salix lasiandra	Pacific willow	**500 total, a mix of these**
Cornus sericea	Red osier dogwood	**species, harvested from on**
Salix fluviatilis	Columbia river willow	**site if possible**
Spiraea douglasii	Douglas spirea	
Physocarpus capitatus	Pacific ninebark	
Stream and river bank live pole cuttings:		
Salix lasiandra	Pacific willow	**Approx. 1,000 total, a mix of**
Cornus sericea	Red osier dogwood	**these species, harvested from**
Salix fluviatilis	Columbia river willow	**on site if possible, and placed**
Spiraea douglasii	Douglas spirea	**where possible around LW**
Physocarpus capitatus	Pacific ninebark	**structures. Harvested from**
		site if possible.
Herbaceous seed:		
Hordeum brachyantherum	Meadow barley	**Approx. 10 lbs of seed mix**
Glyceria elata	Fowlgrass	
Deschampsia cespitosa	Tufted hairgrass	
Alopecuris geniculatus	Water foxtail	
Carex aperta	Columbia sedge	
Carex obnupta	Slough sedge	
Wetland emergent plugs:		
Leersia oryzoides	Rice cut grass	**400**
Cuttings will be installed in clusters of ten, where possible around the large wood installations.		
Seed mix will be applied at a rate of approximately 25 lbs per acre.		
[redacted]		
TREES,	***bare root:***	**1,750**
TREES for Volunteer Events,	***container plants:***	**1,000**
Fraxinus latifolia	Oregon Ash	
Populus balsamifera ssp. trichocarpa	Black Cottonwood	
Crataegus suksdorfii	Black Hawthorne	
Rhamnus purshiana	Cascara	
SHRUBS,	***bare root:***	**1,750**
SHRUBS for Volunteer Events,	***container plants:***	**1,000**
Sambucus racemosa	Red Elderberry	
Rosa pisocarpa	Swamp rose	
Cornus sericea	Dogwood	
Spiraea douglasii	Spirea	
Live pole cuttings, in lowest areas		**500**
Salix lasiandra	Pacific willow	
Salix fluviatilis	Columbia River willow	
HERBACEOUS SEED, access and stockpile areas:		**As needed, at rate of 25lbs/ac**
Festuca rubra var. *commutata*	Chewings red fescue	



ENVIRONMENTAL SERVICES
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Proposed planting communities at the Stephens Creek confluence.

Creating an Environmental Streamlined Permit Process for Federal, State and City Surface Water-Related Permits in the City of Portland

Prepared by Mike Reed, Environmental Permits Compliance Manager
City of Portland
October 15, 2007

Background

The idea of developing a streamlining process for water related permits began with the federal River Trust Partners consisting of federal agencies and the City of Portland. The River Trust Partners was envisioned by Portland's former Mayor Vera Katz to begin exploring how the City could address multiple regulatory requirements in a more efficient and coordinated manner. At the time, the City had created numerous separate programs to deal with the listing of steelhead and Chinook in 1998-99 under the federal Endangered Species Act (ESA), the placement of the lower Willamette River on the National Priorities List pursuant to the Comprehensive Environmental Response, Compensation, Liability Act (CERCLA) as well as the amended stipulated and final order to reduce combined sewer overflows.

The first River Trust meeting was held April of 2002 and one of the outcomes of the meeting was a recommendation to develop a process for streamlining federal ESA Section 7 consultations with the federal agencies. The River Trust agreed to designate staff to develop a streamlining process. This process was to include the creation of a Streamlining Team consisting of federal agency and City representatives and an Agreement that would guide this coordination. Agency members of the Streamlining Team were chosen who had the authority to issue permits, conduct Section 7 consultations, and write biological opinions. The City created a Permits Compliance Manager position that would chair the Team meetings and act as the point of contact between the City and agencies.

The Streamlining Agreement was signed on February 14, 2003 by the City of Portland and three federal agencies; the U.S. Army Corps of Engineers, National Marine Fisheries Service and U.S. Fish and Wildlife Service.[1] The Streamlining Team began implementing the Agreement in September 2003. Current members include:

Streamlining Team Members	Phone	Email
Michael Reed (COP - Chair)	503.823.3399	Michaelr@Bes.ci.portland.or.us
Kathryn Harris (Corps)	503.808.4387	Kathryn.L.Harris@usace.army.mil
Christy Fellas (NOAA)	503.231.2307	christina.fellas@noaa.gov
Greg Smith (USFWS)	503.231.6179	greg_m_smith@r1.fws.gov
Mike McCabe (DSL)	503.378.3805 ext 255	Mike.McCabe@state.or.us

[1] Development of the Agreement principles were provided by the following agency and City staff; Don Borda (Corps), Joe Zisa (USFWS), Nancy Munn (NMFS), and Mike Reed (City of Portland). Additional assistance was provided through a Memorandum of Agreement (April, 2002) between Barbara Hill, Special Status Species Biologist of the Bureau of Land Management's Oregon State Office and Mike Reed with the City of Portland's ESA Program.

Alex Cyril (DEQ)	503.229.6030 Cyril.Alex@deq.state.or.us
Mischa.Connine (ODFW)	503-621-3025 ext.28 Mischa.a.connine@state.or.us
Kate Green (BDS)	503-823-5868 Kgreen@ci.portland.or.us
Stacey Castleberry (BDS)	503.823.7586 scastleberry@ci.portland.or.us

The Nuts and Bolts of the Streamlining Agreement
The Streamlining Agreement spells out the goals and procedures for streamlining federal ESA Section 7 consultations for City sponsored projects seeking Army Corps of Engineers Section 404 and Section 10 permits.

The goals of the Agreement are to (1) ensure that City projects are constructed and implemented in a timely manner; (2) improve coordination, communication and agreement on formal and informal consultations on listed and proposed species prior to project development; (3) ensure that activities do not jeopardize listed and proposed species, or result in the destruction/adverse modification of designated critical habitat, or result in unauthorized take during implementation of a project or activity, and (4) support conservation and recovery of listed and proposed species (A copy of the Agreement can be found on the following website address: www.fish.ci.portland.or.us).

The Streamlining Team developed Standard Operating Procedures clarifying roles, responsibilities, and operating procedures for Streamlining Team. The Procedures clarify City project applicant and regulating Agency protocols for ensuring early project review as well as spelling out the development and review of biological assessments as part of the consultation process.

Expansion of the Streamlining Team to include State and City permitting agencies
It became clear early on to the Streamlining Team that focusing on federal permitting alone would not achieve the overall goal of streamlining permitting for City sponsored activities. State and local water related permit review processes needed to be taken into account for any meaningful permit streamlining to occur.

As an example, some of the state's water related laws and agencies that administer them are intricately connected to the federal permitting process[2]. In addition, like the federal permit review process, multiple agency reviews can occur during the Oregon Department of State Land's Removal Fill Law permit application review.[3] It became clear that these agencies and review processes needed to be included in the permit streamlining process.

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[2] Section 401 of the Clean Water Act requires that an application for a Corps Section 404 permit must also receive a water quality certification from the Oregon Department of Environmental Quality (DEQ). The water quality certification becomes part of the Corps' permit conditions.

[2] As an example, the Oregon Department of Fish and Wildlife provides additional guidance on DSL permit applications (signatory requirements on the Fish Enhancement General Authorizations) as well as approvals for inwater work window extension requests, fish passage requirements and guidance for placement of wood in streams. The Oregon Department of Environmental Quality oversees state water quality standards and can request additional conditions be placed in the DSL permit to ensure water quality criteria are not exceeded. The condition placed in the permit can require the applicant to comply with the water quality certification issued by DEQ to the Corps permit.

The Team also recognized local governments role in water related permitting. The City's Bureau of Development Services (BDS) administers the review and approval for applications of proposed activities along the Willamette River through the Greenway Review and with all tributary streams and their riparian zones through the Environmental Review.[4] Also, many project proposals requiring Greenway and Environmental Reviews also require Corps and DSL permits.

Due to the key role these agencies play in permitting City water related activities, the state Departments of Environmental Quality, State Lands, Fish and Wildlife and the Bureau of Development Services were asked to participate on the Streamlining Team.[5]

The addition of the state and City regulators to the Streamlining Team has been an effective approach for streamlining multiple regulatory requirements.[6]

[4] The genesis of these laws is the State Land Use Goals 5 and 15 as well as Metro's Title 3.

[5] The Portland River Trust was reconvened on November 18th, 2005 to reaffirm commitment to the Streamlining Agreement and to formally recognize both the federal and state agencies and BDS for their participation on the Streamlining Team. Participating Agency Directors included; Colonel Thomas O'Donovon (Corps), Socorro Rodriguez (EPA), Mike Tehan (NMFS), Kemper McMaster (USFWS), Stephanie Hallock (DEQ), Ann Hanus (DSL), Lindsay Ball (ODFW), Paul Scarlett (BDS) and Sam Adams (City of Portland Commissioner).

[6] An example of some of the project design elements and information that are presented to the Streamlining Team include; (1) The preferred project option over all possible alternatives; (2) Clarification on mitigation requirements; (3) Preliminary sediment and pollution control measures and work isolation methods; (4) Clarification on all applicable resource plans (Originally required for SLOPES, now for DSL's SPGP); (5) Ensuring the project description in the permit application adequately address the whole of the proposed action, including secondary and cumulative impacts; (6) Clarification that design drawings in the permit application depict the full extent of proposed work within the jurisdictional area.

4.0 Measures to Avoid and Minimize Impacts

Adverse impacts resulting from the Stephens Creek Confluence Habitat Enhancement Project are temporary and minimal in effect, only lasting through the duration of construction. The following measures were developed in order to avoid and minimize impacts to wetlands, waterways, fish, and wildlife. These measures will be included in the contract specifications as appropriate and will be managed throughout project construction.

4.1 Site Preparation – Preconstruction Activities

Exclusion Zone Limits

- Prior to ground disturbing activity including mobilization, exclusion zone fence and/or sediment fences will be installed to surround the north and south work areas to define the work exclusion zones and protect the trees located within the exclusion zone areas.
- Trees located within the designated work area will be labeled for either removal or protection.
- During the construction period, heavy equipment will not be allowed beyond the fenced limits of disturbance. Placement of the dirt bags for de-watering may be done by hand within these areas.
- Exclusion zone fencing will be high visibility orange plastic mesh, a minimum of 4 feet high and secured to the ground with 8-foot metal posts with 2-foot burial so a 2-foot gap exists between the bottom of the plastic mesh and the ground surface.
- Exclusion zone fencing will be secured to the ground with metal posts and will remain upright, taut and in-place until construction is completed.

Grading Limits. Stakes will be placed along project lines and grades. Staking will be approved by the owners representative prior to the construction. Some adjustments to lines and grades are expected. Damaged or destroyed construction stakes will be replaced as needed.

Tree Protection Zones.

- Prior to ground disturbing activities, temporary fencing, barricades and guards will be installed to protect trees and other plants which are to remain undisturbed. See Exclusion Zone Fencing (above).

- Trees labeled for protection, but located within the work limits may be limbed and grading may cause some damage to the root zones, however, they are not to be removed.
- Native materials, including trees, large downed (non-decayed) wood, limbed vegetation, weed-free topsoil, and native channel substrate (gravel, cobble, and boulders) will be conserved for site restoration.
- A pruning saw will be used to make cuts on roots or limbs that must be removed to perform work.
- Trees along the access trails may need to be limbed prior to construction. Limbing will be limited to remove as little material as possible. All limbing will be done by City arborists.
- Where possible, native materials will be left where they are found. Vegetation will be clipped at the ground level to retain root mass and encourage reestablishment.
- Trees removed that have greater than 12" diameter breast height (DBH) will be stockpiled and placed on site with direction from the owner. On-site material larger that 12" DBH will not be used in the in-water large wood structures.
- Any trees removed with less than 12" DBH and all limbs removed will remain on site to be incorporated into brush piles or chipped for mulch. This material will either be used in the large wood structures as specified, or placed with direction from the owner. After incorporating as much material on site as possible, the excess material will be hauled off-site by the contractor per direction of the owner.
- The large snag (tree # 9) near the confluence of Stephens Creek and the Willamette River will be designated for protection. However, if this snag is damaged during removal or replacement, then a tall snag will be installed in it's place.
- Plants and trees outside of the construction area will be undisturbed to the maximum extent practicable.
- All wood removed from below OHW will be stockpiled and re-used during site restoration.

4.2 Erosion, Sediment and Pollution Control Plan (ESPCP)

ESPCP facilities will be installed prior to any ground disturbing activity on the project site, including mobilization, in such a manner to ensure that sediment laden water does not leave the project site, enter the drainage system, roadways or violate applicable water standards. The ESPCP will meet requirements of all applicable laws and regulations and will be in accordance with the City of Portland's Title 10 Erosion and Sediment Control regulations; requirements set forth in this document can be found at City of Portland, Web site: http://www.bds.ci.portland.or.us/pubs/pubsmain.htm).

Construction Activities:

Minimum Area. Construction activities will be confined to the minimum area necessary to complete the project, as defined by Exclusion Zone Limits. During the construction period, no equipment will be allowed beyond the fenced limits of disturbance. Refer to Exclusion Zone Limits (above) for additional details.

Type of Heavy Equipment. Equipment that has the least adverse effect on the environment will be selected (e.g., minimally sized, low ground pressure equipment).

Site Access: Site access will be from the existing paved areas, the greenway trail, and from the existing access road along the southwest site boundary. All site access routes will conform to City of Portland, Title 10 Erosion Control Manual Section 4-1.

- Site access will be through routes designated on the Plans.
- The existing sewer line will be protected during site access.
- Clean gravel will be used for the gravel construction entrances. This material will be placed to a depth of 8-inches. Material for the temporary gravel access road will be reasonably well-graded, angular, pit run gravel from ¾ inches to a No. 200 sieve.
- Organic matter in the gravel is acceptable provided organic matter does not exceed 5.0 percent as determined in accordance with AASHTO T195. If organic matter is less than 2.0 percent as determined in accordance with AASHTO T195.
- Temporary gravel construction access areas will be maintained in a condition to prevent tracking or flow of mud or sediment onto public right-of-ways, or off the project site.
- Upon completion of the project, the temporary gravel construction entrances and any modifications for site access will be removed and the area will be restored to pre-construction conditions.
- Following construction, the paved path will be repaired and re-surfaced.

Equipment and Material Staging and Stockpiling.

- Only enough supplies and equipment to complete construction will be stored on site.
- Vehicle staging, maintenance, refueling and fuel storage areas will be at least 150 feet from the Willamette River and Stephens Creek to ensure potential spillage of pollutants will not reach environmentally sensitive areas and/or waters of the state.
- All stockpile and staging areas shall be protected by sediment fence or other measures such as covering to prevent sediment laden run-off or wind blown sediment from exiting the site.
- Stationary equipment stored in staging areas such as excavators, pumps and generators will be equipped with drip pans and/or diapers capable of containing 110% of the vehicle and/or equipments capacity.
- Suitable containment devices (e.g., diapers) will be used on all stationary power equipment used within 150-feet of the water body or wetland to prevent potential spills from entering a waterbody.

- Vehicles / equipment will be inspected daily for fluid leaks before leaving staging and storage areas. Any leaks discovered, will be repaired before the vehicle / equipment resumes service.
- Equipment used below ordinary high water will be clean of visible grease, oil, mud and other contaminants before leaving the staging area and during construction. All cleaning will occur in the designated equipment staging area. Inadequately cleaned or leaking equipment will be immediately removed from the site, cleaned, and repaired. A daily log of vehicle maintenance activities will be maintained and submitted to the City biweekly. An inspection record will be available upon request.
- Stockpiles will not be placed within the root zones of existing trees to be saved or existing, native vegetation to remain. Stockpiled material will be covered, moved off-site or reshaped within 48-hours.
- Trees or limbed branches may be temporarily stockpiled on the greenway trail north of the CSO removal work area. Soil, sediment, or equipment will not be staged or stockpiled in this area. Excess tree material to be stockpiled in the materials staging area.
- Following construction, all existing gravel will be removed from the materials stockpile and staging area. This area shall be ripped or tilled to a minimum of 18 inches and tracked over one time only to a smooth surface.

In-water work timing.

- Work occurring below ordinary high water will be completed within the State approved in-water work period for the Willamette River: July 1 thru October 31.
  - The contractor will develop a construction schedule to ensure that work is completed by October 31.

Erosion, Sediment and Pollution Control Plan (ESPCP)

- The contractor will prepare an ESPCP for review and approval prior to construction.
- ESPCP facilities depicted on plans shall be installed such that sediment and sediment-laden water and wind driven sediment does not leave the project site, enter drainage systems, roadways, environmentally sensitive areas, or waters of the state.
- ESPCP facilities will be installed prior to any ground disturbing activity on the project site, including mobilization, in such a manner to ensure that sediment laden water does not leave the project site, enter the drainage system, roadways or violate applicable water standards.
- Sediment barriers and all other erosion control devices will remain in-place (as needed) until after proposed construction related activities are complete and sites are stable.
- Excavation within the remnant channel and along the streambanks of Stephens Creek will be seeded and covered with erosion control material (jute) after construction to provide immediate erosion control.

- All impacted areas will be planted with native plants and trees during winter 2008 / 2009 as described in the site restoration and revegetation plan.
- All erosion control areas that are seeded and planted with live stakes and/or rooted cuttings will be watered by the contractor during the maintenance and establishment period. These areas will be hand watered daily for two weeks following installation. After that two week period, hand watering will occur on a weekly basis through September 30, 2008.
- Requirements for erosion, sedimentation and pollution control found in agency permits, the project plans and specifications and the City's of Portland Title 10 Erosion Control Manual (City of Portland, 2000) will be followed.
- The City will require that the selected contractor keep emergency erosion/pollution control best management practices on site at all times.
- Remove sediment from erosion controls before it reaches 1/3 of the exposed height of the control.
- All disturbed areas will be stabilized if a work break is anticipated for more than 4 days.

Water Quality Treatments/Methods

Water quality treatments will be designed, installed and maintained to collect and treat all construction discharge water to remove debris, nutrients, sediment and other pollutants that may be present.

- Straw Wattles. Straw wattles catch and detain sediments and runoff. Wattles will be manufactured from rice or coconut straw. The straw will not be moldy, caked, decayed or of otherwise low quality. Straw wattles will be a 9-inch diameter roll of straw that is contained in a biodegradable mesh. Straw will be free of noxious weeds.
- Sediment Fence. Silt fence will be installed in areas specified before construction starts. The sediment fence will be extended into the trench to prevent sediment from going beneath it, and removed after erosion control measures have been installed on the slopes. Damaged and otherwise improperly functioning portions of silt fences will be repaired or replaced.
- Sedimat (or approved equal) is a biodegradable silt barrier. Sedimats will be placed and fixed to the bed of Stephens Creek at the downstream end of the project to trap sediment. When full, or at the completion of the project, Sedimats will be removed from the stream channel.
- Pump Discharge Sediment Control System (PDSCS). The pump discharge sediment control system will be Dirtbag® or equivalent. The pumped sediment control device will have a fill spout large enough to accommodate a 4" discharge hose. Straps are attached to secure the hose and prevent pumped water from escaping without being filtered. Clean flow will be discharged at a rate of 4" per second or less with a maximum aperature size of 1 inch.

- Turbidity Curtain. Turbidity curtains (or approved equal) will be placed around targeted work areas to trap suspended sediment. When full, or at the completion of the project, they will be removed from the project site.
- Return Flow. If construction discharge water is released using an outfall or diffuser port, velocities will not exceed 4 feet per second, and the maximum size of any aperture will not exceed one inch.
- Pollutants. No pollutants such as green concrete, cement grout silt, welding slag, or sandblasting abrasive will be generated at the site. The project will not use any treated wood.

Inspection of Erosion Control Measures

- During active construction, erosion prevention and sediment control measures will be inspected daily. Erosion prevention and sediment control measures will be maintained, adjusted, repaired or replaced daily to ensure that they are functioning properly.
- An inspection log recording field inspection of each ESPCP element will be maintained. The log will detail the date, time, and worker name, title, and condition of each element and the remedial action taken.
- Maintenance of ESPCP will include turbidity monitoring: "No visible and measurable sediment or pollutant will exit the site, enter the public right-of-way or be deposited into any water body or storm drainage system." "Depositing or washing soil into a water body or storm drainage system is prohibited". **Visible and measurable is further defined in City Code Title 10, Chapter 10.20 as**: Deposits or tracking of mud, dirt, sediment or similar material exceeding one-half cubic foot in volume on public or private streets, adjacent property, or into the storm or surface water system, either by direct deposit, dropping, discharge or as a result of the action of erosion; Evidence of concentrated flows of water over bare soils; turbid or sediment laden flows; or evidences of on-site erosion such rivulets on bares soil slopes, where the flow of water is not filtered or captured on the site; and Earth slides, mudflows, earth sloughing, or other earth movement that leaves the project. Water quality monitoring will be in accordance with 401 Certification and will comply with City Codes (Title 10):
    - Prior to any activity on the project site including mobilization, the contractor will designate turbidity-monitoring points 100 feet upstream and 100 feet downstream of the in stream work area.
    - Turbidity will be visually assessed and recorded every 2 hours during active periods of construction. If at any time, visual turbidity levels are estimated to be approaching the turbidity exceedance level turbidity measuring will be performed with a turbidimeter. The meter will be calibrated and measurements will be documented and be available for review upon request. A log containing turbidity measurement results will be maintained on the project site at all times, and will be available for review upon request.
    - Turbidity monitoring results will include date, time, personnel, turbidity readings and comments.

- The turbidity standard may be exceeded for a maximum of one monitoring interval per 24-hour period providing all practicable control measures have been implemented. If an exceedance of 10% above background turbidity occurs, modify the activity causing the problem and continue to monitor turbidity levels.
- If exceedances occur with two consecutive measurements, the activity causing the turbidity will be stopped until the problem is resolved. Work will not resume until the turbidity level has dropped to an acceptable level.

Erosion Prevention.

- Erosion control materials (and spill response kits) will remain on-site at all times (e.g., silt fence, straw bales). These measures will be maintained on the site until erosion control measures have been installed.
- To facilitate an emergency response:
  - A project manager or assigned representative will be either on-site at all times throughout construction or will be available at any time (by telephone or mobile phone) throughout the duration of the project;
  - Contract specifications will require that emergency erosion/pollution control equipment and best management practices are on site at all times. For example, the contractor will ensure that a supply of sediment control materials (e.g., silt fence, straw bales) and hazardous material containment booms and spill containment booms be on site and accessible to facilitate the cleanup of hazardous material spills if necessary; and
  - Contract specifications will require that the contractor identify a contingency plan(s) (and the appropriate means to enact the contingency plan) specifically for "work isolation and de-watering" should a high flow event occur.
  - A boat will be present on site for installation of booms should a spill occur.

Spill Containment and Control Plan

The contractor will develop a Spill Containment and Control Plan and the owner will review this plan to ensure that it is in compliance with all permits. This plan will describe any regulated or hazardous products and materials that will be used for the project, including inventory, storage, handling and monitoring; and will describe a proposed spill containment and control plan. The spill containment and control plan will include: notification procedures, specific cleanup and disposal instructions for different products, BMPs that will used to control different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

Emergency Measures

- To avoid spills or discharge of chemicals, hazardous materials, fuels, and lubricating oils to the creeks during construction, contractors will be required to adhere to the erosion, sedimentation and Pollution control requirements found in the agency permits, project plans and specifications and to the City's Erosion Control Manual (City of Portland, 2000).
- The contractor will be required to provide a list of any hazardous materials to be used on site. He will also be required to provide information about the storage, handling, and monitoring of these products.
- Construction activities will cease if the construction area becomes inundated due to high flows, except for efforts to avoid or minimize resource damage. ESPCP may be upgraded (as needed) for unexpected storm events and to ensure that sediment and sediment-laden water do not leave the site, enter drainage systems or roadways, or violate applicable water quality standards.
- A supply of plastic sheeting and straw will remain on site during all phases of construction to respond to erosion and sediment emergencies should they occur. Temporary stabilization will be in the form of plastic sheeting on disturbed slopes and temporary stockpiles where immediate protection is required and permanent controls as specified are not yet in place. Plastic sheeting will cover all exposed surfaces, and be firmly secured and will be completely removed upon installation of permanent control measures.
- An oil-absorbing floating boom will be available on site during all phases of construction whenever surface water is present.
- In the event of an emergency (spills, failure of temporary construction structures, equipment failures or accidents and / or flood and fire), the following sequence of actions will occur:
    - First response will always be to the safety of any persons in and around the project area; and secondary response will be to control the source problem (if feasible), to stabilize the environment and to prevent future environmental damage.
    - Work causing, or affected by the event will cease until the Project Manager, or assigned representative provides clearance to proceed.
    - If water quality monitoring indicates that turbidity exceeds 10% of natural background levels for two consecutive measurements, then the activity causing the turbidity will stop until the problem is resolved. Turbidity standards may only be exceeded for a maximum of one monitoring interval per 24-hour work period providing all practicable control measures have been implemented. Work causing, or affected by the event will cease until the Project Manager, or assigned representative provides clearance to proceed.
    - If the above emergency measures for construction, operation and maintenance are not providing measurable response, the Project Manager, or assigned

representative will contact the following representatives as appropriate: BES Construction Manager; and BES Permits Compliance Manager.

Responsible Party.

BES is the permit holder responsible for assuring that all construction projects comply with the requirements of City Code, Title 10, Erosion and Sediment Control on this project. Refer to Emergency Response for additional details.

In-stream wood structures

- All in-stream wood >12" DBH will consist of Doug Fir (*Pseudotsuga menziesii*) and Black Cottonwood (*Populus balsamifera*) species brought in from off-site. The wood must be intact, hard, and undecayed. Trees will have untrimmed rootwads where intact rootwads are depicted in plans.

4.3 Work Area Isolation – Surface Water Diversion

Work Area Isolation

Methods.

- The water surface elevation data collected from 1988 to 2006 indicates that the mean tidal elevations of the Willamette River range from 4.8 feet msl to 8.06 feet msl with the highest elevation recorded at 12.50 feet during the in-water work period. Thus, the in-water work barriers will be designed to withstand an elevation of 12.5 feet.
- Erosion control barriers will be not be removed until erosion control measures are in place.

In Stephens Creek:

- The downstream check dam (shown on Sheet 10) will be placed in Stephens Creek.
- Then, fish salvage will occur between the culverts and the downstream check dam.
- Then, the upstream check dam will be installed and a pipe will convey flows from the upstream check dam through the work area to the downstream check dam.
- After the fish salvage, pumps may be used to remove the water remaining in the channel. This water will be discharged through approved sediment control devices to achieve ESPCP.
- Any additional groundwater that seeps in will be pumped and discharged through approved sediment control devices as required to achieve ESPCP.

In the Willamette River:

- The waterproof barrier, such as a Portadam or industry equivalent, will be installed near the end of the CSO pipe and the downstream end of the remnant channel as specified on Sheets 10 and 11.
- If possible, the waterproof barrier should be installed at low tide when the area is dry. If installed in a dry work area, then initial de-watering and fish salvage will not be necessary.
- If the waterproof barrier is installed in standing water, then fish salvage operations will need to occur within the waterproof barrier prior to the next low tide.
- Following fish salvage, any water that remains behind the waterproof barrier will be pumped and discharged through approved sediment control devices as require to achieve ESPCP.
- Any additional groundwater that seeps in will be pumped and discharged through approved sediment control devices as required to achieve ESPCP.
- A floating turbidity curtain will be installed to surround the work areas where large wood is installed.

o Fish Screens. Pumps will be used after Fish Salvage is complete, hence fish screens will not be needed.

4.4 Fish Salvage

Fish will be electro fished in accordance with NOAA Fisheries' electrofishing guidelines (NOAA Fisheries, 1998):

- An electro fisher will not be used if stream temperatures rise above 18.0'c, unless no other method of capture is feasible.
- ESA listed fish will be handled with extreme care during capture, transport and release.
- Clean, cold, and aerated water will be maintained for holding and transporting fish.
- Fish will be released immediately downstream of the project area in Stephens Creek or near the confluence of the Willamette River.
- ESA-listed fish will not be transferred to any person other than NOAA Fisheries personnel or BES staff.
- An ODFW Fish Salvage Permit will be obtained prior to fish salvage activities commencing.
- NOAA Fisheries personnel or its designated representative will be allowed to accompany the capture team during fish salvage activities, and to inspect capture and release records.
- An electronic copy of the fish salvage report will be available upon request within 10 calendar days of completion of fish salvage.

- The following BES staff will be responsible for all fish salvage operations:

  Chad Smith and Cindy Studebaker

  City of Portland, Bureau of Environmental Services

  1120 SW 5th Ave, Suite 1000

  Portland, Oregon 97204

5.0 Project Monitoring

The City will monitor project establishment for five years following project construction. Annual monitoring efforts will include as assessment of the vegetation, fish use, sedimentation rates, and photodocumentation. Each of these monitoring elements are further described below.

The BES re-vegetation team will conduct vegetation monitoring to assess the survival rate of installed plantings. Vegetation monitoring protocols will follow those outlined in the BES revegetation team monitoring and documentation protocol (City of Portland 2003). Based upon the monitoring results, they will make recommendations for site maintenance and supplemental plantings, as needed.

The BES Science, Fish, and Wildlife group will monitor fish use in Stephens Creek, the remnant channel, and near the large wood structures placed on the banks of the Willamette River. These fish counts and presence/absence surveys will be compared to data collected on site prior to site construction to determine if project implementation has resulted in increased use by fish.

BES staff will install one or more staff gauges in the remnant channel to document sedimentation rates that may accumulate in this area. BES staff will also document site conditions by taking annual (or more frequent) photos in pre-established areas located throughout the site. Photos of the project area will be taken before, during, and after project completion and throughout the five year monitoring period. Photo documentation will include general views and close-ups showing details of the project and project area.

AP **208-3090-7548** N

Received By OWEB
MAY 27 2009

Type the information for Sections I and II **USING ONLY the pages provided.**
DO NOT EXCEED 3 PAGES.

Name of project: Tryon Creek Confluence Habitat Enhancement Project

OWEB funds requested: $100,000.00 **Total cost of project**: $765,929.00

Project location:

This project occurs at (check one): ☒ **A single site** ☐ **Multiple sites**

Willamette River & Tryon Creek
Watershed(s)

Multnomah
County or counties

2S1E02C
Township, Range, Section(s)

Longitude, Latitude (if available)

Applicant	**Project Manager**
Name: Paul Ketcham	**Name:**Kristen Acock
Organization: City of Portland BES	**Organization:**City of Portland BES
Address:1120 SW 5th Ave Rm 1000	**Address:**1120 SW 5th Ave Rm 1000
Portland, Oregon 97204	Portland, Oregon 97204
Phone:503.823.5549	**Phone:**503.823.7395
Fax:503.823.6995	**Fax:**503.823.6995
Email: paul.ketcham@bes.ci.portland.or.us	**Email:** kristen.acock@bes.ci.portland.or.us

Fiscal Agent	**Landowner(s)**
Name: Andi Gresh	☒ **Public: Agency:**City of Portland, City of Lake Oswego, Metro
Organization: City of Portland BES	☐ **Private: Name(s):**
Address:1120 SW 5th Ave Rm 1000	
Portland, Oregon 97204	
Phone:503.823.7623	
Fax:503.823.5228	
Email: andig@bes.ci.portland.or.us	

CERTIFICATION:

I certify that this application is a true and accurate representation of the proposed work for watershed restoration and that I am authorized to sign as the Applicant or Co-Applicant. By the following signature, the Applicant certifies that they are aware of the requirements (***see Application Instructions***) of an OWEB grant and are prepared to implement the project if awarded.

Applicant Signature: X _____ Date: 5/20/09

Print Name: Mayor Sam Adams Title: Mayor

Co-Applicant Signature: _____ Date: _____

Print Name: _____ Agency: _____

Section II

OWEB

WATERSHED RESTORATION GRANT APPLICATION

Revised
January 2009

OWEB's Mission
To help create and maintain healthy watersheds and natural habitats
that support thriving communities and strong economies.

GENERAL INSTRUCTIONS

1. Please read the "Instructions for Completing Restoration Grant Applications" before beginning your application.
2. Use 8½″ x 11″ single-sided, unstapled pages. Avoid color and detail that will not photocopy clearly.
3. Complete Sections I and II in the space provided.
4. Answer all the questions in Section III on separate 8½″ x 11″ **single-sided**, single-spaced, **unstapled** pages. Complete the required forms and attachments.
5. Read and sign the Restoration Grant Application (Section I Certification).
6. Read and complete the Application Checklist at the back of this document and return with your application.

* **IMPORTANT:** Avoid color and detail that will not photocopy clearly. Otherwise, provide 25 color copies of any maps, photos, or project designs that you want OWEB reviewers to see in color. If more than one map/photo/design, assemble and staple as a set; provide 25 sets for distribution to reviewers. This is the only exception to the use of staples.

A down-loadable electronic application form and instructions may be obtained from **www.oregon.gov/OWEB**

SUBMISSION OF GRANT APPLICATIONS

Grant applications may be submitted to OWEB by hard copy via mail or delivery to our Salem office. No faxes or e-mails will be accepted. To learn about the next deadline and review date, visit our website at the address shown above.

OREGON WATERSHED ENHANCEMENT BOARD
775 Summer Street NE, Suite 360
Salem OR 97301-1290
Phone: (503) 986-0178

PROJECT INFORMATION

1. **Abstract.** In approximately 200 words, 1) identify the project location, 2) state the watershed issue or problem to be addressed, 3) the proposed solution including the area or other measurable units to be treated, 4) any proposed effectiveness monitoring, and 5) how OWEB funds will be used.
This project is located in the Lower Willamette River at the confluence of Tryon Creek and the Willamette River near the jurisdictional boundaries of the Cities of Lake Oswego and Portland. Watershed functions addressed by this project include re-establishing floodplain connectivity, increasing in-stream complexity, and increasing native plants and habitat diversity. The goal of this project is to enhance off-channel habitat, primarily for ESA-listed salmonids and other native species. The project will reduce slopes to 3:1 along 900 ft of riparian streambank; create a floodplain bench along 400 ft of Tryon Creek; add 80 pieces of large wood and 200 tons of boulders along 900 ft of Tryon Creek; and enhance 4.5 acres of native plant communities. OWEB's proposed involvement in this partnership includes investing in constructed activities to increase in-stream complexity and reconnect the floodplain.

2. **Has this project, or any element of this project, ever been submitted in a previous application(s) to OWEB?** ☐ Yes ☒ No
   If yes, what was the application number(s)?

3. **Is this project, or any element of this project, a continuation of a previously funded OWEB restoration project(s)?** ☐ Yes ☒ No
   If yes, what was the grant number(s)?

4. **Is this project a result of a previously funded OWEB Technical Assistance project(s)?** ☐ Yes ☒ No
   If yes, what was the grant number(s)?

5. **Project Partners.** In the table below, show all proposed partners and clearly describe their contribution. Be sure to provide a dollar value for each funding source. If participation is in-kind, briefly describe the nature of the contribution in the Funding Source Column.

Funding Source Name the Partner and what their contribution is.	Cash (x)	In-Kind (x)	Secured (x)	Pending (x)	Amount/Value
OWEB	X	☐	☐	X	$100,000
Landowner: City of Portland (pending annual budget approval)	☐	X	☐	X	$23,447
City of Portland (pending annual budget approval)	X	☐	☐	X	$143,642
LCREP/BPA grant (total grant $100,000)	X	☐	X	☐	$30,000
EPA/WEI grant	X	☐	☐	X	$468,840
Total Estimated Funds (add all amounts in the far-right Column):					*$765,929

*The total should equal the total cost of the project on page 1 of the application.

6. **Have any conditions been placed on other funds that may affect project completion?**
   ☐ Yes ☒ No
   If yes, explain:

7. **Are you requesting OWEB funds for Effectiveness Monitoring?**
   ☐ Yes ☒ No **If you check "Yes", follow the Instructions in Question R15.**

8. **Attachments — Complete and attach to the back of your application:**

   ☒ *Project Maps: 1) Provide a vicinity map showing township, range, and section (TRS), and the project location, and 2) On a USGS 7.5 min. topographic quad map, or on an aerial photo showing TRS, locate the extent of your project and site-specific activities by GPS reading if available. **Provide maps on 8½" x 11"** pages and include a legend.

   ☒ *Preliminary Project Designs: Provide sufficient detail to allow a reasonable evaluation of the proposal and of the effect of the project on the site. The preliminary design should include reference to appropriate standards and guidelines.

☒ *Photographs: Provide photographs to aid in understanding the situation. If color photos are necessary to convey information important for application review, supply 25 copies of each photo. **Note: If your project is funded, pre-project photos will be required in the final report.**

☒ Letters of Support from key partners or others, as appropriate.

Section III
SPECIFIC RESTORATION PROJECT ACTIVITY

These essay questions and their answers are designed to step you and reviewers through a logical process from understanding and identifying the problem to "fixing" the problem and evaluating the results.

Answer the questions in 12-pt type size, single spaced, on single-sided pages. Use 10-pt type size for the tables, and use bullets where appropriate. Use **bold face** and *italics* for emphasis only. If the project involves multiple sites, be specific for each. **Refer to the Application Instructions for clarification and helpful examples.**

R1. Contextual Overview

Provide the location and significance of the project including why that location was chosen, what watershed functions are to be addressed in the project and a brief explanation of the history of the issues leading to the project. Describe the project in the context of the landscape including the key water quality, water quantity, species, habitat, land use and resource management issues (physical or social) that are proposed to be addressed in that watershed. **See the Application Instructions for clarification.**

This project is located in the Lower Willamette River at the confluence of Tryon Creek and the Willamette River near the jurisdictional boundaries of the Cities of Lake Oswego and Portland. The project area includes the Tryon Creek Confluence with the Willamette River to Highway 43 (about 900 ft of stream channel) and the 400 ft culvert under Highway 43).This project is significant because it is one of very few confluence areas along the Lower Willamette River with great potential to restore off-channel habitat for ESA listed fish. The project was chosen because it addresses multiple target actions identified in the Fanno and Tryon Creeks Watershed Management Plan (2005) including improving floodplain connectivity and riparian condition by planting native shrubs and in the riparian corridor and broader floodplain area; protecting land from future development or redevelopment; providing habitat to local populations; providing critical refuge to upper Willamette Basin fish populations year-round; enhancing channel complexity and instream structure; and adding depth to the channel for refugia.

Watershed functions addressed by this project include re-establishing floodplain connectivity, increasing in-stream complexity, removing impediments for fish, and increasing native plants and habitat diversity. The primary issue leading to the project is human actions and urbanization transforming a watershed once well-connected and diverse in species to one paved, fragmented and disconnected.

Tryon Creek is about seven miles long and flows southeast from its headwaters near Multnomah Village (just north of Interstate 5 and Highway 99) to its confluence at the Willamette River in Lake Oswego downstream of Highway 43. The Tryon Creek watershed comprises 4,142 acres. The historic hydrology of Tryon Creek and its tributaries was typical of low to moderate gradient Willamette Valley headwater streams with steep landscape slopes. The annual hydrograph reflected the climatic precipitation pattern, with an extended wet period exhibiting higher flows and frequent storm flow events from approximately October through May, followed by a dry summer season with low flows from June through September. Stream flows during the summer low-flow period were dominated by groundwater recharge to the streams. The topography, including steep hillslopes, and the native soil characteristics, which limited infiltration, contributed to a rapid response of flows to storm events and moderate runoff volume. This response was moderated by the native vegetation, including a mature forest with a surficial forest duff layer that provided precipitation storage (May et al. 1997). Topographic features confined many of the headwater tributary stream channels, with lower reaches of the streams exhibiting more meandering and interaction with the floodplain (e.g., lower Tryon Creek mainstem within Tryon Creek State Natural Area).

Land use is a general indicator of the types of human and urban activities present in the watershed. Impacts from land use changes include increased impervious area, alteration of natural flow patterns through development of urban infrastructure, and increased pollutant loads. The predominant existing land use within the Tryon Creek watershed is single-family residential development. Parks and open space are the second-largest land use, largely because of the 645-acre Tryon Creek State Natural Area. The remaining commercial and multi-family residential land uses are concentrated along major transportation corridors, including Interstate 5 and SW Barbur Boulevard.

Floodplain interactions historically and currently play a critical role in maintaining watershed functions in Tryon Creek. The creek is bound by steep valley walls on the northern and southern facing hillsides. Although these hillsides constrain the creek, areas exist where the valley floor broadens, providing great opportunities for floodplain interactions. The area in Tryon Creek State Natural Area historically functioned as a depositional reach, with deep soils and a wide historic floodplain (WMSWCD 2003b). This broader floodplain allowed the creek to adjust to high flows (by meandering from hillside to hillside), and probably augmented summer base flows via springs, seeps, hyporheic flows, and an elevated groundwater table.

Substantive floodplain interactions are now severely lacking in Tryon Creek. The creek is incised and straight. Flood flows rarely extend far into the floodway, even within the protected areas of Tryon Creek State Nature Area. Frequent flood flows are not capable of reaching the relatively flat floodplain for energy dissipation, sediment deposition, and periodic flooding of riparian vegetation (WMSWCD 2003b). Disconnection of Tryon Creek from its floodplain can be attributed to several interrelated factors and processes. Notably, the channel has downcut and widened, so the amount of water that formerly filled the channel and spilled onto the floodplain is now held within the deeper, wider channel. In addition, the channel length is shorter, with fewer bends and meanders. Channel complexity is lacking. The National Riparian Services Team (WMSWCD 2003b) concluded that the reduction in resistance forces (e.g., loss of large wood and woody, riparian vegetation) and increases in water velocity result in an increase of flow energy that continually erodes the stream bed and stream banks. This has been significant enough to produce rapid vertical adjustments to the channel network, effectively disconnecting the channel from its floodplain. The creek seldom accesses its floodplain and is functionally confined. The result is that more water remains in the channel, and less water infiltrates into the floodplain and aquifer during moderate storm flows. Flow overtops the creek banks only during very high, infrequent floods. Observations by ODFW state biologists in 2002 confirm this phenomenon. Even in large events, flood flows do not extend far into the floodplain.

Lack of historic floodplain habitat in lower Tryon Creek is a key limiting factor affecting the stream's ability to function dynamically. Given urban constraints within upland and floodplain areas and the altered hydrograph, re-establishment of the full-spectrum of historic stream/floodplain interactions is not likely feasible.

Riparian condition is relatively good throughout much of the lower and middle portion of the basin, except for the confluence of the Willamette River and Tryon Creek. In the confluence zone, the riparian corridor is narrow, grasses and vines predominate, and tree canopy cover is relatively low. The confluence reach up to Highway 43 has been extensively constricted by placement of fill material, most notably along the northern bank. The stream is lying on bedrock for the entire reach below Highway 43.

The National Riparian Services Team characterizes Tryon Creek as a wood-dependent system, meaning that it developed in conjunction with a large conifer forest stand (WMSWCD 2003b). The wood provided by larger conifer tree boles historically trapped sediment and formed floodplains, retaining flood flows and promoting rich, diverse riparian vegetation. The team concluded that large wood material is the most important attribute in this stream type, and the processes associated with it are the most important to the function of the watershed. Large woody material is lacking throughout the basin (ODFW 2001; WMSWCD 2003a, 2003b, and 2003d). Wood volume is low throughout the basin; and key pieces are rare. The loss of

accumulated large wood has resulted in channel erosion, which has further converted the stream from one that often accessed its floodplain to one that cannot. Loss of transient and buried large wood from the channel and floodplain may have had the most adverse affect on stream habitat and on riparian and floodplain connectivity.

Wood pieces indicate riparian vegetation age and species; the presence of smaller to mid-sized single pieces indicates that wood is falling into the creek, but has not yet amassed enough to provide critical habitat function in the form of debris jams or clusters. The National Riparian Services Team noted that upland and riparian vegetation is generally less than 60 years old, too young to contribute significant amounts of large woody material needed to rebuild floodplain and channel structure (WMSWCD 2003b). Buried, large wood complexes provide important overwintering habitat to salmonids. Without this protective cover, fish are often swept downstream during higher winter and spring flows. The lack of large wood, combined with the prevalence of higher, flashy storm flows, significantly impacts habitat formations and the maintenance of good-quality spawning and rearing fish habitat in Tryon Creek. It is probably a prominent factor limiting fish productivity.

Access to spawning and rearing habitat is a key limiting factor affecting salmonid distributions and species diversity in Tryon Creek. The Highway 43 culvert severely limits anadromous fish from accessing spawning and rearing habitat in Tryon Creek. The 400 ft. long concrete box culvert was recently (summer 2008) retrofitted with new baffles as part of Phase 1 of this project. The culvert retrofit intends to improve passage for juvenile and adult native fish species, including Pacific lamprey; however, it remains a partial barrier, particularly for fall spawning coho salmon and does not meet Oregon fish passage design criteria for fish bearing streams. Even with retrofits the culvert remains long (400-ft) and steep. The conditions leading of entry into the culvert are significantly improved, and continued monitoring will show whether fish are able to enter and navigate through the culvert. Other fish passage barriers exist throughout the basin, but this culvert is most significant because of its closeness to the confluence and its frequent impassability. Oregon Dept. of Transportation (ODOT), a project partner, is managing the culvert retrofit as part of this proposal thus improving fish access into Tryon Creek and increasing anadromous fish productivity and species diversity throughout the watershed.

Tryon Creek is an important resource to the City of Portland. Approximately 75% of the Tryon Creek watershed is within Portland city limits. The Tryon Creek confluence area is located within the jurisdictional limits of the City of Lake Oswego on publicly-owned land. The three landowners (acquired in 2002), Metro, the City of Lake Oswego and the City of Portland, work as partners on this project.

R2. Problems to be Addressed

Provide information specific to the project: a) The specific problem(s) you are addressing; and b) the *root* cause(s) of the problem(s). This description should explain the watershed process or ecosystem function your project proposes to address. **DO NOT describe the project here; you will do so in question #R3.** You may add narrative in addition to the table.

Specific Problem(s)	Root Cause(s) of the Problem
Impediments limiting access to fish habitat	Connectivity between Tryon Creek and the Willamette River is good up to highway 43. At this point Tryon Creek flows through a culvert that runs under highway 43 and a railroad that prior to Phase 1, significantly reduced but not entirely blocked stream connectivity with the upstream reaches of Tryon Creek. The culvert is 400 feet long, and had a formidable jump and slope prior to completing Phase 1 fish passage improvements (culvert retrofit). Anadromous salmonids might have navigated through the culvert during higher annual flow periods (winter – spring). Even then, however, passage was limited to periods when flows provided adequate water depth (for jump height into the culvert and passage through the baffles) yet did not pose a velocity barrier. It was unlikely that fall-run coho salmon pass beyond the culvert, except during very opportune periods. Flows during this period are too low in most

Specific Problem(s)	Root Cause(s) of the Problem
	years to allow adequate access into and through the culvert. Late-run winter steelhead may pass in late winter and early spring. Resident trout probably cannot move upstream through the culvert, but they may pass downstream during spring freshets or other high-flow periods. Undercut banks probably provided most instream refugia. Additional cover may have been found in a few deeper pools, among the few pieces of wood and overhanging vegetation. No off-channel habitats or secondary channels were identified during ODFW 2001 surveys, and no tributaries flow into this lower portion of Tryon Creek.
Lack of in-stream complexity and loss of floodplain connectivity	Urban development (residential, industrial, and public utility) and land use are the root cause of this problem. The mouth of Tryon Creek is part of the Willamette River floodplain. Although creek depth, channel flow, and floodplain inundation are influenced by perennial channel flows and Willamette River flows, floodplain interactions between Tryon Creek and its floodplain are impaired. The creek is currently disconnected from its floodplain except in large events, exceeding approximately the 4% Annual Chance (25-year) event. The confluence reach up to highway 43 has been extensively constricted by placement of fill material, most notably along the northern bank, which has been steepened throughout the reach and has a relatively flat terrace above it. The south bank consists of a steep high hillside with mature tree cover and some exposed bedrock at the toe of the slope. In-stream complexity and floodplain connectivity go hand-in-hand. Tryon Creek's channel has been simplified, and there is a loss of woody riparian vegetation to reduce resistance forces, reducing stream complexity. Paired with increased flows from land use changes in the watershed, there now exists increased stream power and erosion of the stream bed and banks. The result is that more water remains in the channel, and less water infiltrates in the floodplain and aquifer during moderate storm flows. Flow overtops the creek banks only during very high, infrequent floods. Observations by ODFW state biologists in 2002 confirm this phenomenon. The National Riparian Services Team noted that within the Tryon Creek Watershed, upland and riparian vegetation is generally less than 60 years old, too young to contribute significant amounts of large woody material needed to rebuild floodplain and channel structure (WMSWCD 2003b). Buried, large wood complexes would provide important overwintering habitat to salmonids. Without this protective cover, fish are often swept downstream during higher winter and spring flows. The lack of large wood, combined with the prevalence of higher, flashy storm flows, significantly impacts habitat formations and the maintenance of good-quality spawning and rearing fish habitat in Tryon Creek. It is probably a prominent factor limiting fish productivity.
Lack of native plants and habitat diversity	Invasive plants out-compete natives and human influences have dramatically altered Tryon Creek's habitat. Riparian condition in lower Tryon Creek is "quite poor" (ODFW 2001). Buffers are narrow, and backyards and a sewage treatment facility are predominant land uses and features in the riparian area. Canopy cover is approximately 50 percent within the immediate 0-10 meters then drastically diminishes to 23 percent at 10-20 meters and 0 percent at 20-30 meters. Grasses and forbs are common, and overstory canopy is mostly provided by second-growth deciduous trees. Small conifers are coming up through the understory, and cedar and arbor vita hedges are common along the landscaped portions of the creek bank. Vegetative cover is generally greater along the north bank and floodplain terrace. Hardwoods are only moderately mature and currently do not contribute source woody material into Tryon Creek.

R3. Project Description

Using the table below, provide a description of the project that describes the restoration activities to occur (e.g., direct flow, remove 36" culvert, construct free spanning bridge, place 12 three log clusters between RM 44 and 52, etc.), including a description of the methodologies (e.g., juniper – burning or cutting; tree release – manual or

herbicide; etc.) and the equipment planned for use. In addition, describe any Project Management functions/activities necessary to implement the project (e.g., acquire permits or landowner approval; solicit bids, award contracts, etc.). The degree of detail should match the project complexity and technical difficulty to allow for full evaluation of technical viability. For projects involving multiple sites, be sure to identify and describe them separately, as appropriate. **This is not the place to describe the benefits of the project, but rather the specific elements of the proposed project.** You may add narrative in addition to the table.

Project Element	Proposed Action
Restoration Activity	
Retrofit baffles in the highway 43 culvert and improve stream conditions to promote fish access between the confluence area and the 645-acre Tryon Creek State Natural Area upstream	To simplify funding, permitting and construction roles and responsibilities, the project has been broken into two phases. ODOT is taking the lead on Phase 1, and the City of Portland is taking the lead on Phase 2. Phase 1 was constructed in the summer of 2008. Phase 2, the subject for this grant request of funding, is anticipated to be constructed in the summer of 2010. Phase 1 includes the highway 43 culvert retrofit and approximately 160 feet of stream work immediately downstream of the culvert. The work in the culvert will include removing and replacing the existing baffles. The stream work raises the downstream elevation of the plunge pool, thus raising the low flow water surface elevation for a swim-in condition to the culvert. Phase 2 connects with Phase 1 work and includes stream and bank work in the 900 feet of Tryon Creek between Phase 1 and the Willamette River. The work will improve refuge through greater pool depths, greater channel roughness and floodplain accessibility.
Excavate a floodplain bench where feasible, lay back the north stream bank and place large wood at the confluence and several locations along the creek to enhance in-stream and riparian habitat.	Plans for Phase 1 included 17 logs, 120 cubic yards of boulders and 120 cubic yards of streambed material. The 60% design for Phase 2 includes excavating a floodplain bench along approximately 400 feet of the creek, laying back the north bank of the creek to a 3:1 (H:V) slope, placing large wood, boulders, streambed material in the creek and the toe of the banks and placement of live stakes and pole cuttings in the banks. Laying back the north bank allows floodwaters to access the floodplain with its greater complexity and vegetative roughness, thereby reducing velocities. The new floodplain and streambanks provides favorable planting surfaces for riparian scrub shrub and floodplain plant communities. Construction involves bank excavation along the entire 900-foot long reach of Tryon Creek from the confluence to the lower limits of the Phase 1 project. The south bank is higher and has infrastructure at the top of bank, so it cannot be laid back. In-stream habitats such as alternating pool and riffle bed forms will be created. The design of habitats and habitat features, including large wood and boulders, follow modeled hydrologic and hydraulic characteristics in the project area, such that newly constructed bed forms support natural stream building processes and existing flow regimes. Given the infrastructure and land use constraints of the urban environment, dynamic processes will be aided by importing about 80 pieces of large wood ranging in length from between15 to 30 feet and in diameter from 12 to 18 inches are proposed in Phase 2. Strategically placed wood individually or in complexes, on-grade, buried or partially buried provides channel stability, habitat diversity and streambank protection. Some wood will be incorporated in structures in the banks of Tryon Creek and others are proposed in a large accumulation at the mouth. Large key pieces of wood provide an immediate source of wood debris in channel, along streambanks and in the floodplain. Large wood is expected to help stabilize streambanks and channel bed, and to enhance fish rearing and resting habitat by providing cover and areas for macroinvertebrate production. Key pieces will be placed in the active floodplain to provide initial floodplain roughness and provide high flow refugia to native fish communities during higher flood flows. The surrounding riparian and floodplain area does not currently support enough larger sized, dead and or dying trees to provide an immediate source of wood into the channel, or onto the surrounding floodplain area. Hence, addition of these larger, habitat-forming pieces is expected to provide the immediate source of large wood until existing trees can naturally provide that function. Larger key pieces are expected to function such that smaller and mid-sized pieces floating down the creek will be captured, and wood clusters and

Project Element	Proposed Action
	jams may form. A few key pieces of wood will be secured using a combination of natural and artificial anchoring techniques, including ballast anchoring and rebar pins. Hydraulic model output and topographic data will be analyzed to evaluate how large wood functions in the project area. The results of the data and modeling will determine location, orientation and elevation of large key pieces and clusters.
Revegetation activities to control invasive species and establish native plantings to enhance riparian scrub-shrub, floodplain and forested plant communities on 4.5 acres	Phase 1 and Phase 2 propose invasive removal and native revegetation on a total of 4.5 acres. BES Watershed Revegetation Program planting plan guides the implementation and evaluation stages of revegetation, featuring: -the location of all landscape elements, including size and species of all proposed plantings, and existing plants and trees to be preserved. - a plant list/table, including botanic and common names, size at time of planting, quantity, spacing, stock type, and other related information. - a method of irrigation to be used for the establishment period, if necessary. This project does not intend to create any areas that require long term irrigation. Removal of invasive species and revegetation of native plant communities is an integral part of restoring site conditions and achieving habitat restoration. In total, project activities will restore and enhance 4.5 acres of mixed hardwood/conifer riparian forest. By project completion over 5,000 native trees and shrubs will be planted. Native plant establishment will improve existing site conditions and functions with respect to stormwater runoff, groundwater recharge, streambank protection, erosion reduction, water quality protection, and fish habitat enhancement and native plant succession. Over time, mature riparian forest conditions will allow for natural recruitment of large wood to the stream channel and floodplain. Site preparation includes clearing and grubbing with heavy equipment during the stream corridor construction and grading phase of the project. Areas not cleared in construction will be cleared of invasive vegetation using manual, mechanical and chemical means. Native materials, including large wood, native vegetation, and weed-free topsoil displaced during site preparation and construction will be conserved for site restoration. In areas to be cleared, native vegetation will be clipped at the ground level to retain root mass and encourage reestablishment. Native plants and trees outside of the construction area will be undisturbed to the maximum extent practicable. If native materials are destroyed, damaged or moved, they will be replaced with functional equivalent during site restoration. Woody plantings and herbaceous cover will be planted along stream banks, impacted riparian areas and along floodplain wetland habitats in the project area. All disturbed areas will be seeded for immediate erosion control and planted with native plants, shrubs and trees before the end of the first growing season following construction. Coir fabric may be used individually or in stacks to trap sediments and provide growth medium for riparian plantings. Tree and Shrub seedlings will be distributed in a random fashion at an average spacing of seven feet on center throughout the project area. Monitoring data will be compiled annually as per the City's Revegetation Monitoring and Documentation Protocol.
Project Management Activity	
Finalize designs, secure permits	Project design encompasses both project phases to ensure connectivity between and among work. Designs developed from concept to 30%, 60%, and 90% to final. Before 30% design, the project is introduced to Portland's Streamlining Committee where projects are vetted early to all participating state and federal permitting authorities. Design review milestones provide scheduled opportunities for comment, questions. After designs reach 60%, permit applications are prepared and submitted to the required authorities. Permits are secured, and influence when and what work is done.
Develop, publish and advertise construction documents; review bids, award contract	Using the City of Portland's public procurement process, the project is advertised through the City's Purchasing Office. Public notification is made in the local newspaper as well. Opportunities to ask project related questions occurs during pre-award meetings between city staff and potential contractors. Bids are received, reviewed, and the lowest responsive bidder is determined. After contracting processes are completed, and a contract is agreed to by all parties, it is signed and submitted for Portland City Council approval. A notice to proceed is issued.

Project Element	Proposed Action
Monitor contractor performance; inspect work	The City of Portland's Construction Manager is the responsible official who ensures contractor performance. The Construction Manager holds regular meetings with the contractor in an effort to anticipate any project complications, and discuss corrective action when/where necessary. The Project Manager and Construction Manager works closely with the City's on-site Project Inspector to note any discrepancies between designs, regulations, and actual work.

Additional clarifying, detailed narrative description:
The storm outfall located about midway up the project area will be carefully considered and limits opportunities for streambed aggradation. Designers must be mindful of not backing up stormwater from the outfall.

Completed plans for the project include detailed drawings and descriptions for grading, construction access and staging, large wood and boulder placement, typical cross sections, stream profile, revegetation and erosion control. The design process includes many opportunities for a designated interdisciplinary team that includes expertise in engineering, fish biology, botany, ecology and hydrology/hydraulics, geomorphology and construction to review and comment.

Design features include wood and rock placement, laying back banks, increasing low-flow sinuosity and other features that will improve water quality and enhance habitat for fish and wildlife. Design work will be performed in conjunction with the City of Portland's Streamlining Committee, comprised of agency representatives who have responsibility for permitting, and will specifically focus on improving riparian conditions for salmonids. Local, state, and federal permits will be prepared and submitted to the Streamlining Committee when the design plans are at 60% completion. With permits in place and designs at 100%, the City of Portland will prepare construction bid documents, complete a public procurement process, award a contract, and initiate the notice to proceed with the selected contractor.

With the contractor on board, construction will commence during the in-water window.

Preconstruction Activities

- In an effort to comply with the Migratory Bird Treaty Act, trees and shrubs that must be removed for project construction will be removed by the City prior to the nesting season
- The boundaries of disturbance limits (including trees to be protected) will be fenced in the field with exclusion zone fencing prior to any ground disturbing activity on the site, including mobilization to protect riparian vegetation, wetlands, and other sensitive sites.
- Stakes will be placed along project lines and grades. Staking shall be approved prior to the construction. Some adjustments to lines and grades are expected. Damaged or destroyed construction stakes shall be replaced as needed.
- Erosion, Sediment, and Pollutant Control Plans (ESPCP) devices will be constructed prior to all clearing and grubbing to ensure that sediment and sediment laden water do not leave the site, enter drainage system or roadways, or violate applicable water quality standards.

Construction Activities

Practices will be employed to prevent erosion and sedimentation associated with temporary access roads, construction sites, equipment and material storage sites, fueling operations, and staging areas.
Minimum Area. Construction activities will be confined to the minimum area necessary to complete the project. Project work area and boundaries will be identified in the construction documents.
Exclusion Zone Fencing. During the construction period, no disturbance beyond the fenced limits of disturbance shall be permitted. Exclusion zone fencing shall be maintained for the duration of construction. All equipment, materials and personnel will remain within the exclusion zone limit.
Type of Heavy Equipment. Equipment that has the least adverse effect on the environment will be selected (e.g., minimally sized, low ground pressure equipment).

Equipment and Material Staging. Only enough supplies and equipment to complete construction will be stored on site. All equipment, materials and personnel will remain within the limits of disturbance, defined by exclusion zone fencing, and access and egress routes. Vehicle staging, cleaning and maintenance, refueling and fuel storage areas will be 150 feet or more from the water body. Vehicles operated within 150 feet of a waterbody (or wetland) will be inspected for fluid leaks before leaving staging areas. If leaks are detected, they will be repaired before the vehicle resumes operation. The Contractor will maintain a daily log of vehicle maintenance activities. An inspection record will be available upon request. Equipment used below ordinary high water will be clean of visible grease, oil, mud and other contaminants before leaving the staging area and during construction. All cleaning will occur in the staging area. Suitable containment devices (e.g., diapers) will be used on all stationary power equipment used within 150-feet of the water body or wetland to prevent potential spills from entering a waterbody. Stockpiles will not be placed within the root zones of existing trees to be saved or existing, native vegetation to remain.
In-water work timing. Work occurring below ordinary high water will be completed within the State approved in-water work period for the Willamette River.
High Flows. BES may stop work if the construction area becomes inundated due to high flows, except for efforts to avoid or minimize resource damage. ESPCP may be upgraded (as needed) for unexpected storm events and to ensure that sediment and sediment-laden water do not leave the site, enter drainage systems or roadways, or violate applicable water quality standards.
Construction debris. Best Management Practices will be employed to prevent construction debris from dropping into the Willamette River and Tryon Creek and to remove any material that does drop with a minimum disturbance to the streambed and water quality.
Erosion Control Inspection and Maintenance. ESPCP facilities shall be inspected and maintained daily and within 24 hours following a storm event. Erosion control materials (and spill response kits) will remain on-site at all times (e.g., silt fence, straw bales).
Immediate Erosion Control. All disturbed areas will be seeded and / or covered with coir fabric at completion of ground disturbance to provide immediate erosion control. Streambanks, riparian, wetlands and floodplain areas will be planted with native grasses, plants, shrubs and trees following the stream corridor work.

R4. Watershed Benefits

What are the proposed project watershed benefits? While many projects benefit forest or agricultural production, OWEB funding is for fish and wildlife habitat protection and enhancement. Briefly describe how the project will affect watershed functions or ecosystem processes.

The project benefits are

- Improves refuge through greater pool depths, greater channel roughness and floodplain accessibility.
- Stabilization of streambanks and channel bed.
- Wood placement provides an immediate source of wood debris in channel, along streambanks and in the floodplain, and to enhance fish bearing habitat by providing cover and areas for macroinvertebrate production.
- Provides initial floodplain roughness and high flow refugia to native fish communities during higher flood flows.
- By project completion over 5,000 native trees and shrubs will be planted. Native plant establishment will improve existing site conditions and functions with respect to stormwater runoff, groundwater recharge, streambank protection, erosion reduction, water quality protection, and fish habitat enhancement and native plant succession.

The confluence of Tryon Creek and the Willamette River is critical refugia for juvenile salmonids. Ecological conditions at this location are compromised. Floodplain connectivity and riparian condition

would improve by planting native shrubs and trees in the riparian corridor and broader floodplain area. Key benefits that additional plant cover would provide include bank and channel stabilization, stream roughness and complexity, additional canopy cover, instream woody structure (small wood clusters and allochthonous inputs for macroinvertebrates and fish), and attenuating creek flows.

R5. Project Objectives

What are the proposed project objectives? Provide specific objectives based on the location, size and significance of the project and provide information on how the objectives could be evaluated. The measurements should be able to be reported to document successful implementation. **See the Application Instructions for the distinction between project objectives and achievement of goals.**

Project Element	Specific Objectives	Measure for Evaluation
Retrofit culvert baffles and raise downstream plunge pool elevation	Remove and replace existing baffles in the 400 foot long Highway 43 culvert and raise downstream plunge pool elevation by 2.3 feet to promote fish access between the confluence area and the 645-acre Tryon Creek State Natural Area upstream	Baffles, culvert length, plunge pool elevation, fish absence/presence up and down stream
Enhance riparian streambank	Reduce slope to 3:1 along 900 ft of streambank	Bank length and slope
Increase in-stream complexity and reconnect floodplain	Create floodplain bench along 400 ft. of Tryon Creek, add 80 pieces of large wood and 200 tons of boulders along 900 ft of Tryon Creek and confluence area, increase low-flow sinuosity	Length of streambank and floodplain, length of low-flow channel, tons of boulders, number of large wood pieces
Riparian planting	70% survival of planted natives at the end of five years	% survival

R6. Project Design

a) Provide a list of qualifications and experience you will require for the project designer. If a project design has been completed, identify the designer and what qualifications and experience they have.
b) Describe the design criteria used or proposed and how those criteria take into consideration natural events and conditions (e.g., culvert design to 100-year flood event, wood placement to readjust with higher than bankfull flows, cultivation to retain at least 75% stubble, 4-strand fence to allow for wildlife passage, etc.).

In June 2006, the City if Portland hired a professional engineer, Herrera Environmental Consultants (HEC), to develop three alternative design concepts to restore and enhance stream habitat from the confluence with the Willamette River up to the Highway 43 culvert. Both project reaches (Phases 1&2) were initially evaluated within the context of the 1000-foot stream reach, from the confluence to the culvert. Environmental assessments, soil bores, survey, materials and toxicity testing, and hydraulic and hydrologic modeling were managed and evaluated together.

The project design was broken into two discrete phases. For Phase 1, the recently completed Highway 43 culvert retrofit and upper 160 feet of steam work, an alternative was selected and design completed prior to selection and design of Phase 2. The design for the culvert improvements and upper stream riparian enhancement (Phase 1) was completed in 2007. It featured improvements to the plunge pool just downstream of the Highway 43 culvert and construction of a rock riffle/cascade structure for approximately 160 feet below Highway 43, with the objective of improving swim-in conditions at the culvert outlet. Boulders and wood provide structural and hydraulic stability and diversity. The Oregon Dept. of Transportation is the project lead and construction was completed during summer 2008. The project elements proposed for funding in this application (Phase 2) provides connectivity with Phase 1, evaluating the remaining 900 feet of Tryon Creek down to the confluence. Phase 2 was conceptualized as an

"enhancement" project as opposed to a "restoration" project – improving existing conditions rather than restoring something that has been lost or is missing.

In July 2008, BES advertised a Request for Proposals for design service provider for Phase 2. This competitive process resulted in submittals from ten consulting teams. BES selected the most qualified team after interviewing the three top-scoring teams. Through this competitive process, HEC, the same design team that lead the Phase 1 design, was selected to lead the Phase 2 design. HEC was familiar with the site needs and constraints from their work on Phase 1. They have designed numerous habitat restoration projects in Portland and the greater Pacific Northwest in recent years. Their team includes experts in civil and geotechnical engineering, hydrologic and hydraulic modeling, fish biology, geomorphology and contractors experienced in constructability review. Design of Phase 2 commenced in October 2008.

Design documents are reviewed by an interdisciplinary team that includes expertise in engineering, fish biology, botany, ecology and hydrology/hydraulics, geomorphology and construction at project milestones.

Construction documents for Phase 2 have recently reached the 60% design level. Structures in Tryon Creek are designed to withstand the 4% Annual Chance (25-year) event. Wood and boulder structures will be placed at a range of elevations below, at and above Ordinary High Water, so the structures will be engaged at a wide range of water levels. Large wood structures are designed to remain in place even when completely submerged.

The design features include wood and rock placement, excavating a floodplain bench, laying back banks, increasing low-flow sinuosity and other features that will improve water quality and enhance habitat for fish and wildlife. Design work has been performed in conjunction with the City of Portland's Streamlining Committee, comprised of agency representatives who have responsibility for permitting, and focuses on improving riparian conditions for salmonids. Local, state, and federal permits will be prepared and submitted to the Streamlining Committee shortly after 60% completion. With permits in place and designs at 100%, the City of Portland will prepare construction bid documents, complete a public procurement process, award a contract, and initiate the notice to proceed with the selected contractor.

R7. Design Alternatives

Were alternative designs or solutions considered? ☒ **Yes** ☐ **No**

If yes, explain why the design or approach proposed was chosen. If no, explain why alternative approaches were not explored.

Four alternatives were evaluated by the team for Phase 2, as described below. Considerations that led to the selected alternative included research of historic photos and maps, geotechnical investigations, soil and sediment quality, topographic survey, construction estimates, funding sources, structure stability and level of habitat improvements needed to restore functional capacity of a tributary – large riverine confluence area.

Alternative 1 - No Action Alternative
Leaving the site in its existing condition would be a missed opportunity for aquatic habitat enhancement and improved, expanded fish and wildlife habitat, resulting in a net loss for species recovery in the Willamette and Columbia River systems.

Alternative 2 –Site Selection
A large scale stream re-meandering alternative was considered. This option was inconsistent with the general approach of habitat "enhancement" as opposed to "restoration". This would have required mass excavation of soil and relocation of the existing garage owned and utilized by the City of Lake Oswego Parks and Recreation Department as well as potential impacts to the City of Lake Oswego's 48" storm outfall and a City of Portland 15"

gravity sewer line also in the vicinity of the garage. Additionally, historic maps and photographs did not indicate that the creek had a significantly different alignment. Property ownership and funding were limitations to the feasibility of this alternative.

Alternative 3 –Habitat Restoration – Conceptual to 30% Design

At approximately 30% design the project included six deflector structures along the south bank, numerous grade control structures in-channel, creation of an alcove in the upper reach, substantial excavation on the north bank to maximize floodplain potential within the current creek alignment and substantial grading at the confluence to maximize sandy beach habitat at elevations below 13'. Although there were many desired features in this proposed design, it, as a whole, was deemed considerable "restoration" and beyond the scope of "enhancement". The construction cost estimate also far exceeded the project budget. For these reasons, the project was scaled-down to better match lower-impact, habitat enhancement described in Alternative 4.

Alternative 4 –Prioritization of Habitat Enhancement Elements - Selected Alternative

A number of different design elements were considered to enhance salmonid habitat in the confluence reach of Tryon Creek. Some of these elements have a greater potential for habitat improvement. The hydraulic effect of regrading the floodplain will be the greatest in the upper reach, where flows are rarely moderated by Willamette River backwater. Coincidently, this reach provides the greatest physical opportunity to expand the floodplain because of the lack of existing infrastructure. The channel deflector and grade control structures provide increased roughness and complexity in the reach, further encouraging floodplain inundation and dramatically increasing habitat structure in the channel. Construction of these project elements (excavation and deflector/grade control structure installation) would provide the greatest habitat benefits to native fish, and hence were considered priority actions. Installation of additional large wood structures along the riverbank, lower, and middle reach were considered secondary priorities, and spawning habitat improvement is expected to be enhanced through natural recruitment of channel sediments in the more complex, higher roughness proposed channel areas; thus import of spawning gravels was considered the lowest priority. This alternative is consistent with the project goal of "enhancement".

The following alternatives matrix graphically compares the four alternatives.

	Alternative 1 No Improvement	Alternative 2 Site Selection - large scale stream re-meandering.	Alternative 3 Habitat Restoration – Conceptual to 30% Design	Alternative 4 Prioritization of Habitat Enhancement Elements - Selected Alternative
Enhance cold water refuge habitat		X	X	X
Expanded floodplain interaction		X	X	X
Remove invasive plants and plant natives		X	X	X
Enhances riparian conditions by allowing periodic inundation		X	X	X
Placement of large wood and boulders enhances in-stream habitat		X	X	X
Excavate significant floodplain on majority of property		X		
Meander creek		X		
Utilize historic stream alignment	X		X	X
Consistent with "enhancement" goal				X
Within available budget	X			X
Stream alignment on City of Portland property			X	X

The alternatives considered included no improvement, two "restoration"-level options and an "enhancement"-level option. The no improvement alternative was declined because of the inherent value the confluence area provides to the restoration of native steelhead, Chinook, coho and lamprey. All three of the remaining alternatives would have produced improvements to the area habitat. In the end, as with most projects, budget and property ownership prove to be important factors. The portion of the project site that is under City of Portland ownership is a narrow strip generally following the creek bed. A large scale grading project would have resulted in a significant budget gap and a significantly altered natural park site. This was not necessary to meet the habitat "enhancement" goal of the project. Alternative 4 was selected as the preferred alternative.

R8. Project Schedule

Use the table below to show the anticipated schedule for the project. Add or change the list of project elements to fit your project. **See the Application Instructions for clarification and an example.**

Project Elements	Start Date	End Date	Description
Pre-project data collection Phase 1 & Phase 2	Sept 2006	Sept 2008	Collect preliminary data on fish presence, plant community composition, hydrology, hydraulics, topography, infrastructure, soil samples and geology at the site.
Design Phase 1 Phase 2	Sept 2006 Oct 2008	April 2008 Oct 2009	Develop and document design with technical memoranda on bank stability, hydraulic model, design criteria and assumptions. Engage key project team to review at key milestones throughout the design process. Produce final construction documents, including, construction plans, specifications, cost estimate and schedule. Plans will include sheets for grading, construction access and staging, large wood and boulder placement, typical cross sections, revegetation and erosion control.
Permit Applications Phase 1 Phase 2	June 2007 June 2009	June 2008 June 2010	Design drawings developed and permits secured for culvert retrofit and upper 160 feet of stream work. The permitting process begins with presentations to the Streamlining Committee well before the permit submittal at 60% design and ends with permits in hand by Final Design
Bid Solicitation and Contracting	January 2008 January 2010	June 2008 June 2010	Complete a public procurement process, award a contract, and initiate the notice to proceed with the selected contractor.
Construction Phase 1 Phase 2	July 2008 July 2010	Sept 2008 Oct 2010	Retrofit of culvert and construction of 160 feet of in-stream improvements. Erosion control, mobilization, bank excavation and grading, placement of large wood, boulders and streambed material. Construction contract management and inspection by City of Portland staff.
Revegetation	Oct 2010	Mar 2011	Site preparation and plantings will be coordinated by the City of Portland's Watershed Revegetation Program.
Project Inspection	July 2008 Oct	Oct 2010 Mar	Inspection of constructed elements Inspection of revegetation activities

Project Elements	Start Date	End Date	Description
	2010	2011	
Post Project Implementation Review	Oct 2010	Dec 2010	Review of constructed elements
Project Monitoring	Oct 2010	Oct 2015	Monitoring of plants, fish, large wood, bank stability
Project Maintenance	Mar 2011	Oct 2015	Maintenance of plantings
	Oct 2010	Ongoing	Maintenance of constructed elements (large wood, boulders, constructed streambanks etc…) as needed

R9. Project Relationship to Regional Priorities

If the project specifically implements a plan or larger conservation effort, identify the effort and the specific role of this project. Explain whether the project implements a regional plan (e.g., ESA Recovery Plan, Coastal Coho Assessment, NWPCC Subbasin Plan, Groundwater Management Area). Specifically identify the relationship between the proposed project and the OWEB Basin Priorities. Priorities can be found on the OWEB website at: www.oregon.gov/OWEB/restoration_priorities.shtml. **(See the Application Instructions for helpful links to various regional plans.)**

Regionally, the Lower Columbia River Estuary Partnership (LCREP) identified "loss of wetlands and habitat" as the number one priority to be addressed in the Estuary (LCREP Management Plan - p. 46). A second priority is to reverse the "decline and loss of species". Completion of the project will help to address these two priorities. In addition, the project will meet multiple actions proposed by LCREP to address Habitat and Land use (1, 2, 4, 6, and 11) and Education and Management (14, 15, 18 and 20).

At a State level, the Oregon Department of Fish & Wildlife's Conservation Strategy (February 2006) identifies strategy habitats for the Willamette Valley ecoregion. These habitats include oak woodlands, grasslands, wetlands, riparian, and aquatic habitats.

The Strategy further states: "Of the Conservation Strategy's six key conservation issues, land use changes, altered disturbance regimes (both fire and floodplain function) and invasive species are of greatest concerns. In addition to addressing these issues, some actions include: 1. Maintaining and restoring fish and wildlife habitats in urban centers; and 2. Conserving, restoring and reconnecting high value habitats." Each of these top issues for the Willamette Valley will to be addressed with this project.

The Oregon Watershed Enhancement Board has performed analysis of watersheds in the State of Oregon. This analysis includes identifying, by watershed, basin priorities. For the Lower Willamette River Watershed projects are deemed high priority if they include riparian restoration and even more critical at confluence areas. As stated in the OWEB Willamette Basin Report (Dec 2005): "Even if fish passage is not restored, the confluence areas of these streams provide valuable watershed health benefits, including refuge areas for fish in the Willamette".
At a local level, the Fanno and Tryon Creeks Watershed Management Plan (2005) identifies these target actions for improving this reach of Tryon Creek:

- Floodplain connectivity and riparian condition could be improved by planting native shrubs and trees in the riparian corridor and broader floodplain area. Key benefits that additional plant cover would probably provide include stabilizing creek banks and channel, providing additional canopy cover, providing instream woody structure (small wood clusters and allochthonous inputs for macroinvertebrates and fish), and attenuating creek flows.

- Lower Tryon Creek is part of the larger Willamette River floodplain and should be protected from future development or redevelopment to the maximum extent possible. In addition to providing habitat to local populations, this short reach provides critical refuge to upper Willamette Basin fish populations year-round.
- Channel condition and habitat structure could be improved by enhancing channel complexity and instream structure. Adding large wood and boulders instream would increase channel roughness and help pool and riffle forming processes. Lower Tryon Creek currently does not exhibit complex habitat types. Riffle area is low. Lateral scour pools predominate and are not significantly deeper than the prevailing channel depth; they do not provide significant depth refugia or protective cover.

The following BES documents recommend stream enhancement in this reach of Tryon Creek:

- Tetra Tech, Inc. for US Army Corps of Engineers and City of Portland Bureau of Environmental Services. Lower Willamette River, Oregon Ecosystem Restoration General Investigation Study. February 2008
- Herrera Environmental Consultants, Inc. for BES. Lower Tryon Creek Fish Passage: Analysis of Alternative Design Concepts. June 2006
- Mobrand Biometrics, Inc. (Appendix to 2005 BES Fanno and Tryon Creeks Watershed Management Plan). Analysis of Habitat Potential in Tryon Creek for Coho Salmon and Steelhead Trout
- ODFW for City of Portland Bureau of Environmental Services. Abundance and Distribution of Fish in City of Portland Streams. Final Report 2001-03

Other (non-BES) documents recommending stream enhancement in this reach of Tryon Creek:

- ODFW. Comprehensive Wildlife Conservation Strategy. 2005.
- Willamette Restoration Initiative for the Northwest Power and Conservation Council. Willamette Subbasin Plan. 2004.
- City of Lake Oswego. Lake Oswego Comprehensive Plan 2000.

The City of Portland's Portland Watershed Characterization Summary (March 2004) emphasizes the importance of "local actions to improve the Willamette River's connection to its current and historical floodplain will improve hydrologic conditions at the local and site-specific scale." This project addresses these issues. Project features such as large wood placement, volunteer stewardship, and revegetation, are easily and likely to be transferred to other places in need of habitat improvement throughout the Tryon Creek tributary and along the Willamette River.

The ecological principles guiding this effort are described in *The Framework for Integrated Management of Portland Watersheds* (BES 2005a[1]), which was reviewed by an Independent Science Panel, and some detail behind the approach for selecting habitat restoration sites are described below. The management approach for integrating these multiple efforts into a unified ecosystem restoration approach are described in the *Portland Watershed Management Plan* (BES 2005b[2])

In conjunction with comprehensive water quality improvements, the City believes that habitat improvements in Portland are critical for regional salmon recovery because:

- Portland habitats are ecologically important
- Local limiting factors pose threats to regional salmon populations
- Portland has a strategic, integrated approach for addressing these threats

R10. Other Related Conservation Actions

a) Explain how the project complements other efforts under way or completed in the watershed. Identify other restoration, technical assistance, monitoring, assessment or education projects, conservation actions and ecological protection efforts in the watershed and explain how this project relates to those actions.

[1] http://www.portlandonline.com/fish/index.cfm?c=33528
[2] http://www.portlandonline.com/bes/index.cfm?c=38965

b) If the project is a continuation of previously completed activities, describe the results of the previous project(s) and identify what you have learned from the implementation of similar project(s).

The City is also making efforts to improve habitat along the Willamette River, including projects at Stephens Creek Confluence, the Columbia Slough Confluence and Oaks Bottom Wildlife Refuge.

Several other stream enhancement projects have recently been completed in the Tryon Watershed. Projects include:

- The Iron Mountain project, constructed in the summer of 2008, enhanced approximately 200 feet of stream channel and adjacent wetlands, and reconnected floodplain as part of a sewer project to protect exposed sanitary sewer infrastructure,
- The High Creek culvert replacement and stream enhancement project removed a perched culvert on a tributary near its confluence with Tryon Creek. This project was completed in 2008.
- The 4th Avenue project was constructed in 2005 and 2006. It was another sewer protection project completed in a way that enhanced 350 feet of Tryon Creek. Enhancements included laying back stream banks, improving floodplain access, increasing sinuosity, and addition of 39 logs.
- In 2007, the City of Portland built in-stream wood structures on Tryon Creek in the Foley Balmer Natural Area, designed to stabilize a headcut and redirect the creek back into an abandoned meander.

Future Tryon Creek Watershed projects include:

- Four additional stream enhancement projects linked with sewer infrastructure protection projects
- Replacement of the Boones Ferry Road culvert with a fish-passable bridge or culvert. Construction is anticipated to be in 2014
- BES continues to plan and construct facilities to improve water quality and quantity in addition to funding invasive plant removal and native revegetation.

R11. Project Inspection

Identify who will inspect and sign off on the completed project.

Name of Person & Agency/Organization	Telephone Number or Email Address	Project Element to be Inspected
Nick Naval, City of Portland, Bureau of Environmental Services	503.823.7108	Constructed project elements
Darian Santner, City of Portland, Bureau of Environmental Services	503.823.5669	Revegetation activities

R12. Educational/Public Awareness Opportunities

Explain whether and how you will raise public awareness about the project (e.g., install a project partner or interpretive sign, write an article for the local paper, lead a site tour for local citizens). **See the Application Instructions for clarification of eligible education and outreach costs.**

The education and outreach strategy includes opportunities to inform the public about project goals and benefits, proposed activities construction schedule, maintenance and monitoring opportunities and volunteer work events. Education and Outreach Strategy identifies community concerns such as noise ordinances, road closures, construction activities, and relationship to other related projects in the South Willamette Reach: Ross Island, Powers Marine, Stephens Creek and Oaks Bottom, Phase 1 of this Tryon Creek project, recent work in Tryon Creek State Natural Area; and environmental education such as community events, kick-off meetings, open-houses and stakeholder events. Stakeholders include: US Fish & Wildlife Service, Oregon Department of Fish & Wildlife, Tryon Creek Watershed Council, Friends of Tryon Creek, Birdshill Community Planning Organization (CPO) and Willamette Riverkeeper.

R13. Project Maintenance and Reporting

Use the table below to document how the project will be maintained over time. State who will maintain the project. Identify their affiliation and provide contact information. In addition, please indicate who will conduct Post-Implementation Status Reporting following project completion.

Name of Person & Agency/Organization	Telephone Number or Email Address	What will be done and for how long?
Kristen Acock, City of Portland, Bureau of Environmental Services	503.823.7395	5 years project maintenance oversight for constructed project elements and post-implementation status reporting
Darian Santner, City of Portland, Bureau of Environmental Services	503.823.5669	5 years revegetation maintenance

R14. Budget Development

There are a number of assumptions used to develop any budget. This does not mean you must provide a line by line description of costs. Use this response to provide a clear understanding of what the budget estimate was based on.

a) Explain how costs were determined for the budget elements. Describe if contractor conversations, past projects or other cost figures were used for each major element of the budget. This is particularly important for lump sum elements in the budget. For project management costs describe the time and activities that would be involved.
b) If there are any unusual cost factors, explain them. For example, if the fencing costs are unusually high because of steep, rocky terrain and unroaded access, this is the place to explain the cost elements on the budget page.

The budget for this project was developed by comparing similar unit costs to other recent City of Portland restoration projects for all major elements.

Pre-implementation/project management costs include personnel and the remainder of an existing consulting design contract. Personnel time will be spent reviewing design plans, authoring permit applications, coordinating with public property owners (Metro and City of Lake Oswego), overseeing the design contract, and coordinating survey, archeological investigations, and arborist activities at the site. In addition, the project activities will comply with the Migratory Bird Treaty Act and as such will require more up-front planning and coordination. For example, clearing & grubbing activities will need to be scheduled in advance of bird nesting season and will incur additional staff time to coordinate these activities. Similarly, project plans include removal of 10 trees at the site. Some of these trees will be used on-site and incorporated into the large wood structures, incurring more staff-time for coordination.

Project management costs are most significant for the Construction Inspector position. This position is responsible for daily oversight of the construction contractor.

Contracted service costs capture constructed activity expenses and revegetation services. The constructed activities and unit costs were developed by the current design contractor (Hererra), were reviewed at every submittal stage to BES by the BES construction manager, and are currently based on 60% design estimates. A contingency line item is included (roughly 30% of constructed activities) as a standard practice for project cost estimating. This contingency percentage will be reduced as design plans are refined at the 90% submittal. Other considerations in developing this budget include:

-The project site cannot accommodate all cut materials and some must therefore be hauled off-site.
-Access to the project site is limited by a narrow, winding road access and steep topography in some places.
-City of Lake Oswego tree protection ordinance will require additional tree protection measures on all trees throughout the site.
-Stream diversion shall include a turbidity curtain at the mouth of the creek.
-The residential road leading into the project site will be impacted by large trucks and will require repair following project completion.

Section IV WATERSHED RESTORATION BUDGET
Tryon Creek Confluence Habitat Enhancement Project
IMPORTANT: Read the application instructions. Attach additional lines, if necessary.

CAPITAL BUDGET *Totals automatically round to the nearest dollar

	A	A1	B	C	D	D1	E	F
Itemize projected costs under each of the following categories.	**Unit Number**	**Unit Type**	**Unit Cost**	**In-Kind Match**	**Cash Match Funds**	**Other funds (match to other grants)**	**OWEB Funds**	**Total Costs**
	(e.g., # of hours)		(e.g., hourly rate)					(add columns C, D, E)
PRE-IMPLEMENTATION. Must occur *after* the OWEB grant agreement has been fully executed, unless it is a city or county charge for processing the Land Use form. OWEB funds will be disbursed only upon receipt of all required permits and licenses.								
Design: Project Mgr (Engineer)	300	hr	48.27			14,481.00		14,481
Design: Fish Biologist	100	hr	49.75			4,975.00		4,975
Design: Construction Manager (Engineer)	100	hr	50.68			5,068.00		5,068
Design: Botanic Specialist	50	hr	39.15			1,957.50		1,958
Design: Contracted Services	1	ls	30,000.00		30,000.00			30,000
SUBTOTAL (1)				0	30,000.00	26,481.50	0	56,482
PROJECT MANAGEMENT. Includes *staff or contractors* who coordinate project implementation. Line items should identify who will be responsible for project management and their affiliation.								
BES Project Manager (Engineer)	300	hr	48.27			14,481.00		14,481
BES Construction Manager (Engineer)	180	hr	50.68			9,122.40		9,122
BES Construction Inspector	900	hr	41.81			37,629.60		37,630
SUBTOTAL (2)				0	0	61,233.00	0	61,233
IN-HOUSE PERSONNEL. Includes *only* Applicant employee costs and the portion of their time devoted to this project.								
BES Fish Biologist	200	hr	49.75			9,950.00		9,950
BES Botanic Specialist	150	hr	39.15			5,872.50		5,873
SUBTOTAL (3)				0	0	15,822.50	0	15,823
CONTRACTED SERVICES. Labor, supplies, and materials to be provided by non-*staff* for project implementation.								
Invasive species control - site prep cut	4.5	ac	347.00			1,561.50		1,562
Bamboo stake installation (sm and med)	2.87	thou	98.00			281.26		281
Native straw / mulch application	5.74	thou	122.00			700.28		700
Vexar tube installation	2.87	thou	292.00			838.04		838
Live pole cuttings installation	2	thou	138.80			277.60		278
Live pole cuttings harvest	2	thou	142.00			284.00		284
Native plant installation	5.74	thou	218.80			1,255.91		1,256
Invasive species control - establishment period cut (2 treatments, 4.5 acres/treatment)	9	ac	282.00			2,538.00		2,538
Survey (as-built)	15	day	1,000.00		15,000.00			15,000
Mobilization	1	LS	50,000.00			50,000.00		50,000
Traffic Control, Temporary	1	LS	10,000.00			10,000.00		10,000
Construction Entrance	1	LS	2,500.00			2,500.00		2,500
Tree Protection	1	LS	1,000.00			1,000.00		1,000

	A	A1	B	C	D	D1	E	F
Itemize projected costs under each of the following categories.	**Unit Number**	**Unit Type**	**Unit Cost**	**In-Kind Match**	**Cash Match Funds**	**Other funds (match to other grants)**	**OWEB Funds**	**Total Costs**
	(e.g., # of hours)		(e.g., hourly rate)					(add columns C, D, E)
Exclusion Zone Fencing	1500	LF	3.00			4,500.00		4,500
Clearing and Grubbing	1	LS	9,000.00			9,000.00		9,000
Diversion of Stream Flow	1	LS	50,000.00				50,000.00	50,000
Salvaged Boulders	200	TN	25.00		5,000.00			5,000
Imported Cobble and Gravel	40	TN	75.00			3,000.00		3,000
Salvaged Ballast Rock	1	LS	5,000.00			5,000.00		5,000
Imported Ballast Rock-18"-12" angular basalt	400	ton	40.00			16,000.00		16,000
Log w/Rootwad-30' x 18"-supplied by City (Type 1)	12	ea	300.00			3,600.00		3,600
Log w/Rootwad-30' x 12"-Supplied by City (Type 2)	11	ea	300.00			3,300.00		3,300
Log w/Rootwad-20' x 18"-Imported (Type 3A)	36	EA	800.00			13,800.00	15,000.00	28,800
Log w/Rootwad-20' x 18"-Supplied by City (Type 3)	7	EA	200.00			1,400.00		1,400
Log w/Rootwad-15' x 18"-Imported (Type 4A)	6	EA	700.00			4,200.00		4,200
Log w/Rootwad-15' x 12"-Imported (Type 5A)	8	EA	600.00			4,800.00		4,800
Timber Piles, 12' x 12"	4	EA	300.00			1,200.00		1,200
Salvaged Woody Debris	1	LS	4,500.00			4,500.00		4,500
Soil Encapsulated Lifts	700	LF	50.00				35,000.00	35,000
Common and Unclassified Excavation-Regraded onsite	3283	CY	12.00			39,396.00		39,396
Common and Unclassified Excavation-Hauled Offsite	2129	CY	25.00			53,225.00		53,225
Concrete Debris Removal	1	LS	2,000.00			2,000.00		2,000
Erosion and Sediment Control	1	LS	50,000.00		50,000.00			50,000
Coir Erosion Control Fabric	3200	SY	5.00			16,000.00		16,000
Seeding-Hydroseeding	3.66	AC	5,000.00			18,300.00		18,300
Adjust Manhole	1	EA	400.00			400.00		400
Road Repair/Restoration	10800	SF	2.42			26,136.00		26,136
Contingency (30% of construction contract)	1	LS	134,700.00			134,700.00		134,700
SUBTOTAL (4)				0	70,000.00	435,693.59	100,000	605,694
TRAVEL. Mileage, per diem, lodging, etc. Must use current State of Oregon rate.								
SUBTOTAL (5)				0	0	0	0	0
SUPPLIES/MATERIALS. Refers to items that typically are "used up" in the course of the project. Costs to OWEB must be directly related to on-the-ground work.								
Native straw / mulch material	5.5	thou	75.00			412.50		413
Bamboo stakes (small) materials	2.87	thou	40.00			114.80		115
Bamboo stakes (medium)	5.74	thou	70.0			401.80		402

	A	A1	B	C	D	D1	E	F
Itemize projected costs under each of the following categories.	**Unit Number**	**Unit Type**	**Unit Cost**	**In-Kind Match**	**Cash Match Funds**	**Other funds (match to other grants)**	**OWEB Funds**	**Total Costs**
	(e.g., # of hours)		(e.g., hourly rate)					(add columns C, D, E)
Vexar tubes (materials)	2.87	thou	170.00			487.90		488
Live pole cuttings (materials)	2	thou	142.00			284.00		284
Native plants (materials)	5.74	thou	270.00			1,549.80		1,550
SUBTOTAL (6)				0	0	3,250.80	0	3,251
CAPITAL EQUIPMENT. List equipment costing only **$250 or more per unit**. Useful life of *capital* equipment is for the duration of project and will be used only for this project **(see next page for Non-Capital Equipment).**								
SUBTOTAL (7)				0	0	0	0	0
EFFECTIVENESS MONITORING. This only applies if you are conducting Effectiveness Monitoring (*see Application Instructions and R15*).								
EM Budget SUBTOTAL (8)				0	0	0	0	0
CAPITAL SUBTOTAL [Add all subtotals, (1-8) above]				0	100,000	542,481	100,000	742,481

NON-CAPITAL BUDGET *Totals automatically round to the nearest dollar

EDUCATION/OUTREACH. Refers to informational and promotional activities associated with the project.								
BES Public Information Officer	80	hr	53.09	4,247.20				4,247
SUBTOTAL (9)				4,247.20	0	0	0	4,247
EQUIPMENT. List equipment costing only **$250 or more per unit**. Refers to items with a useful life of generally 2 years or more.								
SUBTOTAL (10)				0	0	0	0	0
NON-CAPITAL TOTAL [Add the two subtotals, (9-10) above]				4,247	0	0	0	4,247

FISCAL ADMINISTRATION *Totals automatically round to the nearest dollar

Not to exceed 10% of the Capital Subtotal (1-8) and the Non-Capital Total (9-10). Refers to costs associated with accounting; auditing (fiscal management); contract management (complying with the terms and conditions of the grant agreement); and fiscal reporting expenses for the OWEB grant, including final report expenses for the grant.								
FISCAL ADMIN. Compute by adding the **Capital Subtotal** and **Non-Capital Total** and multiplying both by 0.10 or less.								
SUBTOTAL (11)				0	0	0	0	0
POST-IMPLEMENTATION STATUS REPORTING. Costs associated with annual reporting requirements typically required for each grant (***see Application Instructions***).								
OWEB grant reporting ($384/yr)	5 yr			1,920.00				1,920
Aquatic Vertebrate monitoring ($1152/yr)	5 yr			5,760.00				5,760
Physical Habitat Characterization/Native Plant monitoring ($1536/yr)	5 yr			7,680.00				7,680
Terrestrial Wildlife monitoring ($768/yr)	5 yr			3,840.00				3,840
SUBTOTAL (12)				19,200.00	0	0	0	19,200

	A	A1	B	C	D	D1	E	F
Itemize projected costs under each of the following categories.	**Unit Number**	**Unit Type**	**Unit Cost**	**In-Kind Match**	**Cash Match Funds**	**Other funds (match to other grants)**	**OWEB Funds**	**Total Costs**
	(e.g., # of hours)		(e.g., hourly rate)					(add columns C, D, E)
CAPITAL SUBTOTAL (1-8)				0	100,000	542,481	100,000	742,481
CAPITAL TOTAL [Add the two Subtotals (11&12) to the Capital Subtotal from (1-8) above]				19,200	100,000	542,481	100,000	761,681

BUDGET TOTAL *Totals automatically round to the nearest dollar

BUDGET TOTAL [Add Non-Capital Total and Capital Total, from above]	23,447	100,000	542,481	100,000	765,929

ATTACHMENT A

MATCH FUNDING FORM

Document here the match funding shown on the budget page of your grant application

OWEB accepts all non-OWEB funds as match. An applicant may not use *another OWEB grant* to match an OWEB grant. However, an applicant who benefits from a pass-through OWEB agreement with another state agency, by receiving either staff expertise or a grant from that state agency, may use those benefits as match for an OWEB grant. (Example: A grantee may use as match the effort provided by ODFW restoration biologists because OWEB funding for those positions is the result of a pass-through agreement). At the time of application, match funding does not have to be *secured*, but you must show that at least 25% of match funding has been *sought*. On this form, you do not necessarily need to show authorized signatures ("secured match"), but the more match that is secured, the stronger the application. Identify the type of match (cash or in-kind), the status of the match (secured or pending), and either a dollar amount or a dollar value (based on local market rates) of the in-kind contribution. In the table below, the match may be identified as either Effectiveness Monitoring (EM) or Other (OTHER) Dollar Value. **If you are not requesting funds from OWEB to support effectiveness monitoring, disregard the EM column and use only the OTHER column.**

EFFECTIVENESS MONITORING: If you are requesting more than $3,500 in OWEB funds to support Effectiveness Monitoring activities as part of a Watershed Restoration Grant Application and filling out information for Question R15, you must include matching funds which will be used as match for the effectiveness monitoring portion of the project. This is identified in the table below as EM Dollar Value.

If you have questions about whether your proposed match is eligible or not, visit our website at www.oregon.gov/OWEB/GRANTS/grant_app_materials.shtml, or contact your local OWEB regional program representative (contact information available in the instructions to this application).

Project Name: Tryon Creek Confluence Habitat Enhancement Project Applicant: City of Portland BES

Match Funding Source	Type (√one)	Status (√one)**	EM Dollar Value	OTHER Dollar Value	Match Funding Source Signature/Date**
EPA-WEI Grant (application for $468,840 pending)	☒ cash ☐ in kind	☐ secured ☒ pending		$70,000.00	
LCREP/BPA Grant (secured grant total is $100,000)	☒ cash ☐ in kind	☒ secured ☐ pending		$30,000.00	
City of Portland BES (pending annual budgets)	☐ cash ☒ in kind	☐ secured ☒ pending		$23,447.00	X 5/20/09
City of Portland BES (pending budget $143,642 NON-MATCH)	☒ cash ☐ in kind	☐ secured ☒ pending			
	☐ cash ☐ in kind	☐ secured ☐ pending			
	☐ cash ☐ in kind	☐ secured ☐ pending			
	☐ cash ☐ in kind	☐ secured ☐ pending			
	☐ cash ☐ in kind	☐ secured ☐ pending			

** **IMPORTANT**: If you checked the "Secured" box in the status Column for any match funding source, you must provide either the signature of an authorized representative of the match source in the final Column, or attach a letter of support from the match funding source that specifically mentions the dollar amount you show in the EM or OTHER Dollar Value Column(s).

ATTACHMENT B

LAND USE INFORMATION FORM

This information is needed to determine if the proposed project complies with statewide planning goals and is compatible with local comprehensive plans (ORS 197.180). The form must be submitted before OWEB releases project funds. OWEB will release project funds only if the project either is not regulated by, or is compatible with, the local comprehensive plan and zoning ordinance. If a project is regulated by the local comprehensive plan and zoning ordinance, OWEB will void grant agreements for projects the county determines to be incompatible with the local comprehensive plan and zoning ordinance. If the county requires additional local approvals for a project regulated by the local comprehensive plan and zoning ordinance, OWEB will not release project funds until these conditions are satisfied.

1. TO BE COMPLETED BY THE APPLICANT/GRANTEE

Applicant/Grantee Name: City of Portland Bureau of Environmental Services

Project Name: Tryon Creek Confluence Habitat Enhancement Project

2. TO BE COMPLETED BY CITY/COUNTY OR TRIBAL PLANNING OFFICIAL

Complete this section only after section 1, above, has been completed. Check the box below that applies:

☐ This project is not regulated by the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is compatible with the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is not compatible with the local comprehensive plan and zoning ordinance.

☒ Compatibility of this project with the local planning ordinance cannot be determined until the following local approvals are obtained:

____ Conditional Use Permit
____ Plan Amendment
____ Other
X Development Permit
____ Zone Change

An application has ____ has not X been made for the local approvals checked above.

Leslie C Hamilton
* Signature of Local Official

May 19, 2009
Date

Print Name: Leslie Hamilton

Phone: 503 675-3731

Title: Assoc. Planner

Email: lhamilton@ci.oswego.or.us

Must be an authorized signature from your local City/County or Tribal Planning Department, regardless of which box is checked above.

ATTACHMENT B

LAND USE INFORMATION FORM

This information is needed to determine if the proposed project complies with statewide planning goals and is compatible with local comprehensive plans (ORS 197.180). The form must be submitted before OWEB releases project funds. OWEB will release project funds only if the project either is not regulated by, or is compatible with, the local comprehensive plan and zoning ordinance. If a project is regulated by the local comprehensive plan and zoning ordinance, OWEB will void grant agreements for projects the county determines to be incompatible with the local comprehensive plan and zoning ordinance. If the county requires additional local approvals for a project regulated by the local comprehensive plan and zoning ordinance, OWEB will not release project funds until these conditions are satisfied.

1. TO BE COMPLETED BY THE APPLICANT/GRANTEE

Applicant/Grantee Name: City of Portland Bureau of Environmental Services

Project Name: Tryon Creek Confluence Habitat Enhancement Project

2. TO BE COMPLETED BY CITY/COUNTY OR TRIBAL PLANNING OFFICIAL

Complete this section only after section 1, above, has been completed. Check the box below that applies:

☐ This project is not regulated by the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is compatible with the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is not compatible with the local comprehensive plan and zoning ordinance.

☐ Compatibility of this project with the local planning ordinance cannot be determined until the following local approvals are obtained:

_____ Conditional Use Permit
_____ Plan Amendment
_____ Other
_____ Development Permit
_____ Zone Change

An application has ____ has not ____been made for the local approvals checked above.

_____ _____

* Signature of Local Official — Date

Print Name: _____ Phone: _____

Title: _____ Email: _____

Must be an authorized signature from your local City/County or Tribal Planning Department, regardless of which box is checked above.

ATTACHMENT C

PUBLIC RECORD CERTIFICATION

Oregon Administrative Rule 695-005-0030(4) states that "All applications that involve physical changes or monitoring on private land must include certification from the applicant that the applicant has informed all landowners involved of the existence of the application and has also advised all landowners that all monitoring information obtained on their property is public record. If contact with all landowners was not possible at the time of application, explain why."

INSTRUCTIONS: **All applicants must complete Part One. In Part One, if you check the first box, skip Part Two and sign and date in the signature box below. If you check the second box, you must complete Part Two and sign and date in the signature box below.**

PART ONE

☒ Public land only (STOP: No need to complete the rest of the form)

☐ Private land only, or a mix of public and private land (complete Part Two and sign and date in the signature box)

PART TWO

☐ I certify that I have informed all participating private landowners involved in the project of the existence of the application, and I have advised all of them that all monitoring information obtained on their property is public record. The following is a complete list of all participating private landowners. Add more lines if needed.

1.	5.
2.	6.
3.	7.
4.	8.

☐ I certify that contact with all participating private landowners was not possible at the time of application for the following reasons:

Furthermore, I understand that should this project be awarded, I will be required by the terms of the OWEB grant agreement to secure cooperative landowner agreements with all participating private landowners prior to expending Board funds on a property.

APPLICANT/CO-APPLICANT SIGNATURE

Applicant Signature	Date
Print Name	Title
Co-Applicant Signature	Date
Print Name	Agency

ATTACHMENT D

RESTORATION METRICS FORM

OWEB receives a portion of its funds from the federal government and is required to report how its grantees have used those funds. Complete both sections of the form below as they apply to your project. The information you provide is used for federal reporting purposes.

Section 1 Project Overview

Answer all five questions below, even if you have answered a similar question in a previous section in the grant application.

1. **Land Use Setting: CHECK ONE BOX ONLY.**

☒ **Urban/Suburban/Exurban** *(Projects located within urban growth boundaries or rural residential areas)*	☐ **Rural** *(Projects located outside urban growth boundaries or rural residential areas.)*

2. **Dominant Watershed Setting: CHECK ONE BOX ONLY.** Example: Your project involves managing erosion in the upland area with some erosion control extended to the riparian area. Because most of the work is to occur in the upland area, you would check only the Upland box below.

☐ **Estuary** *(where freshwater meets and mixes with saltwater of ocean tides.)*	☐ **Riparian** *(adjacent to a water body, within the active floodplain.)*
☒ **Instream** *(below the ordinary high-water mark or within the active channel — includes fish passage.)*	☐ **Upland** *(above the floodplain.)*
	☐ **Groundwater** *(Projects that recharge groundwater or primarily affect the subsurface water table.)*
☐ **Wetland** *(areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.*	

3. **Total Acres Treated:** 4.5 **Total Stream Miles Treated:** 0.2

4. **Project Priority Identification:** Name the primary watershed/subbasin plan or assessment in which this project type is identified as a priority. **See Application Section III, question #R9.**

   Fanno and Tryon Creeks Watershed Management Plan (2005)

5. **Project Monitoring:** Identify monitoring activities planned. Check as many boxes as apply. **See Application Section III, question #R15.**

☐ Fish presence/absence/abundance/distribution survey(s)	☒ Riparian vegetation (Presence/Absence)
☒ Instream Habitat surveys	☒ Spawning surveys
☒ Macroinvertebrates	☒ Upland vegetation (Presence/Absence)
☒ Noxious weed (Presence/Absence)	☐ Water quality
☒ Photo points	☐ Water quantity
☐ Other (explain):	

Section 2 Project Activities

Provide values for each Project Activity applicable to your application. Leave blank any Project Activity or metric line that is not appropriate to your application. All data are pre-project and are therefore proposed, not completed.

Fish Passage Improvement Projects: *Projects that affect or provide fish migration. For partial barriers, include total miles made accessible by the project.* Check all proposed activities.

☐ Install fish passage structure *(e.g., fish ladder, fishway, etc.)*	☐ Removal of stream crossings
☐ Remove/replace culverts	☐ Removal of irrigation/push up dams
☐ Other (explain):	

_____ Number of fish passage blockages removed or improved

_____ Estimated miles of stream made accessible by removal of barriers *other* than culverts

_____ Estimated miles of stream made accessible by the improvement or removal of culverts (i.e., record the miles of stream to the next barrier or the extent of fish use)

Water Quality Projects: *Projects that result in an improvement of water quality parameters.* Check all boxes that apply:

☐ Bacteria	☐ Nutrients (name):	☐ Temperature
☐ Dissolved Oxygen	☐ Pesticides	☐ Toxics
☐ Heavy Metals (name):	☐ pH	☐ Turbidity
☐ Nitrates	☐ Phosphorus	
☐ Other (explain):		

Instream Habitat Projects: *Projects that increase or improve the physical conditions within the stream environment to provide needed habitat conditions.* Check all proposed activities.

☒ Bank stabilization	☐ Channel reconfiguration	☒ Large wood placement
☒ Boulder placement	☒ Deflectors/barbs	☒ Off-channel habitat
☐ Carcass placement	☒ Floodplain connectivity	☐ Spawning gravel placement
☐ Other (explain):		☐ Weirs/grade control

0.2 Estimated miles of stream to be stabilized (i.e., to be bioengineered or engineered to resist the erosive forces of flowing water). *Stream sides treated* ☐ one ☒ two (Do not double count miles if a second side was treated)

0 Estimated miles of stream to be treated that **are not** bank stabilization. Count one side of the stream only.

420 Pieces of wood per mile.

Riparian Habitat Projects: *Projects above the ordinary high-water mark of the stream and within the floodplain of the stream.* Check all proposed activities.

☐ Beaver management	☐ Manage sediment inputs	☐ Riparian habitat protection
☐ Conservation grazing management	☒ Non-native/noxious plant control	☒ Vegetation management (specify):
☒ Floodplain nurse log placement	☐ Riparian fencing	☒ Voluntary tree retention
☐ Manage nutrient inputs	☒ Riparian planting	☐ Water gap development
☐ Off-stream livestock water development		
☐ Other (explain):		

3.5 Estimated riparian acres to be planted.

4.5 Estimated riparian acres to be treated for non-native/noxious plant species.

4.5 Estimated total riparian acres to be treated.

0.2 Estimated miles of riparian streambank to be treated. *Stream sides treated* ☒ one ☐ two (Do not double count miles if a second side was treated)

Upland Habitat Projects: *Projects implemented above the floodplain.* Check all proposed activities.

☐ Conservation tillage	☐ Reduction of nutrient inputs	☐ Sediment control basins
☐ Grazing management	☐ Restore historic natural habitats	☐ Terracing
☐ Non-native/noxious plant control	☐ Upland habitat protection	☐ Upland erosion control; planting/seeding
☐ Reduction of fuels	☐ Upland livestock water development	
☐ Vegetation management (e.g., juniper control)		
☐ Other (explain):		

_____ Estimated total acres of upland habitat to be treated for non-native/noxious species.
_____ Estimated total acres of upland habitat to be treated.
_____ Estimated number of livestock watering sites.

Estuarine Habitat Projects: *Projects that result in improvement or increase in the availability of estuarine habitat.* Check all proposed activities.

☐ Dike breaching/removal	☐ Non-native/noxious plant control	☐ Tide gate modification
☐ Estuarine channel modification	☐ Estuarine habitat protection	☐ Tide gate removal
☐ Estuarine habitat creation	☐ Removal of existing fill material	
☐ Other (explain):		

_____ Estimated total estuarine acres to be treated for non-native/noxious plant species.
_____ Estimated total acres to be reconnected to the estuary.
_____ Estimated total estuarine acres to be treated.

Wetland Habitat Projects: *Projects designed to create or improve wetland areas.* Check all proposed activities.

☐ Manage nutrient inputs	☐ Vegetation planting	☐ Wetland habitat enhancement
☐ Manage sediment inputs	☐ Wetland creation (from upland)	☐ Wetland habitat protection
☐ Non-native/noxious plant control	☐ Wetland restoration (reestablishment of hydrology)	
☐ Other (explain):		

_____ Estimated total wetland acres to be treated for non-native/noxious plant species
_____ Estimated total wetland acres created (new wetland created from uplands)
_____ Estimated total wetland acres restored (wetland hydrology reintroduced to a drained site)
_____ Estimated total wetland acres enhanced (existing wetland improved to benefit function)

Road Projects: *Projects designed to improve road impacts to watersheds.* Check all proposed activities.

☐ Road drainage system improvements	☐ Road sediment and delivery control
☐ Road obliteration/decommissioning	☐ Road surface improvement
☐ Road reconstruction	☐ Other (explain):

_____ Estimated miles of road to be treated.

Water Management Projects: *Projects designed to improve water efficiency, quantity, and timing within the watershed.* Check all proposed activities.

☐ Convert gravity diversion to pumps or infiltration galleries	☐ Irrigation systems for improved water conservation	☐ Recharge groundwater/aquifer
☐ Create off-channel flood storage	☐ Irrigation systems for improved water quality	☐ Reduce water loss in irrigation delivery
☐ Install storm water runoff treatment	☐ Protect instream flow	☐ Other (explain):

_____ Estimated amount of water (cubic feet per second) returned during the critical water period, April-October.
_____ Estimated number of acres to be treated for irrigation system improvements.

APPLICATION CHECKLIST

Instructions: Use this form as an important cross-check to ensure that your application is complete. Return the list with your application. An incomplete application will jeopardize your application's review.

General

- ☑ Only one copy of the application is included with the packet (other applications should be sent separately).
- ☑ The application and attachments are on 8 ½ x 11" paper.
- ☑ The application and attachments are single-sided and single-spaced.
- ☑ The application and attachments are not stapled or bound (sets of color photos and color maps excepted; see check box immediately below).
- ☐ Where color photo(s) or map(s) are provided, I have included 25 copies. If there were several maps, photos or designs, etc., I have taken one copy of each map, photo or design and assembled them to be one complete set and stapled them together (no other documents or attachments are stapled). I have 25 sets for distribution to OWEB reviewers. N/A

Section I – Applicant Information

- ☑ All questions in this section have been answered.
- ☑ The OWEB Dollars Requested and the Total Project Cost mirror the totals shown on the budget page.
- ☑ The project location is complete.
- ☑ All contact information — for the Applicant and fiscal agent — is complete and current.
- ☑ The CERTIFICATION has been completed, signed and dated. (As an Applicant, you must sign this certification.) N/A

Section II – Project Information

- ☑ All questions in this section have been answered.

Section III – Specific Restoration Project Activity

- ☑ All applicable questions in this section have been answered.
- ☑ Make sure that you have made an informed distinction between Effectiveness Monitoring and Post-Project Status Review.
- ☐ IF conducting Effectiveness Monitoring, I have added the Effectiveness Monitoring Insert with Sections I, II and III to R15 to support Effectiveness Monitoring funding. N/A

Section IV – Budget Page

- ☑ I have read the application instructions for completing the budget page.
- ☑ I have downloaded the Excel or Word budget, completed and checked my calculations.
- ☑ Columns A and B have been completed, where appropriate.
- ☑ Fiscal Administration does not exceed 10% of the OWEB subtotal (subtotal row, Column E).
- ☑ The totals shown in the last row (BUDGET TOTAL) add up and are accurately reflected in Section I of the application.
- ☑ I have copied the budget page, inserted it as Section IV in the application and removed the placeholder page.

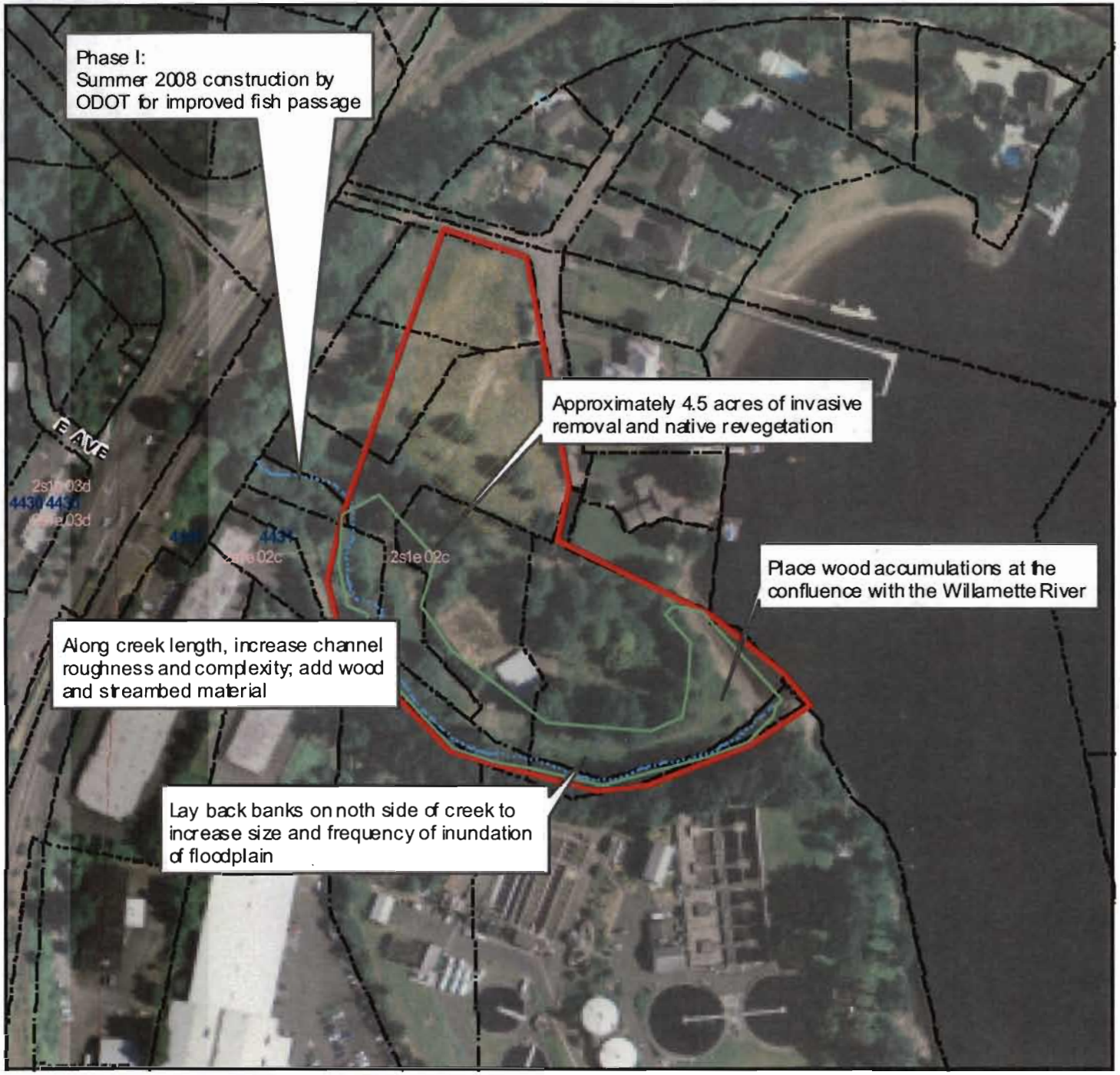
Required Forms

- ☑ ATTACHMENT A - Match Funding form – show that at least 25% match has been sought (authorized signatures are not required at the application stage, but are strongly encouraged).
- ☐ ATTACHMENT B - Land Use form (required only for applications involving on-the-ground activities to ensure compatibility with the local comprehensive plans and zoning ordinances) – completed as relevant, signed, and dated by local official.
- ☑ ATTACHMENT C - Public Record Certification Form – completed, signed, and dated.
- ☑ ATTACHMENT D - Restoration Metrics form – completed, as relevant.

Optional Attachments

- ☑ Project Maps
- ☑ Preliminary Project Designs
- ☑ Photographs
- ☑ Letters of Support from key project partners or others, as appropriate

Tryon Confluence Habitat Enhancement Concept Design - Phase II



Legend

- Tryon Creek
- Property Lines
- Approx. Fill Location
- Approx. Limits of Creek Work
- Project Area

0 50 100 200 300 400

Feet

2S1E02C

Map Updated: 05/11/2009

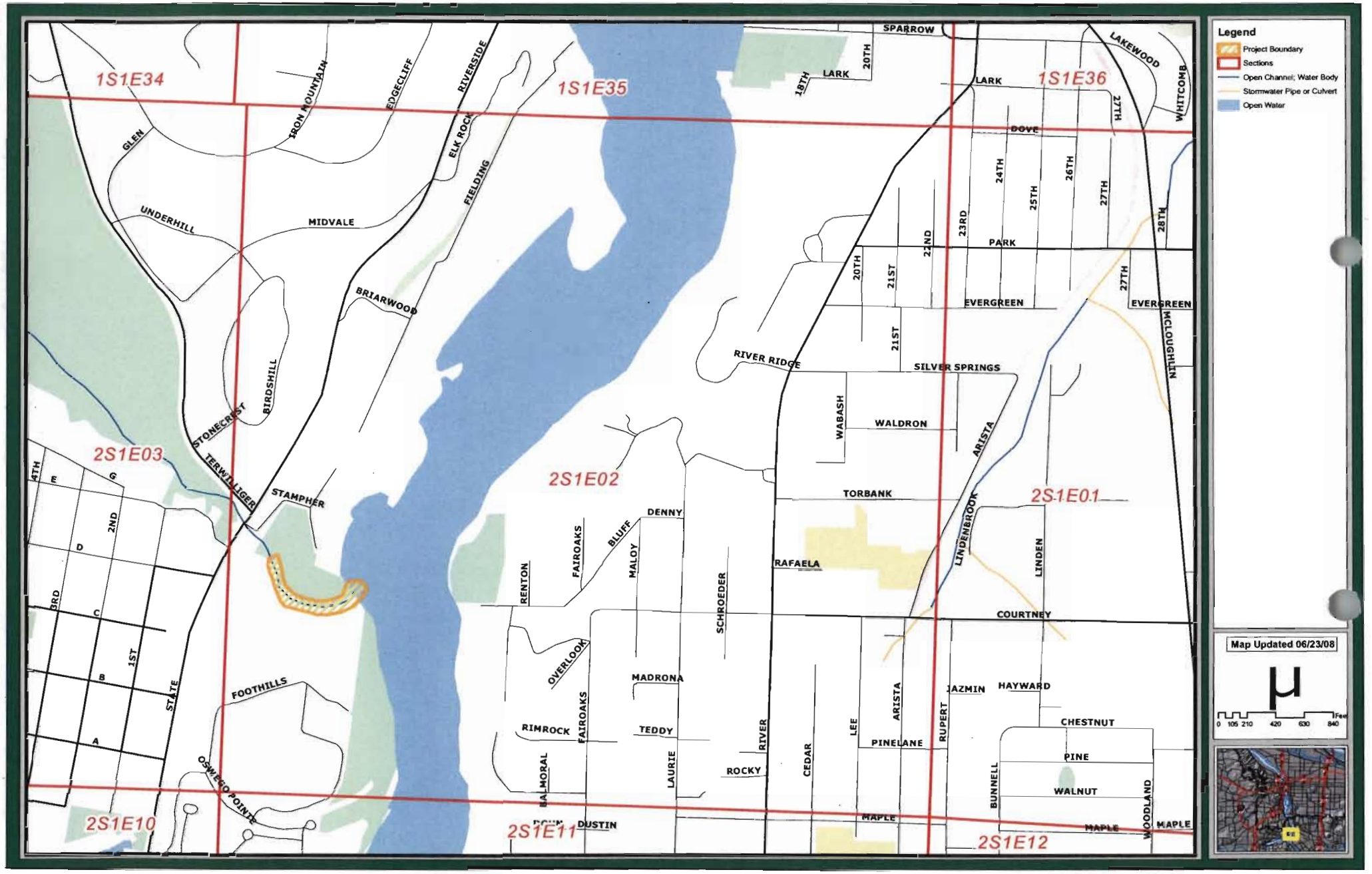

1S1E34
1S1E35
1S1E36
2S1E03
2S1E02
2S1E01
2S1E10
2S1E11
2S1E12
GLEN
IRON MOUNTAIN
EDGECLIFF
RIVERSIDE
ELK ROCK
FIELDING
UNDERHILL
MIDVALE
BRIARWOOD
BIRDSHILL
STONECREST
TERWILLIGER
STAMPER
FOOTHILLS
OSWEGO POINTE
SPARROW
LARK
LAKEWOOD
WHITCOMB
DOVE
PARK
EVERGREEN
MCLOUGHLIN
RIVER RIDGE
SILVER SPRINGS
WABASH
WALDRON
ARISTA
TORBANK
LINDENBROOK
LINDEN
RAFAELA
COURTNEY
DENNY
BLUFF
FAIROAKS
MALOY
RENTON
SCHROEDER
OVERLOOK
MADRONA
RIMROCK
TEDDY
LAURIE
BALMORAL
DUSTIN
ROCKY
RIVER
CEDAR
LEE
PINELANE
RUPERT
JAZMIN
HAYWARD
CHESTNUT
PINE
WALNUT
MAPLE
BUNNELL
WOODLAND
STATE
1ST
2ND
3RD
4TH
A
B
C
D
E
G
18TH
20TH
21ST
22ND
23RD
24TH
25TH
26TH
27TH
28TH
Legend
Project Boundary
Sections
Open Channel; Water Body
Stormwater Pipe or Culvert
Open Water
Map Updated 06/23/08
0 105 210 420 630 840
Feet

Photo 1

Photo 2

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

Photo 1depicts Phase I of the Tryon Creek project, at the downstream end of the HWY 43 culvert and plunge pool to be modified Summer 2008. Photo 2 was taken from the top of bank, looking down at the plunge pool at the downstream end of the culvert. Photos taken 3/13/08 and 1/22/08, respectively.

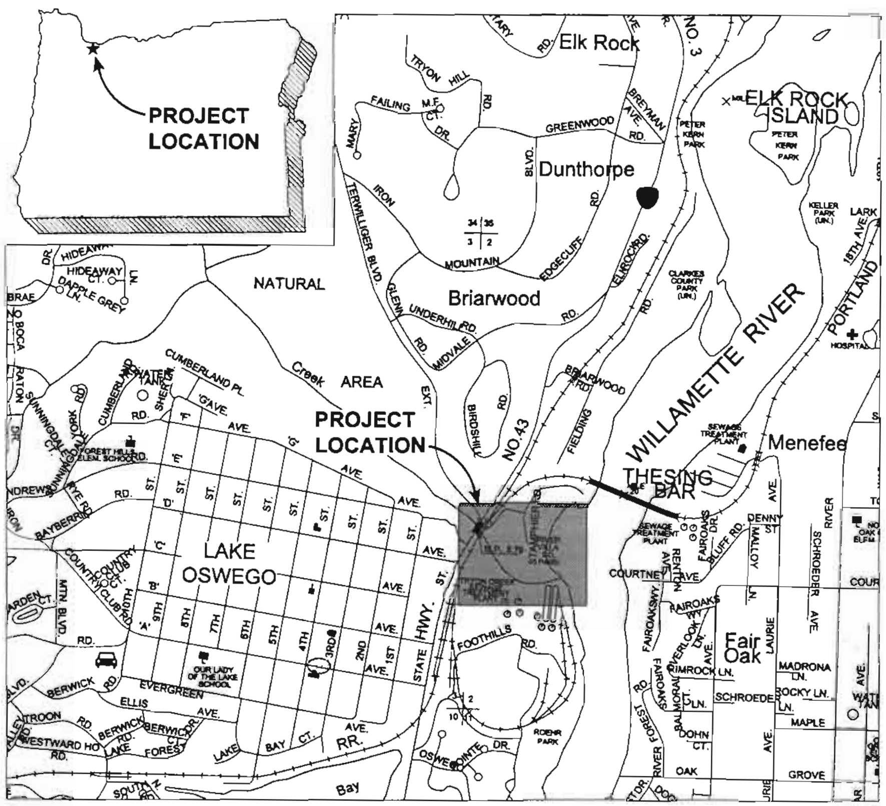
Photo 3

Photo 4

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean river

Photo 3 depicts the Phase II project area, looking downstream along Tryon Creek toward confluence with the Willamette River. Photo 4 depicts the north bank area of Phase II that is proposed to be laid back to improve floodplain connectivity. Phase II improvements will take place Summer 2010. Photos taken 1/22/08 and 3/13/08,

TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
PORTLAND, OREGON



VICINITY MAP
NTS

Dig Safely.
1-800-332-2344

SHEET INDEX

1	G1	COVER SHEET
2	G2	PROJECT NOTES
3	G3.1	EXISTING CONDITIONS, TREE PROTECTION, AND REMOVAL PLAN
4	G3.2	EXISTING CONDITIONS AND TREE PROTECTION PLAN
5	CE1.1	CONSTRUCTION ACCESS, EROSION, AND SEDIMENT CONTROL PLAN
6	CE1.2	CONSTRUCTION ACCESS, EROSION, AND SEDIMENT CONTROL PLAN
7	CE2	EROSION AND SEDIMENT CONTROL DETAILS
8	CE3	EROSION AND SEDIMENT CONTROL DETAILS
9	C1	HABITAT ENHANCEMENT PLAN
10	C2	CROSS SECTIONS
11	C3	PROFILES
12	C4.1	DETAILS
13	C4.2	DETAILS
14	C4.3	DETAILS
15	C4.4	DETAILS

(1 / C-3) DETAIL REFERENCE NUMBER / DRAWING ON WHICH DETAIL IS SHOWN

DETAIL
SCALE: NTS
(1 / C-1) DETAIL REFERENCE NUMBER / DRAWING FROM WHICH DETAIL WAS TAKEN

(A / C-4) SECTION REFERENCE LETTER / DRAWING ON WHICH SECTION IS SHOWN

SECTION
SCALE: NTS
(A / C-2) SECTION REFERENCE LETTER / DRAWING FROM WHICH SECTION WAS TAKEN

"-" INDICATES THAT THE DETAIL/SECTION IS SHOWN ON THE SAME SHEET

"TYP" INDICATES THAT THE DETAIL/SECTION IS UNIFORMLY TYPICAL THROUGHOUT PROJECT EXCEPT WHERE OTHERWISE NOTED

"VAR" SPECIFIES THAT DETAIL/SECTION WAS TAKEN FROM SEVERAL DRAWINGS

NOTE AND DETAIL/SECTION REFERENCING

HENDERSON LAND SERVICES

PRELIMINARY
60% DESIGN

NO	DATE	DESCRIPTION	APPD.
		REVISION	

XREF(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY:
PROJECT COMPLETED:
MAP CORRECTED BY: CHECKED BY:
FINAL MAP DATA
DRAWING NAME: DWG_NAME.DWG

DESIGNED BY: BR | DATE APPD.
DRAWN BY: MB | PROGRAM MGR
CHECKED BY: MB | CONST. MGR.
DESIGN MGR.

CITY OF PORTLAND
ENVIRONMENTAL SERVICES
SAM ADAMS
COMMISSIONER
PUBLIC AFFAIRS
APPROVAL
WILLIAM F. RYAN, P.E.
CHIEF ENGINEER
ENVIRONMENTAL SERVICES CHIEF ENGINEER
REG. PROF. ENGR. NO. 16,301

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TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
COVER SHEET

1/4 SECTION
JOB NO. 8958
SHEET NO. G1
1 of 15

GENERAL NOTES

1. ALL UTILITY LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY DAMAGED UTILITIES TO THE AFFECTED SERVICE AND THE OWNER'S REPRESENTATIVE.
2. THE BASE SURVEY FOR THIS PROJECT WAS COMPLETED BY THE CITY OF PORTLAND DEPARTMENT OF TRANSPORTATION. ALL ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM. TO CONVERT ELEVATIONS TO NAVD88, ADD 2.1 FEET.
3. THE WILLAMETTE RIVER IN-WATER WORK PERIOD FOR THIS PROJECT IS FROM JULY 1 THROUGH OCTOBER 31. THE TRYON CREEK IN-WATER WORK PERIOD FOR THIS PROJECT IS JULY 15 THROUGH SEPTEMBER 30. IN-WATER WORK IS DEFINED AS ALL CONSTRUCTION ACTIVITIES THAT OCCUR BELOW THE ORDINARY HIGH WATER ELEVATION SHOWN ON SHEET G3.1 (ELEVATION VARIES). THESE CONSTRUCTION ACTIVITIES INCLUDE: EARTHWORK, GRADING, PLACEMENT OF WOOD, ROCK AND PLANT MATERIAL, AND INSTALLATION OF TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES.
4. EXCLUSION ZONE FENCING SHALL BE INSTALLED PRIOR TO MOBILIZATION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING PROJECT SITE DURING CONSTRUCTION AND PROTECTING PUBLIC SAFETY BY PREVENTING PUBLIC ACCESS OR BY PROVIDING FLAGGERS AT EITHER END OF THE STAMPHER ROAD ACCESS.
6. THE CONTRACTOR SHALL STABILIZE ALL DISTURBED SOILS AND INSTALL ALL PERMANENT EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO PROJECT DEMOBILIZATION.

SITE PREPARATION PRECONSTRUCTION ACTIVITIES

EXCLUSION ZONES

1. PRIOR TO GROUND DISTURBING ACTIVITY INCLUDING MOBILIZATION, EXCLUSION ZONE FENCE AND/OR SEDIMENT FENCES WILL BE INSTALLED TO SURROUND THE NORTH AND SOUTH WORK AREAS TO DEFINE THE WORK EXCLUSION ZONES AND PROTECT THE TREES LOCATED WITHIN THE EXCLUSION ZONE AREAS.
2. TREES LOCATED WITHIN THE DESIGNATED WORK AREA WILL BE LABELED FOR EITHER REMOVAL OR PROTECTION BY THE CITY.
3. DURING THE CONSTRUCTION PERIOD, HEAVY EQUIPMENT WILL NOT BE ALLOWED BEYOND THE FENCED EXCLUSION ZONE. THE CONTRACTOR MAY ENTER THE EXCLUSION ZONE ON FOOT IN ORDER TO HAND PLACE THE DEWATERING DISCHARGE HOSE THROUGH THE EXCLUSION ZONE, BUT THE DISCHARGE LOCATION MUST BE WITHIN THE PERMITTED WORK AREA. THE CONTRACTOR MAY ALSO ENTER THE EXCLUSION ZONE ON FOOT TO PLACE BRUSH PILES.
4. EXCLUSION ZONE FENCING WILL BE HIGH VISIBILITY ORANGE PLASTIC MESH, A MINIMUM OF 4 FEET HIGH AND SECURED TO THE GROUND WITH METAL POSTS. SEE DTL 5 ON SHT CE2.
5. EXCLUSION ZONE FENCING WILL BE SECURED TO THE GROUND WITH METAL POSTS AND WILL REMAIN UPRIGHT, TAUT AND IN-PLACE UNTIL CONSTRUCTION IS COMPLETED.

GRADING LIMITS

1. STAKES WILL BE PLACED ALONG PROJECT LINES AND GRADES BY CITY SOME ADJUSTMENTS TO LINES AND GRADES ARE EXPECTED. DAMAGED OR DESTROYED CONSTRUCTION STAKES WILL BE REPLACED BY THE CONTRACTOR AS NEEDED.

TREE PROTECTION

1. THE PROTECTION, LIMBING, AND REMOVAL OF EXISTING TREES TO BE PERFORMED IN ACCORDANCE WITH SECTION 320 - CLEARING AND GRUBBING AS DEFINED IN SPECIFICATIONS. REMOVE TREES AS INDICATED ON TREE PROTECTION/ REMOVAL SHEET G3.1.

STANDARD EROSION AND SEDIMENT CONTROL PLAN NOTES FOR 1200-C PERMIT (DEQ)

1. APPLY TEMPORARY AND PERMANENT SOIL STABILIZATION MEASUREB ON ALL DISTURBED AREAS AS GRADING PROGRESSES. (SCH A.5.B.II.&.)
2. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND FROM OCTOBER 1 THROUGH MAY 31 EACH YEAR. (SCH A.7.A.I.)
3. DURING WET WEATHER PERIODS TEMPORARY STABILIZATION OF THE SITE MUST OCCUR AT THE END OF EACH WORK DAY IF RAINFALL IS FORECAST IN THE NEXT 24 HOURS. (SCH A.7.A.II.)
4. ALL EROSION AND SEDIMENT CONTROLS NOT IN THE DIRECT PATH OF WORK MUST BE INSTALLED PRIOR TO ANY LAND DISTURBANCE. (SCH A.7.C.II.)
5. PRESERVE EXISTING VEGETATION AND RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. (SCH A.7.C.III.1)
6. ALL TEMPORARY SEDIMENT CONTROLS MUST REMAIN IN PLACE UNTIL PERMANENT VEGETATION OR OTHER PERMANENT COVERING OF EXPOSED SOIL IS ESTABLISHED. (SCH A.7.C.III.3.)
7. SEDIMENT CONTROLS MUST BE INSTALLED AND MAINTAINED ON ALL DOWN GRADIENT SIDES OF THE CONSTRUCTION SITE AT ALL TIMES DURING CONSTRUCTION. (SCH A.7.D.I.(1))
8. ALL ACTIVE CATCH BASINS MUST HAVE SEDIMENT CONTROLS INSTALLED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. (SCH A.7.D.I.(2))
9. WATER-TIGHT TRUCKS MUST BE USED TO TRANSPORT SATURATED SOILS FROM THE CONSTRUCTION SITE. AN APPROVED EQUIVALENT IS TO DRAIN THE SOIL ON-SITE AT A DESIGNATED LOCATION USING APPROPRIATE BMP'S; SOILS MUST BE DRAINED SUFFICIENTLY FOR MINIMAL BPILLAGE. (SCH A.7.D.III.3)
10. TEMPORARY STABILIZATION OR COVERING OF SOIL STOCKPILEB MUST OCCUR AT THE END OF EACH WORK DAY OR OTHER BMP'S MUST BE IMPLEMENTED TO PREVENT TURBID DISCHARGES TO SURFACE WATERS. (SCH A.7.E.II.2.)
11. DEVELOP AND MAINTAIN ONSITE, A WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURE. (SCH A.7.E.III.3)
12. ANY USE OF TOXIC OR OTHER HAZARDOUS MATERIALS MUST INCLUDE PROPER STORAGE, APPLICATION, AND DISPOSAL (SCH A.7.E.III.(2))
13. THE PERMITTEE MUST PROPERLY PREVENT AND MANAGE HAZARDOUS WASTE, USED OILS, CONTAMINATED SOILS, CONCRETE WASTE, SANITARY WASTE, LIQUID WASTE, OR OTHER TOXIC SUBSTANCES DISCOVERED OR GENERATED DURING CONSTRUCTION. (SCH A.7.E.I.1 AND SCH A.7.E.III.4)
14. SIGNIFICANT AMOUNTS OF SEDIMENT WHICH LEAVE THE SITE MUST BE CLEANED UP WITHIN 24 HOURS AND PLACED BACK ON THE SITE AND STABILIZED OR PROPERLY DISPOSED. THE CAUSE OF THE SEDIMENT RELEASE MUST BE FOUND AND PREVENTED FROM CAUSING A REOCCURRENCE OF THE DISCHARGED WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIME FRAME. (SCH A.7 F.I.1)
15. SEDIMENT MUST NOT BE INTENTIONALLY WASHED INTO STORM SEWERS, DRAINAGE WAYS, OR WATERBODIES, OR DRY SWEEPING MUST BE USED TO CLEAN UP RELEASED SEDIMENTS. (SCH A.7.F.I.2)
16. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW THE MANUFACTURER'S RECOMMENDATIONS. NUTRIENT RELEASES FROM FERTILIZERS TO SURFACE WATERS MUST BE MINIMIZED. TIME RELEASE FERTILIZERS SHOULD BE USED AND CARE SHOULD BE TAKEN IN THE APPLICATION OF FERTILIZERS WITHIN ANY WATER WAY RIPARIAN ZONE. (SCH A.7.F I.3.)
17. SEDIMENT MUST BE REMOVED FROM BEHIND SEDIMENT FENCE WHEN IT HAS REACHED A HEIGHT OF 1/3 THE HEIGHT OF THE FENCE ABOVE THE GROUND, AND BEFORE FENCE REMOVAL. (SCH A.7.F.II.1.)
18. SEDIMENT MUST BE REMOVED FROM BEHIND BIO BAGS AND OTHER BARRIERS WHEN IT HAS REACHED A HEIGHT OF TWO (2) INCHES AND BEFORE BMP REMOVAL (SCH A.7.F.II.2.)
19. CLEANING OF TRAPPED CATCH BASINS MUST OCCUR WHEN THE SEDIMENT RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY (50) PERCENT, AND AT COMPLETION OF PROJECT. (SCH A.7.F.II.3.)
20. REMOVAL OF TRAPPED SEDIMENT IN A SEDIMENT BASIN OR SEDIMENT TRAP MUST OCCUR WHEN THE SEDIMENT RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY (50) PERCENT, AND AT COMPLETION OF PROJECT. (SCH A.7.F.II.3&4)
21. DEQ MUST APPROVE OF ANY TREATMENT SYSTEM AND OPERATIONAL PLAN THAT MAY BE NECESSARY TO TREAT CONTAMINATED CONSTRUCTION DEWATERING OR SEDIMENT AND TURSIDITY IN STORMWATER RUNOFF. (SCH A.7.F.III.)
22. SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR THIRTY (30) DAYS OR MORE, THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD. (SCH A.8.A.)
23. SHOULD CONSTRUCTION ACTIVITIES CEASE FOR FIFTEEN (15) DAYS OR MORE ON ANY SIGNIFICANT PORTION OF A CONSTRUCTION SITE, TEMPORARY STABILIZATION IS REQUIRED FOR THAT PORTION OF THE SITE WITH STRAW, COMPOST, OR OTHER TACKIFIED COVERING THAT WILL PREVENT SOIL OR WIND EROSION UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCH A.8.B.)

ADDITIONAL EROSION, SEDIMENT, AND POLLUTION CONTROL NOTES

1. THE EROSION, SEDIMENT, AND POLLUTION CONTROL PLAN (ESPCP) FACILITIES SHOWN ON PLAN SHEETS CE1.1 TO CE3 MUST BE CONSTRUCTED IN SUCH A MANNER TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER OR WIND-DRIVEN SEDIMENT DOES NOT LEAVE THE PROJECT SITE, ENTER DRAINAGE SYSTEMS, ROADWAYS, ENVIRONMENTALLY SENSITIVE AREAS, OR WATERS OF THE STATE, AND DOES NOT VIOLATE APPLICABLE WATER QUALITY STANDARDS.
2. THE ESPCP FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING SUMMER DRY WEATHER CONDITIONS, THESE ESPCP FACILITIES SHALL BE UPGRADED AS NEEOED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
3. THE CONTRACTOR SHALL FURNISH, DISPLAY, MAINTAIN, MOVE AND REMOVE PROJECT SIGNAGE THAT INCLUDES BOTH THE "CLEAN RIVERS" SIGN AND THE "EROSION CONTROL INFORMATION" SIGN. SIGNS SHALL BE PLACED PRIOR TO BEGINNING CONSTRUCTION AS REQUIRED AND OUTLINED IN THE SPECIFICATIONS.
4. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
5. SECURE OR PROTECT MATERIAL STOCKPILES THROUGHOUT THE PROJECT WITH IMPERVIOUS COVERS TO PREVENT RAIN OR WIND EROSION.
6. DURING CONSTRUCTION, CARE WILL BE TAKEN TO PREVENT ANY PETROLEUM PRODUCTS, CHEMICALS OR OTHER MATERIALS FROM ENTERING THE WATER OR ENVIRONMENTALLY SENSITIVE AREAS. ADDITIONALLY, THE CONTRACTOR SHALL DEVELOP A POLLUTION CONTROL PLAN (PCP) AS REQUIRED AND OUTLINED IN THE SPECIFICATIONS. IN THE EVENT A SPILL OCCURS, THE CONTRACTOR WILL UTILIZE AN ONSITE SPILL RESPONSE KIT TO TAKE IMMEDIATE ACTION, AND CONTACT THE OWNER'S REPRESENTATIVE.
7. APPROVAL OF THIS EROSION, SEDIMENT AND POLLUTION CONTROL PLAN (ESPCP) OR THE CONTRACTOR'S POLLUTION CONTROL PLAN (PCP) DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.)
8. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION OF THIS ESPCP AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THE ESPCP AND PCP FACILITIES UNTIL ALL CONSTRUCTION IS COMPLETED AND PERMANENT VEGETATION IS ESTABLISHED.
9. THE ESPCP FACILITIES AND POLLUTION CONTROL PLAN SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
10. THE ESPCP FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A WEEK, AND WITHIN THE 24 HOURS FOLLOWING A RAIN EVENT. ESPCP FACILITIES SHALL BE INSPECTED DAILY DURING RAINFALL.
12. ANY PUMP DISCHARGING TO WATERS OF THE STATE MUST BE FITTED WITH A DIRT BAG OR OTHER APPROVED TURBIDITY ABATEMENT MEASURES.
13. WATER WITH TURBIDITY GREATER THAN 10% ABOVE THE UPSTREAM AMBIENT LEVELS SHALL NOT BE DISCHARGED BACK INTO THE CREEK.
14. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING EROSION CONTROL MEASURES AT ALL TIMES DURING THE CONTRACT PERIOD.
15. ALL STOCKPILE AND STAGING AREAS SHALL BE PROTECTED BY SEDIMENT FENCE OR OTHER MEASURES SUCH AS COVERING TO PREVENT SEDIMENT LADEN RUN-OFF OR WIND-BLOWN SEDIMENT FROM EXITING THE SITE.
16. SEED AND INSTALL PERMANENT EROSION CONTROL MEASURES IN ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES UPON COMPLETION OF WORK PER SPECIFICATIONS. SEED MIX SHALL BE SUPPLIED BY THE OWNER.

PRELIMINARY
60% DESIGN

HENDERSON LAND SERVICES, INC.

NO.	DATE	DESCRIPTION	APPD.
REVISION			

KREF(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY _____ CHECKED BY _____
FINAL MAP DATA
DRAWING NAME: DWG_NAME.DWG

DESIGNED BY		DATE APPD.	
DRAWN BY		PROGRAM MGR.	
CHECKED BY		CONST. MGR.	
DESIGN MGR.			

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

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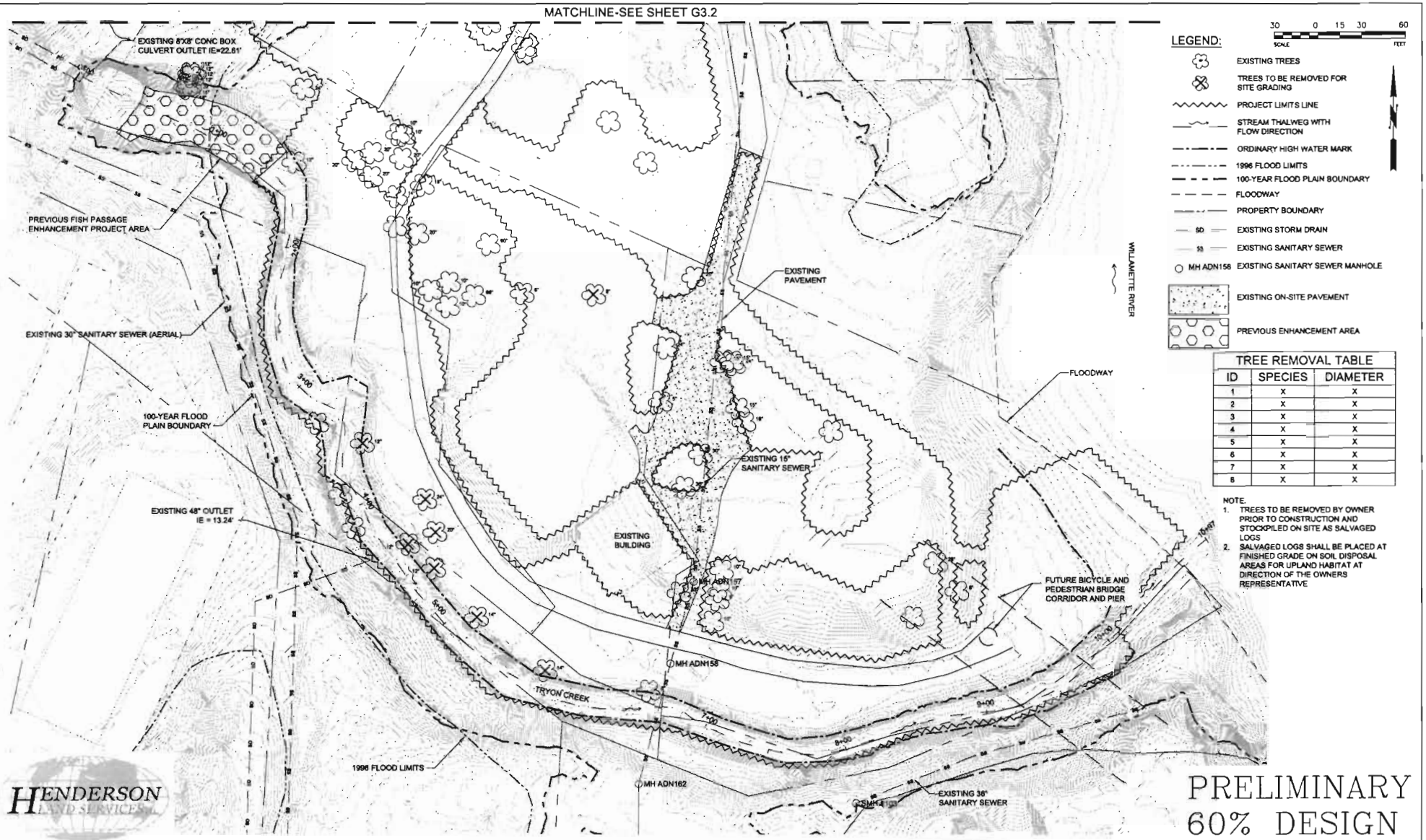
TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
PROJECT NOTES

1/4 SECTION	
JOB NO.	8958
SHEET NO.	G2
	2 of 15



TREE REMOVAL TABLE		
ID	SPECIES	DIAMETER
1	X	X
2	X	X
3	X	X
4	X	X
5	X	X
6	X	X
7	X	X
8	X	X

NOTE.
1. TREES TO BE REMOVED BY OWNER PRIOR TO CONSTRUCTION AND STOCKPILED ON SITE AS SALVAGED LOGS.
2. SALVAGED LOGS SHALL BE PLACED AT FINISHED GRADE ON SOIL DISPOSAL AREAS FOR UPLAND HABITAT AT DIRECTION OF THE OWNERS REPRESENTATIVE

PRELIMINARY
60% DESIGN

HENDERSON LAND SERVICES, LLC

NO.	DATE	DESCRIPTION	APPD
		REVISION	

XREF(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY:
PROJECT COMPLETED:
MAP CORRECTED BY: CHECKED BY:
FINAL MAP DATA
DRAWING NAME: DWG_NAME.DWG

DESIGNED BY | DATE APPD.
DRAWN BY | PROGRAM MGR.
CHECKED BY | CONST. MGR.
DESIGN MGR.

CITY OF PORTLAND
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TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
EXISTING CONDITIONS, TREE PROTECTION, AND REMOVAL PLAN

1/4 SECTION
JOB NO. 8958
SHEET NO. G3.1
3 of 15

\\HERRERA\HCNET\PORTLAND\PROJ\Y2008\08-04022-000 TRYON CONFLUENCE ENHANCEMENT DESIGN\CAD\DWGS\EXISTING.DWG 3/24/2009 1:28:25 PM MBRENNAN

MATCHLINE-SEE SHEET G3.1

30 0 20 30 60
SCALE FEET

LEGEND:

- EXISTING TREES
- EXISTING CONTOUR
- PROJECT LIMITS LINE
- STREAM THALWEG WITH FLOW DIRECTION
- 1996 FLOODPLAIN LIMITS
- 100-YEAR FLOOD PLAIN BOUNDARY
- PROPERTY BOUNDARY
- STORM DRAIN
- SANITARY SEWER

HENDERSON LAND SERVICES

PRELIMINARY
60% DESIGN

NO.	DATE	DESCRIPTION	APPD.
		REVISION	

XREF(S) USED:
ROTATION ANGLE
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY ____ CHECKED BY
FINAL MAP DATA
DRAWING NAME DWG_NAME.DWG

DESIGNED BY	SA	DATE APPD.	
DRAWN BY	AS	PROGRAM MGR.	
CHECKED BY	JS	CONST. MGR.	
DESIGN MGR.			

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

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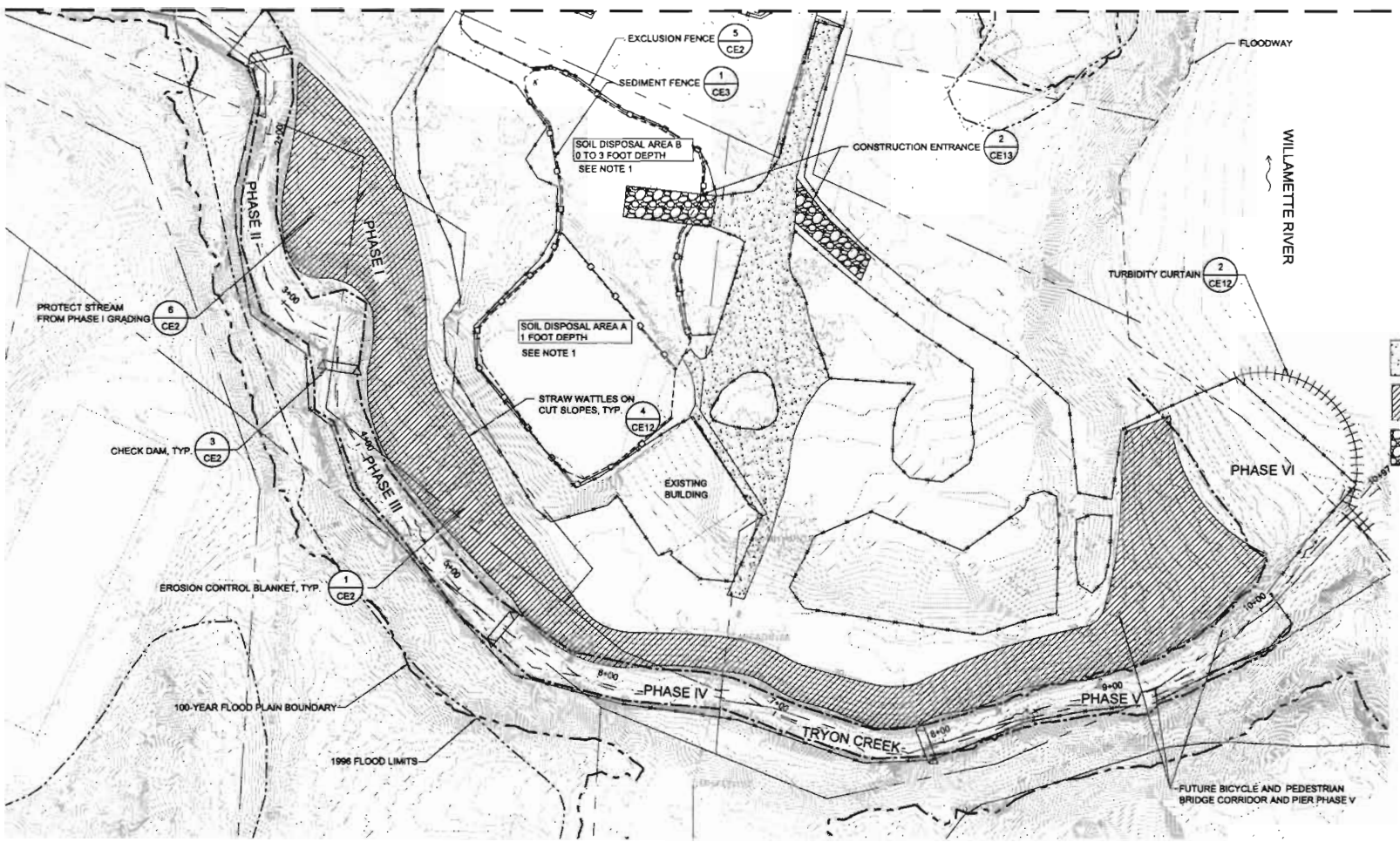
TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT

EXISTING CONDITIONS AND TREE PROTECTION PLAN

1/4 SECTION	
JOB NO.	8958
SHEET NO.	G3.2
	4 of 15



30 0 20 30 60
SCALE FEET

LEGEND:

- EXISTING TREES
- PROPOSED CONTOUR
- EXISTING CONTOUR
- SEDIMENT FENCE
- EXCLUSION FENCE
- STREAM THALWEG WITH FLOW DIRECTION
- SOIL DISPOSAL EXTENTS
- 100-YEAR FLOOD PLAIN BOUNDARY
- 1996 FLOOD LIMITS
- FLOODWAY
- TURBIDITY CURTAIN
- TEMPORARY CHECK DAM
- ORDINARY HIGH WATER MARK
- PROPERTY BOUNDARY
- STORM DRAIN
- SANITARY SEWER
- SANITARY SEWER MANHOLE
- EXISTING PAVED DRIVE
- EROSION CONTROL BLANKET
- CONSTRUCTION ENTRANCE

CONSTRUCTION PHASING:

PHASE I
CONSTRUCT TEMPORARY EROSION CONTROL MEASURES
MOBILIZE AND PREPARE SITE
REGRADE FLOODPLAIN ABOVE OHW

PHASE II
ESTABLISH WATER DIVERSION IN PHASE II AREA
REGRADE BANK AND CHANNEL
CONSTRUCT CHANNEL AND FLOODPLAIN STRUCTURES

PHASE III
ESTABLISH WATER DIVERSION IN PHASE III AREA
REMOVE DIVERSION IN PHASE II AREA
CONSTRUCT CHANNEL, REGRADE BANK AND FLOODPLAIN STRUCTURES

PHASE IV
ESTABLISH WATER DIVERSION IN PHASE IV AREA
REMOVE DIVERSION IN PHASE III AREA
CONSTRUCT CHANNEL, REGRADE BANK AND FLOODPLAIN STRUCTURES

PHASE V
CONSTRUCT TURBIDITY CURTAIN AT CHANNEL MOUTH
REMOVE DIVERSION IN PHASE V AREA
CONSTRUCT CHANNEL, REGRADE BANK AND FLOODPLAIN STRUCTURES

PHASE VI
CONSTRUCT TURBIDITY CURTAIN AT RIVERBANK
REGRADE RIVERBANK
CONSTRUCT RIVERBANK STRUCTURES
REMOVE TEMPORARY EROSION CONTROL MEASURES
STABILIZE SITE
DEMOBILIZE

HENDERSON LAND SERVICES

NOTES
1. STABILIZE SOIL DISPOSAL AREAS WITH SEEDING (OWNER WILL SUPPLY) AND WATTLES WHERE SLOPED.
2 USE SEDIMAT AT DIVERSION PIPE DISCHARGE POINT IN CHANNEL IN PHASES II, III, IV, AND V.

PRELIMINARY
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NO.	DATE	DESCRIPTION	APPD.
		REVISION	

KRET(S) USED:
ROTATION ANGLE:
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PROJECT COMPLETED:
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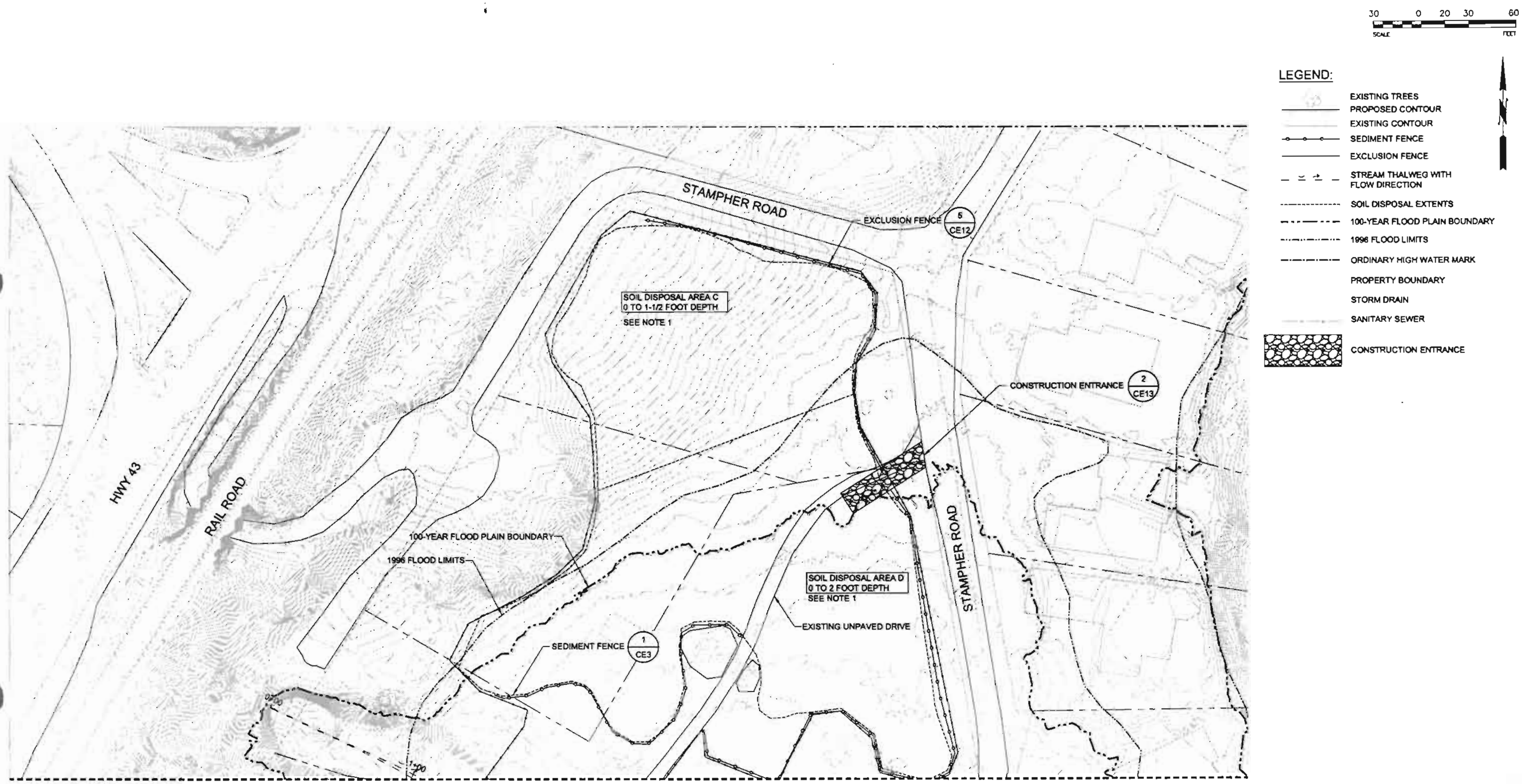
TRYON CREEK CONFLUENCE HABITAT ENHANCEMENT

CONSTRUCTION ACCESS, EROSION, AND SEDIMENT CONTROL PLAN

1/4 SECTION
JOB NO. 8958
SHEET NO. CE1.1
5 OF 15



MATCH LINE-SEE SHEET CE1.1

NOTE:

1. STABILIZE SOIL DISPOSAL AREAS WITH SEEDING (OWNER WILL SUPPLY) AND WATTLES WHERE SLOPED.

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TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT

EROSION, CONSTRUCTION ACCESS, AND SEDIMENT CONTROL PLAN

NO.	DATE	DESCRIPTION	APPD.
REVISION			

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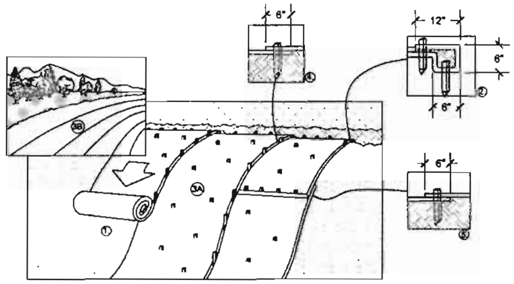
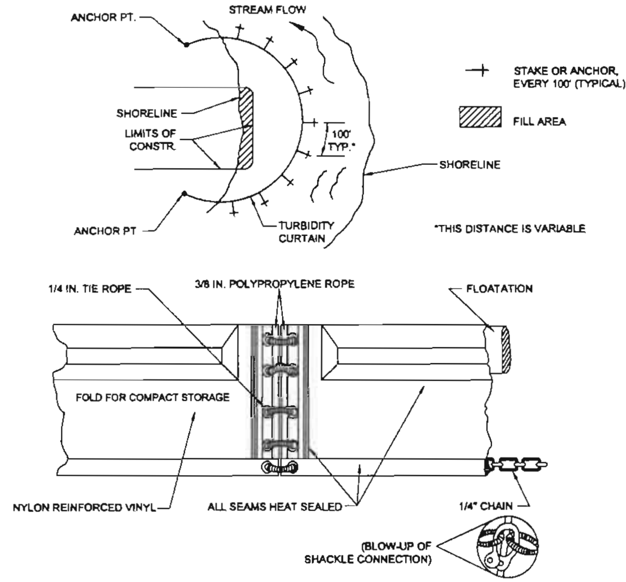
CHECKED BY: ML | CONST. MGR.
DESIGN MGR.

1/4 SECTION
JOB NO. 8958
SHEET NO. CE1.2
6 of 15

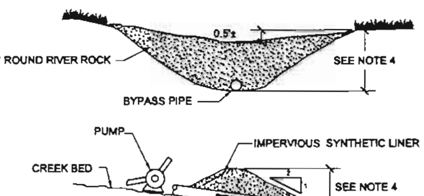


1. PREPARE SOIL BEFORE INSTALLING FABRIC, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED
2. COIR EROSION CONTROL FABRIC SHALL BE NORTH AMERICAN GREEN C125BN OR APPROVED EQUAL.
3. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF FABRIC EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF WOOD STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAKING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF FABRIC BACK OVER SEED AND COMPACTED SOIL. SECURE FABRIC OVER COMPACTED SOIL WITH A ROW OF STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE FABRIC.
4. ROLL THE FABRIC (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. FABRIC SHALL BE UNROLLED WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL FABRIC SHALL BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAKE PATTERN GUIDE.
5. THE EDGES OF PARALLEL FABRIC PIECES SHALL BE STAKED WITH MINIMUM 6" OVERLAP.
6. CONSECUTIVE FABRIC PIECES SPLICED DOWN THE SLOPE SHALL BE PLACED END OVER END (SHINGLE STYLE) WITH MINIMUM 6" OVERLAP. STAKE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE FABRIC WIDTH.

EROSION CONTROL BLANKET (1 / CE1.1)
SCALE: NTS

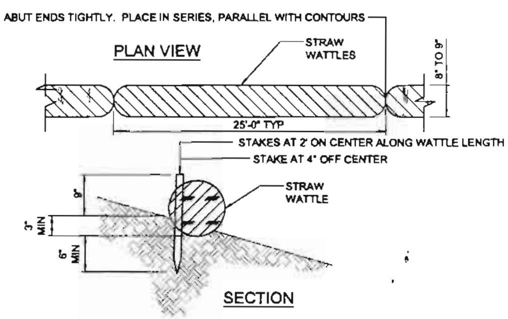


TURBIDITY CURTAIN (2 / CE1.1)
SCALE: NTS

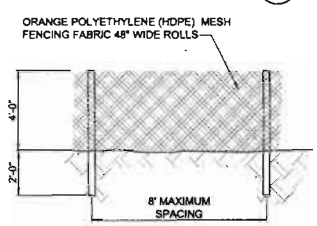


NOTE:
1. CONSTRUCTION CREWS SHALL ROUTE CREEK FLOWS AROUND THE IN-WATER WORK ZONE. CREWS MAY USE SAND BAGS OR A ROCK CHECK DAM AS SHOWN.
2. FLOWS MAY BE PUMPED OR ROUTED THROUGH A BYPASS PIPE (AS SHOWN).
3. THE DOWNSTREAM CHECK DAM IS THE SAME AS SHOWN ABOVE, ONLY WITHOUT THE BYPASS PIPELINE.
4. THE HEIGHT OF THE DOWNSTREAM CHECK DAM SHALL BE HIGH ENOUGH TO PREVENT THE WILLAMETTE RIVER FROM OVERTOPPING. CHECK DAM HEIGHTS AND MATERIALS SHALL BE INCLUDED IN THE CONTRACTOR'S IN-WATER ISOLATION PLAN.
5. DIVERSION SYSTEM SHALL BE SIZED FOR 4 CUBIC FEET PER SECOND.

TEMPORARY CHECK DAM (3 / CE1.1)
SCALE: NTS

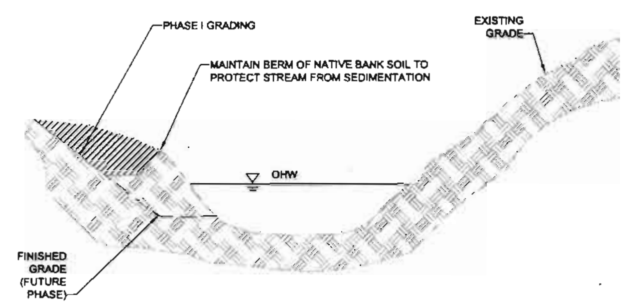


STRAW WATTLE (4 / CE1.1) (4 / CE1.2)
SCALE: NTS



NOTES:
1. 2"x 2"x 6' STEEL FENCE POSTS SHALL BE INSTALLED TO SUPPORT HDPE MESH. INSTALL AROUND TREE DRIP LINE WHERE APPLICABLE
2. FASTEN FABRIC TO FENCE PER MANUFACTURERS RECOMMENDATION.
3. INSURE ALL POSTS ARE SET FIRM AND STABLE INTO GROUND MIN. 2'-0" DEPTH

EXCLUSION ZONE FENCE (5 / CE1.1) (5 / CE1.2)
SCALE: NTS



PHASE 1 GRADING (6 / CE1.1)
SCALE: NTS

HENDERSON LAND SERVICES

PRELIMINARY
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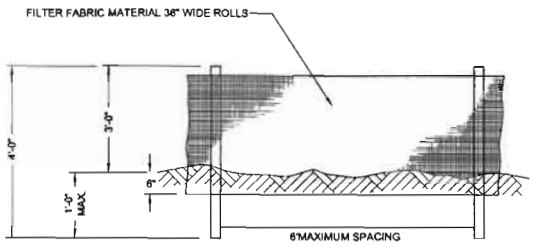
TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT

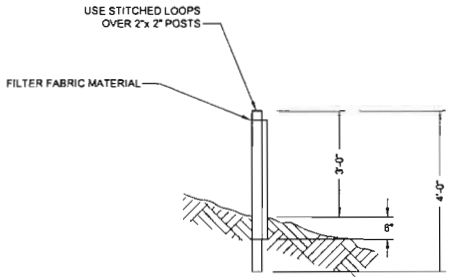
EROSION AND SEDIMENT
CONTROL DETAILS

1/4 SECTION
JOB NO. 8958
SHEET NO. CE2
7 of 15

\\HERRERA\HECNET\PORTLAND\PROJ\Y2008\08-04022-000 TRYON CONFLUENCE ENHANCEMENT DESIGN\CAD\DWGS\8958CE2.DWG 3/24/2009 2:22:47 PM MBREWNAN



ELEVATION
NTS



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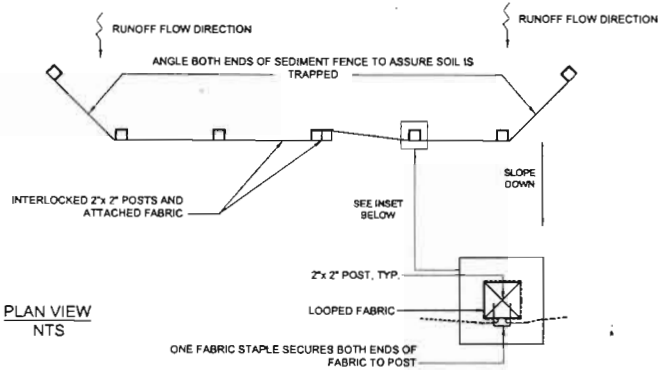
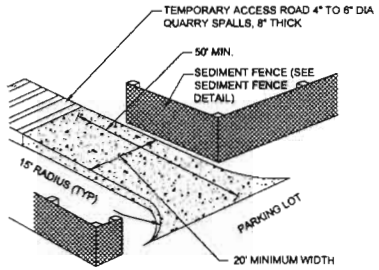
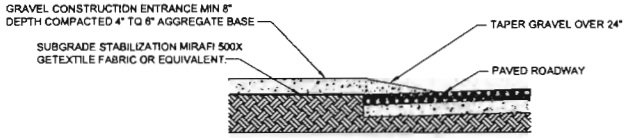


PLAN VIEW
NTS

NOTES:

1. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST, OR OVERLAP 2 INCH X 2 INCH POSTS AND ATTACH AS SHOWN.
2. THE SEDIMENT FENCE SHALL BE INSTALLED TO FOLLOW THE CONTOURS. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES
3. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
4. 2"x 2" FIR, PINE OR STEEL FENCE POSTS SHALL BE USED. INSTALL POSTS UPHILL OF FILTER FABRIC FACE.
5. STITCHED LOOPS TO BE INSTALLED ON THE UPHILL SIDE OF FABRIC
6. COMPACT ALL AREAS OF FILTER FABRIC TRENCH
7. SEDIMENT FENCES SHALL BE INSPECTED BY CONTRACTOR IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.





SEDIMENT FENCE (1 / CE1.1) (1 / CE1.2)
SCALE: NTS

GRAVEL CONSTRUCTION ENTRANCE (2 / CE1.1) (2 / CE1.2)
SCALE: NTS

HENDERSON LAND SERVICES

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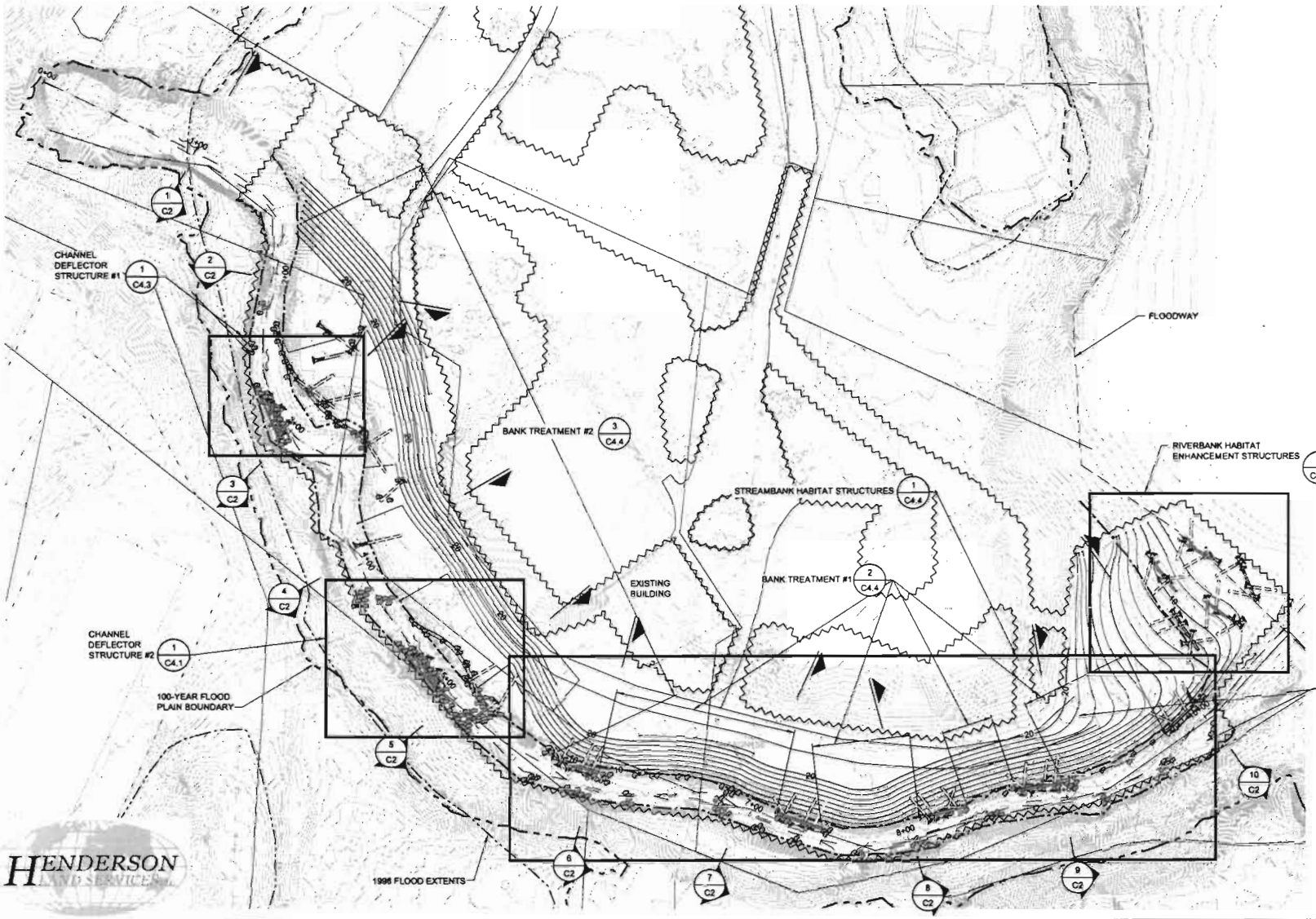
TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT

EROSION AND SEDIMENT
CONTROL DETAILS

1/4 SECTION
JOB NO. 8958
SHEET NO. CE3
8 of 15



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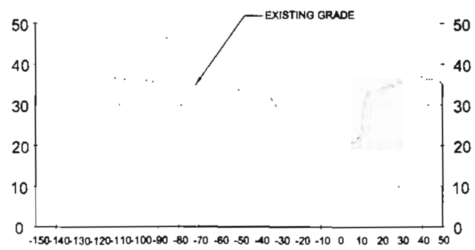
TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT

HABITAT ENHANCEMENT PLAN

1/4 SECTION
JOB NO. 8958
SHEET NO. C1
9 OF 15



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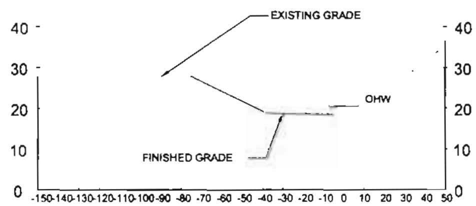
HORIZ. SCALE: 1"=30'
VERT. SCALE: 1"=15'



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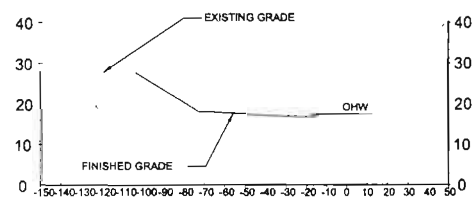

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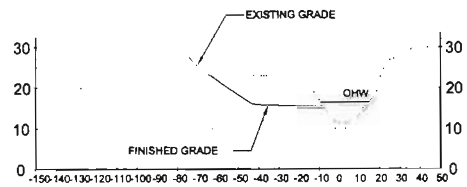

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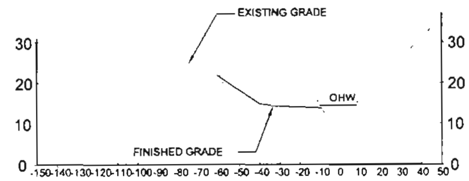

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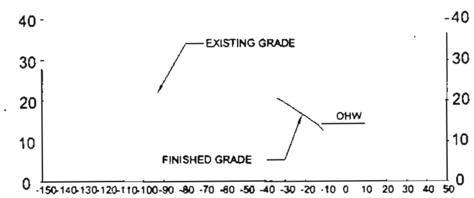

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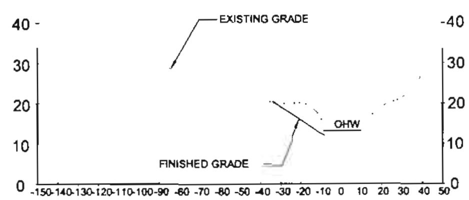

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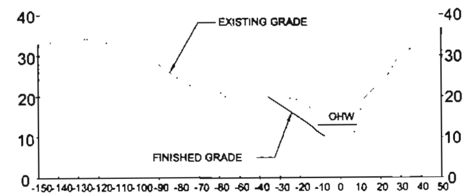

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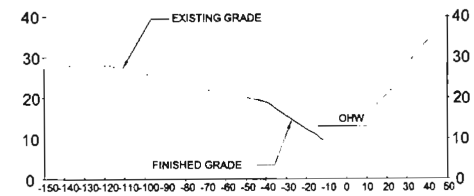

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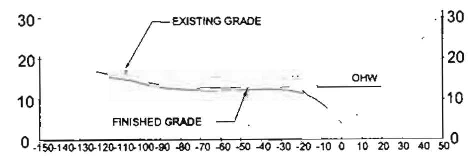

CROSS-SECTION 10+00 (10/C1)
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VERT. SCALE: 1"=15'

HENDERSON LAND SERVICES

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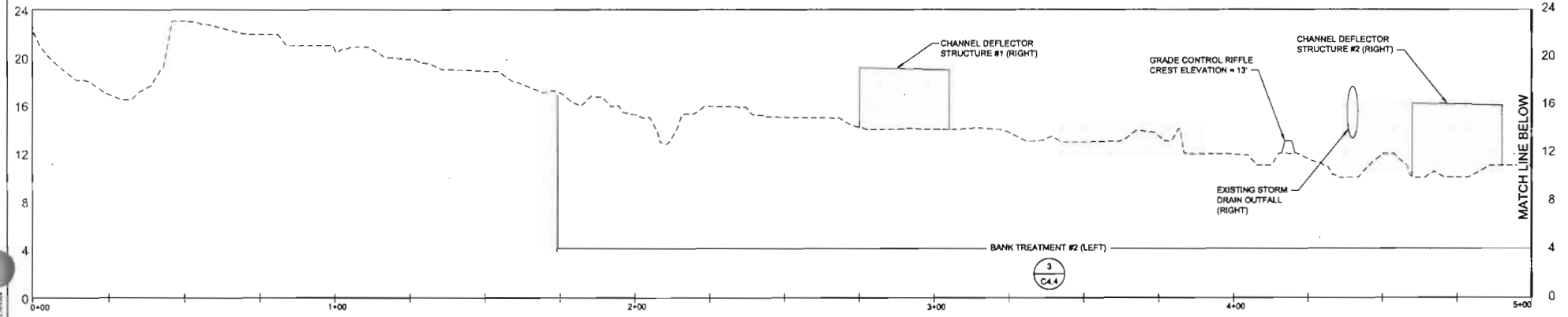
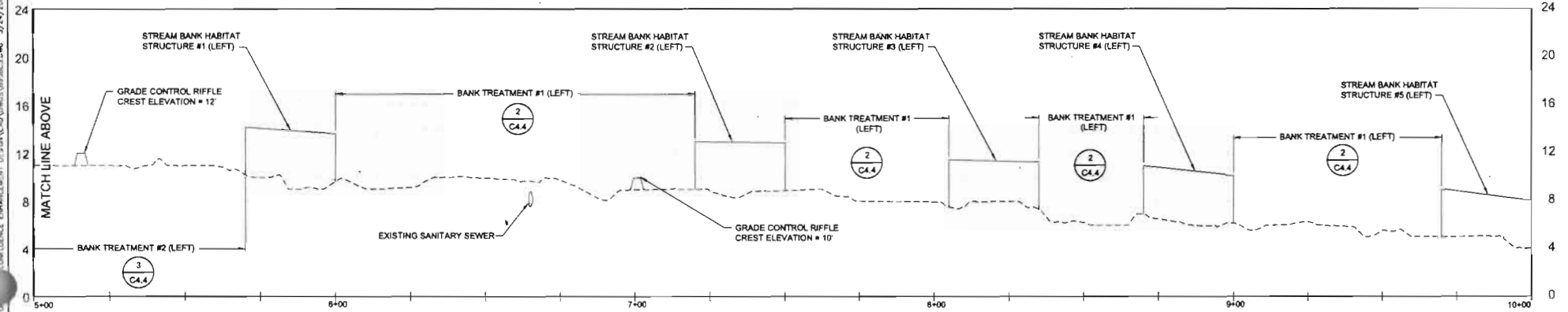
TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
CROSS SECTIONS

JOB NO. 8958
SHEET NO. C2
10 of 15





PROFILE (1)
HORIZ. SCALE: 1"=16'
VERT. SCALE: 1"=4'

PRELIMINARY
60% DESIGN

HENDERSON LAND SERVICES

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TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
PROFILE

1/4 SECTION
JOB NO. 8958
SHEET NO. C3
11 of 15

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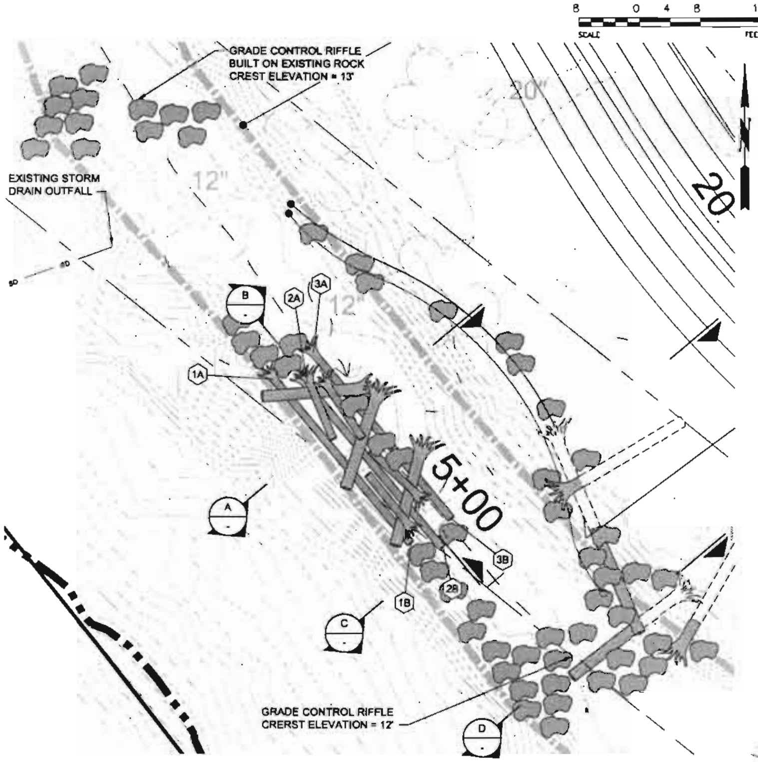
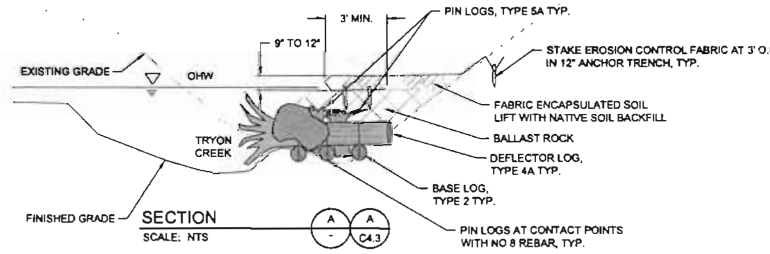
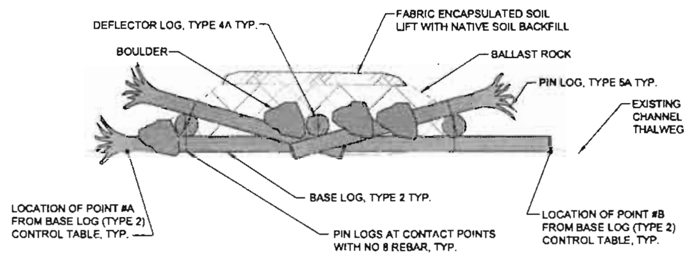


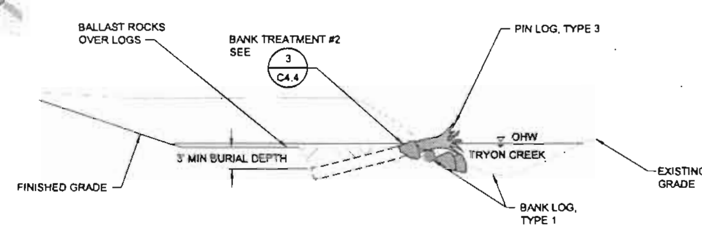
CHANNEL DEFLECTOR STRUCTURE #2 (1/C1)
SCALE: AS SHOWN



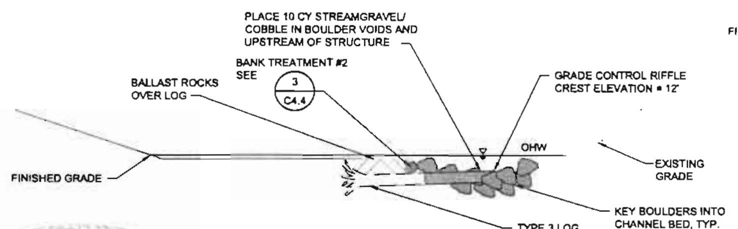
SECTION (A/-, A/C4.3)
SCALE: NTS



SECTION (B/-, B/C4.3)
SCALE: NTS

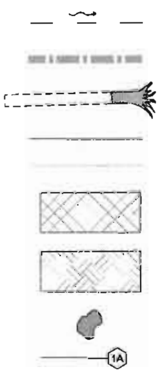


SECTION (C/-)
SCALE: NTS



SECTION (D/-)
SCALE: NTS

LEGEND:



- STREAM THALWEG WITH FLOW DIRECTION
- ORDINARY HIGH WATER (OHW) MARK
- LOG (BURIED END DASHED) - SEE SCHEDULE
- FINISHED CONTOUR/GRADE
- EXISTING CONTOUR/GRADE
- 12" - 18" BALLAST ROCK
- NATIVE SOIL
- 24" - 36" BOULDER
- BASE LOG CONTROL POINT

LOG SCHEDULE

TYPE	LENGTH	DIAMETER	ROOT WAD DIA.
1	30 FT	18 IN	5 FT
1A	30 FT	18 IN	5 FT
2	30 FT	12 IN	5 FT
2A	30 FT	12 IN	5 FT
3	20 FT	18 IN	5 FT
3A	20 FT	18 IN	5 FT
4	15 FT	18 IN	5 FT
4A	15 FT	18 IN	5 FT
5	15 FT	12 IN	5 FT
5A	15 FT	12 IN	5 FT
TIMBER PILE	10 FT	12 IN	NONE

NOTE: LOG TYPES WITH "A" DESIGNATION ARE STRUCTURAL LOGS, AND MUST BE DOUGLAS FIR OR WESTERN RED CEDAR.

CHANNEL DEFLECTOR STRUCTURE #2
BASE LOG (TYPE 2) CONTROL

LOG ID	POINT	X	Y	ELEV.
1	1A	-	-	-
1	1B	-	-	-
2	2A	-	-	-
2	2B	-	-	-
3	3A	-	-	-
3	3B	-	-	-

PRELIMINARY
60% DESIGN

HENDERSON LAND SERVICES

NO.	DATE	DESCRIPTION	APPD.
REVISION			

XREF(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY — CHECKED BY
FINAL MAP DATA
DRAWING NAME: DWG_NAME.DWG

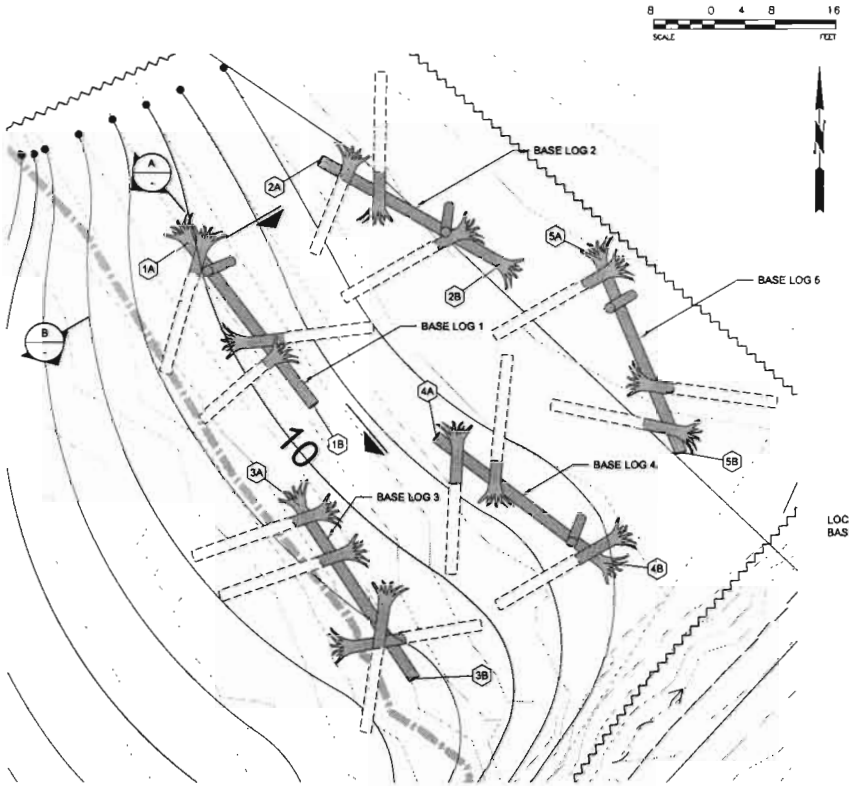
DESIGNED BY / DATE APPD. / DRAWN BY / PROGRAM MGR / CHECKED BY / CONST. MGR. / DESIGN MGR.

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

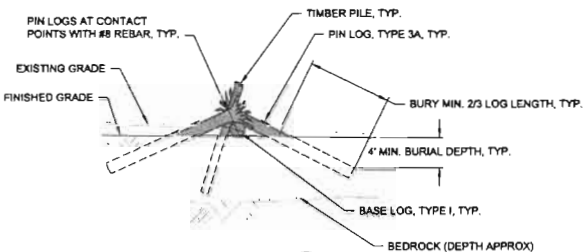
HERRERA ENVIRONMENTAL CONSULTANTS
24 NW Second Avenue
Suite 204
Portland, Oregon
97209
503-228-4301
503-228-3373 FAX
http://www.herrerainc.com

TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
DETAILS

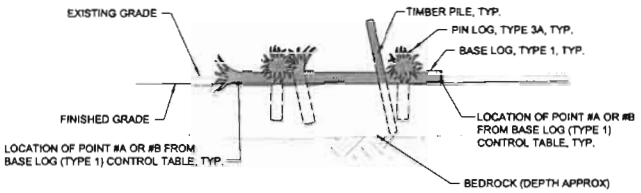
1/4 SECTION
JOB NO. 8958
SHEET NO. C4.1
12 of 15



RIVERBANK HABITAT ENHANCEMENT STRUCTURES (1 / C1)
SCALE: AS SHOWN



SECTION B
SCALE: NTS



SECTION A
SCALE: NTS

LEGEND:

- STREAM THALWEG WITH FLOW DIRECTION
- ORDINARY HIGH WATER (OHW) MARK
- LOG (BURIED END DASHED) - SEE SCHEDULE
- FINISHED CONTOUR/GRADE
- EXISTING CONTOUR/GRADE
- PROJECT LIMITS
- 1A — BASE LOG CONTROL POINT
- NATIVE SOIL
- BEDROCK

NOTES:

PLACE BRUSH BUNDLES ALONG BASE LOG BENEATH PIN LOG AND TIMBER PILE CONTACT POINTS.

RIVERBANK HABITAT ENHANCEMENT STRUCTURE BASE LOG (TYPE 1) CONTROL				
LOG ID	POINT	X	Y	ELEV.
1	1A	-	-	F.G.
1	1B	-	-	F.G.
2	2A	-	-	F.G.
2	2B	-	-	F.G.
3	3A	-	-	F.G.
3	3B	-	-	F.G.
4	4A	-	-	F.G.
4	4B	-	-	F.G.
5	5A	-	-	F.G.
5	5B	-	-	F.G.

F.G. - FINISHED GRADE

LOG SCHEDULE			
TYPE	LENGTH	DIAMETER	ROOT WAD DIA.
1	30 FT	18 IN	5 FT
1A	30 FT	18 IN	5 FT
2	30 FT	12 IN	5 FT
2A	30 FT	12 IN	5 FT
3	20 FT	18 IN	5 FT
3A	20 FT	18 IN	5 FT
4	15 FT	18 IN	5 FT
4A	15 FT	18 IN	5 FT
5	15 FT	12 IN	5 FT
5A	15 FT	12 IN	5 FT
TIMBER PILE	10 FT	12 IN	NONE

NOTE: LOG TYPES WITH "A" DESIGNATION ARE STRUCTURAL LOGS, AND MUST BE DOUGLAS FIR OR WESTERN RED CEDAR.

PRELIMINARY
60% DESIGN

HENDERSON LAND SERVICES, LLC

NO.	DATE	DESCRIPTION	APPD.
		REVISION	

XREF(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY:
PROJECT COMPLETED:
MAP CORRECTED BY: CHECKED BY:
FINAL MAP DATA
DRAWING NAME: DWG_NAME.DWG

DESIGNED BY		DATE APPD.	
DRAWN BY		PROGRAM MGR.	
CHECKED BY		CONST. MGR.	
DESIGN MGR.			

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

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24 NW 2nd Avenue
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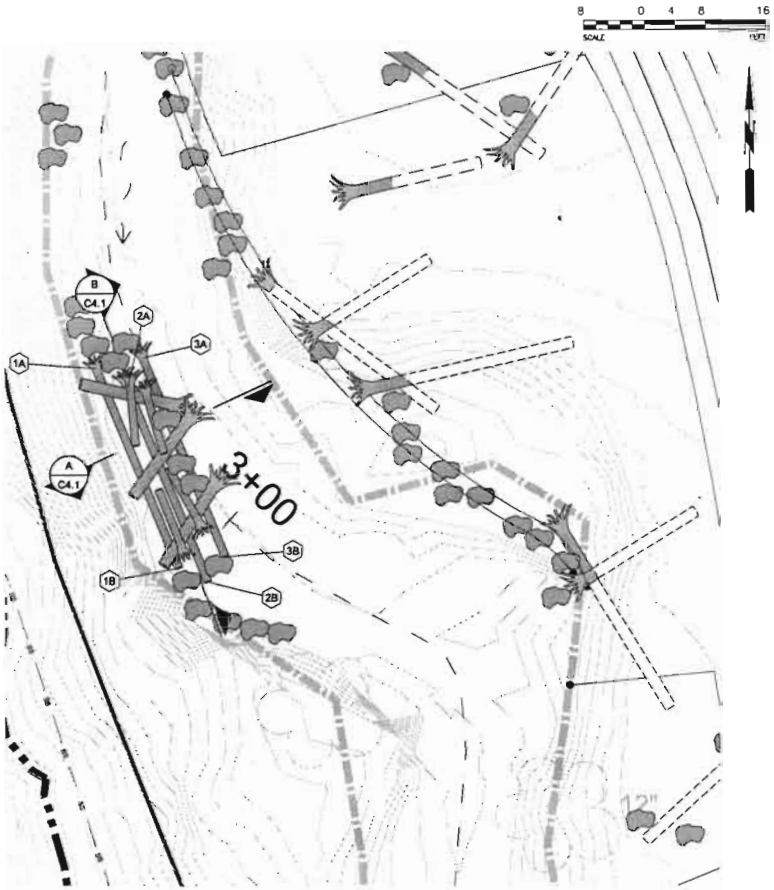
TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
DETAILS

1/4 SECTION
JOB NO. 8958
SHEET NO. C4.2
13 OF 15



CHANNEL DEFLECTOR STRUCTURE #1
SCALE: AS SHOWN
1
C1

LOG SCHEDULE			
TYPE	LENGTH	DIAMETER	ROOT WAD DIA.
1	30 FT	18 IN	5 FT
1A	30 FT	18 IN	5 FT
2	30 FT	12 IN	5 FT
2A	30 FT	12 IN	5 FT
3	20 FT	18 IN	5 FT
3A	20 FT	18 IN	5 FT
4	15 FT	18 IN	5 FT
4A	15 FT	18 IN	5 FT
5	15 FT	12 IN	5 FT
5A	15 FT	12 IN	5 FT
TIMBER PILE	10 FT	12 IN	NONE

NOTE: LOG TYPES WITH "A" DESIGNATION ARE STRUCTURAL LOGS, AND MUST BE DOUGLAS FIR OR WESTERN RED CEDAR

CHANNEL DEFLECTOR STRUCTURE #1 BASE LOG (TYPE 2) CONTROL				
LOG ID	POINT	X	Y	ELEV.
1	1A	-	-	-
1	1B	-	-	-
2	2A	-	-	-
2	2B	-	-	-
3	3A	-	-	-
3	3B	-	-	-

LEGEND:

- STREAM THALWEG WITH FLOW DIRECTION
- ORDINARY HIGH WATER (OHW) MARK
- LOG (BURIED END DASHED) - SEE SCHEDULE
- FINISHED CONTOUR/GRADE
- EXISTING CONTOUR/GRADE
- 12" - 18" BALLAST ROCK
- 24" - 36" BOULDER
- 1A BASE LOG CONTROL POINT

HENDERSON LAND SERVICES

PRELIMINARY
60% DESIGN

NO.	DATE	DESCRIPTION	APPD.
REVISION			

KNEE(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY:
PROJECT COMPLETED:
MAP CORRECTED BY: CHECKED BY:
FINAL MAP DATA
DRAWING NAME: DWG_NAME.DWG

DESIGNED BY | DATE SPEC.
DRAWN BY | PROGRAM MGR.
CHECKED BY | CONST. MGR.
DESIGN MGR.

CITY OF PORTLAND
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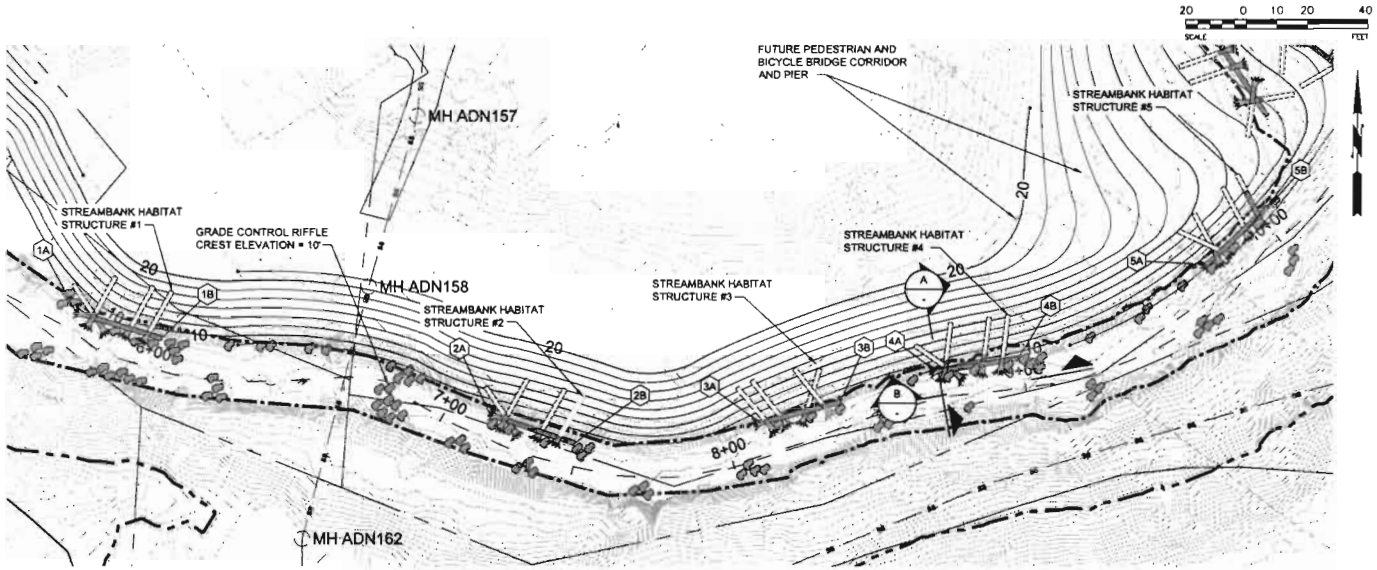
http://www.herrerainc.com

TRYON CREEK CONFLUENCE
HABITAT ENHANCEMENT
DETAILS

1/4 SECTION
JOB NO. 8958
SHEET NO. C4.3
14 of 15

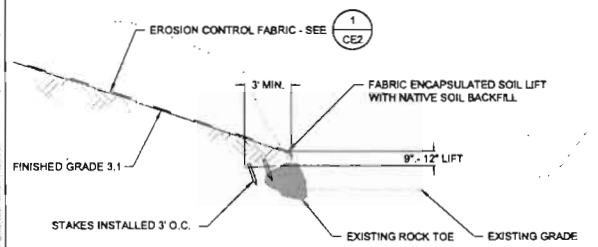


STREAMBANK HABITAT STRUCTURES (1 / C1)

SCALE: AS SHOWN

LEGEND:

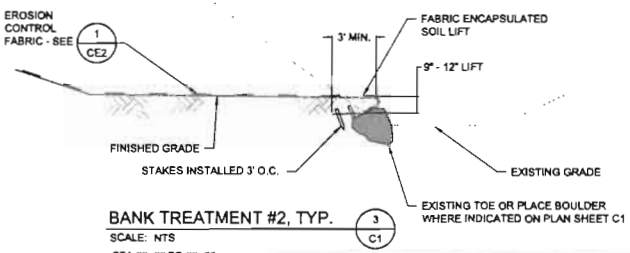
- EROSION CONTROL FABRIC
- FINISHED CONTOUR/GRADE
- EXISTING CONTOUR/GRADE
- ORDINARY HIGH WATER (OHW) MARK
- LOG (BURIED END DASHED) - SEE SCHEDULE
- 12" - 18" BALLAST ROCK
- NATIVE SOIL
- 24" - 36" BOULDER
- 1A BASE LOG CONTROL POINT



BANK TREATMENT #1, TYP. (2 / C1)

SCALE: NTS

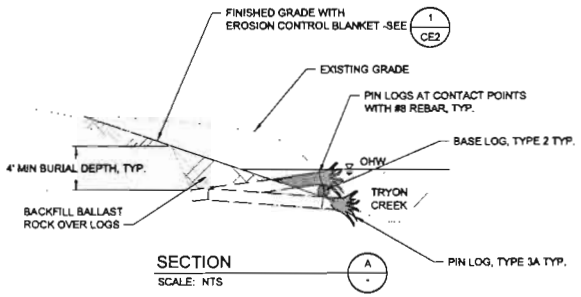
STA ##+## TO ##+##
STA ##+## TO ##+##



BANK TREATMENT #2, TYP. (3 / C1)

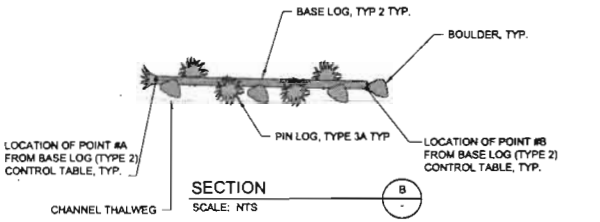
SCALE: NTS

STA ##+## TO ##+##
STA ##+## TO ##+##



SECTION (A / -)

SCALE: NTS



SECTION (B / -)

SCALE: NTS

STREAMBANK HABITAT STRUCTURE BASE LOG (TYPE 2) CONTROL

STR #	POINT	X	Y	ELEV.
1	1A	-	-	-
1	1B	-	-	-
2	2A	-	-	-
2	2B	-	-	-
3	3A	-	-	-
3	3B	-	-	-
4	4A	-	-	-
4	4B	-	-	-
5	5A	-	-	-
5	5B	-	-	-

LOG SCHEDULE

TYPE	LENGTH	DIAMETER	ROOT WAD DIA.
1	30 FT	18 IN	5 FT
1A	30 FT	18 IN	5 FT
2	30 FT	12 IN	5 FT
2A	30 FT	12 IN	5 FT
3	20 FT	18 IN	5 FT
3A	20 FT	18 IN	5 FT
4	15 FT	18 IN	5 FT
4A	15 FT	18 IN	5 FT
5	15 FT	12 IN	5 FT
5A	15 FT	12 IN	5 FT
TIMBER PILE	10 FT	12 IN	NONE

NOTE: LOG TYPES WITH "A" DESIGNATION ARE STRUCTURAL LOGS, AND MUST BE DOUGLAS FIR OR WESTERN RED CEDAR.

PRELIMINARY
60% DESIGN

HENDERSON LAND SERVICES, LLC

NO.	DATE	DESCRIPTION	APPD.
		REVISION	

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PROJECT COMPLETED:
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DRAWING NAME: DWG_NAME.DWG

DESIGNED BY | DATE APPD.
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DESIGN MGR.

CITY OF PORTLAND
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TRYON CREEK CONFLUENCE HABITAT ENHANCEMENT
BANK TREATMENT DETAILS

1/4 SECTION
JOB NO. 8958
SHEET NO. C4.4
15 OF 15

\\HERRERA\HEONE\PORTLAND\PROJ\2008\08-04022-000 TRYON CONFLUENCE ENHANCEMENT DES GRN\CAD\DWGS\8958C4.4.DWG 3/24/2009 2:09:09 PM WWESZCZ

Lower
Columbia
River Estuary
Partnership

April 22, 2008

Kristen Acock
Engineer
City of Portland, Bureau of Environmental Services
1120 SW 5th Avenue, 10th Floor
Portland, OR 97204

Dear Kristen:

Thank you for submitting the Off-Channel Habitat Enhancement Design at the Confluence of the Willamette River and Tryon Creek proposal ($100,000) for habitat restoration funding with the Estuary Partnership and the Bonneville Power Administration (BPA). After review, I am pleased to let you know that this project was recommended for funding during 2008-2009.

As explained in an e-mail message sent to you, we will need a Scope of Work and budget for this project submitted to us by May 12, 2008 to assist us in meeting our contractual requirements with BPA. Templates for both documents were included in that message.

I look forward to working with you on this project. Please contact me with any questions or concerns. You may reach me by email at haas@lcrep.org or by phone at (503) 226-1565x238.

Sincerely,

Evan Haas

Evan Haas
Habitat Restoration Coordinator

811 SW Naito Parkway, Suite 120 Portland, Oregon 97204 503-226-1565 *fax* 503-226-1580 www.lcrep.org

REGIONAL SERVICES

600 NORTHEAST GRAND AVENUE · PORTLAND, OREGON 97232 2736
TEL 503 797 1700 , FAX 503 797 1797

METRO

March 17, 2008

Kristen Acock, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at Tryon Creek Confluence

Metro Regional Parks and Greenspaces would like to pledge our support for and commitment to the Portland Bureau of Environmental Services (BES) for their grant application related to the off-channel habitat enhancement project at Tryon Creek confluence with the Willamette River.

As the elected regional government, Metro is committed to making the region an extraordinary place to live, work, and play. Protecting the region's natural resources is essential for maintaining and improving the livability and sustainability of the region. Tryon Creek is a regionally significant natural resource that multiple jurisdictions and agencies, including Metro, have targeted for protection and enhancement. Funds made available through the 1995 open space bond measure enabled Metro to partner with BES and Lake Oswego to acquire the confluence of Tryon Creek and the Willamette River.

With this major investment in public acquisition funds, we are now committed to enhancing the confluence to the benefit of multiple species of native fish and wildlife. Grant funds will allow design work to commence on the Tryon Creek Confluence project that will enhance the functions of the confluence area, including fish passage and flood plain connectivity. The visibility and accessibility of this project will provide opportunities to many people in the region to understand the benefits of functional riparian and floodplain habitat.

Metro Regional Parks and Greenspaces fully supports BES in its pursuit of this critical grant funding for the Tryon Creek Confluence project. I urge you to give favorable consideration in supporting this important project.

Sincerely,

Jim Morgan

Jim Morgan, Manager
Science & Stewardship Division

PARKS & RECREATION
DEPARTMENT

CITY OF
LAKE OSWEGO

4101 KRUSE WAY
PO BOX 369
LAKE OSWEGO
OREGON 97034

503-675-6500
503-635-6579

WWW.CI.OSWEGO.OR.US
WWW.LAKEOSWEGOPARKS.ORG

March 18, 2008

Kristen Acock, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at Tryon Creek Confluence with Willamette River

The City of Lake Oswego would like to pledge our support for and commitment to the Bureau of Environmental Services for their grant application. The City of Lake Oswego has been in partnership with BES to acquire property near the Tryon Creek Confluence, and is dedicated to restoration and stewardship of this area.

Grant funds will allow design work to commence on the Tryon Creek Confluence project that will enhance the functional and aesthetic value of the ecosystem and provide benefits to multiple species of fish and wildlife. This project is in alignment with goals of the City of Lake Oswego to enhance access and recreation in this area, while improving the habitat for native plants and animals.

The City of Lake Oswego fully supports BES in its pursuit of this critical grant funding for the Tryon Creek Confluence project. I urge you to give consideration to this important grant project.

Sincerely,

Kim Gilmer, Director
Parks and Recreation Department
City of Lake Oswego

America in Bloom Champion

Oregon
Theodore R. Kulongoski, Governor

Department of Transportation
Region 1
123 NW Flanders
Portland, OR 97209-4019
(503) 731-8200
FAX: (503) 731-8259

March 17, 2008

Kristen Acock, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

File Code:

Re: Off-Channel Habitat Enhancement at Tryon Creek Confluence with Willamette River

Dear Ms. Acock,

The Oregon Department of Transportation Region 1 Environmental Unit would like to pledge our support for and commitment to the Bureau of Environmental Services for their grant application. The Oregon Department of Transportation (ODOT) is committed to environmental stewardship and has been working in partnership with BES (and other Natural Resource Agencies) for the past three years to enhance fish passage into ODOT's culvert under Oregon Highway 43 just upstream of this project proposal on Tryon Creek.

Grant funds will allow design work to commence on the Tryon Creek Confluence project that will enhance the functional and aesthetic value of the ecosystem and provide benefits to multiple species of fish and wildlife. This project is important for the restoration of fish runs to Tryon Creek and would compliment the work our agency is completing this summer 2008 to enhance fish passage into Upper Tryon Creek.

The Oregon Department of Transportation Region 1 Environmental Unit fully supports BES in its pursuit of this critical grant funding for the Tryon Creek Confluence project. I urge you to give consideration to this important grant project.

Sincerely,

Robert Hadlow
Environmental Unit Manager (Interim)
Region 1

Cc: Jason Tell, Region 1 Manager
Ron Kroop, District 2A Manager (Maintenance)
Melissa Hogan, Region 1 Environmental Coordinator

Oregon
Theodore R. Kulongoski, Governor

Department of Fish and Wildlife
Sauvie Island Wildlife Area
North Willamette Wildlife District
18330 NW Sauvie Island Road
Portland, OR 97231
503-621-3488
FAX 503-621-3025

March 12, 2008

Kristen Acock, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Proposed Off-Channel Habitat Enhancement Project at Tryon Creek Confluence with Willamette River

The Oregon Department of Fish and Wildlife would like to pledge support and commitment to the Bureau of Environmental Services for their grant application to implement design and construction of the Tryon Creek Confluence Project. ODFW recognizes the Tryon Creek watershed as an important urban stream that supports diverse populations of wildlife, cutthroat trout, and ESA federally listed winter steelhead and coho salmon, as well. Proposed work by BES at the confluence of Tryon Creek and the Willamette River will greatly enhance important habitat features necessary for the health and survival of these species. As the state agency that manages all fish and wildlife in Oregon, ODFW works closely with BES on many habitat improvement projects across the City of Portland, and recognizes the efforts underway in Tryon Creek as essential to restoring function and aesthetic value to this important semi-urban stream. Not only will this project improve fish and wildlife habitat and function, but it will also be a showcase and educational tool for local publics to gain an understanding and respect of this and other neighborhood streams.

The ODFW fully supports BES in its pursuit of this grant funding for the Tryon Creek Confluence project, and hopes that the grantor will give it thoughtful consideration for funding.

Sincerely,

Tom Murtagh
District Fish Biologist - ODFW
Coast Range Unit
Sauvie Island

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Columbia River Fisheries Program Office
1211 SE Cardinal Court, Suite 100
Vancouver, WA 98683

Kristen Acock, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at Tryon Creek Confluence with Willamette River

March 11, 2008

Dear Ms. Acock,

I am pleased to write this letter in support of the City of Portland, Bureau of Environmental Service's (BES) project proposal titled, "Off-Channel Habitat Enhancement at Tryon Creek Confluence with Willamette River."

Tryon Creek, a tributary of the Willamette River, has historically supported steelhead, Coho, resident rainbow and cutthroat trout, and lamprey species. Currently only small numbers of steelhead, rainbow and cutthroat trout spawn and rear in certain reaches of Tryon Creek. Several factors limiting the populations of these native fish have been identified including a major culvert (Hwy 43) at river mile 0.3 which is thought to impede fish passage, lack of suitable habitat and lack of mature native vegetation. This project proposes designing an on-the-ground restoration and monitoring plan to mitigate these factors. The restoration plan will occur as a second phase to a multi-agency project, of which BES and USFWS are partners, which will retrofit the Hwy 43 culvert to improve fish passage into Tryon Creek.

Based on our experience with salmon, steelhead, native trout, and lamprey population and habitat studies in Tryon Creek, we support the design of a restoration plan that BES has put forth in this proposal. Grant funds will allow design work to commence on the Tryon Creek Confluence project that will enhance the functional and aesthetic value of the ecosystem and will likely provide benefits to multiple species of fish and wildlife.

It is extremely important to restore streams historically populated with native anadromous and resident fish species. With the inclusion of community members and volunteers this project will instill watershed awareness that will serve Tryon Creek and its inhabitants for many years to come. I urge you to give consideration to this important grant project.

Sincerely,

Christina W. Luzier
Supervisory Fishery Biologist

Willamette RIVERKEEPER®

March 19, 2008

Kristan Acock, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement Design at Tryon Creek Confluence with Willamette River

Willamette Riverkeeper would like to pledge our support for and commitment to the Bureau of Environmental Services for their grant application. Willamette Riverkeeper is a non-profit, 501(c)(3) organization established in 1996 and dedicated to the protection and restoration of the Willamette River. Our goal is to enable the Willamette to function more naturally, with cold, clean water that provides a healthy habitat for fish and wildlife. Further, we believe that a river with good water quality and abundant natural habitat is a basic right for all people. In our twelve years of existence, we have made considerable progress in meeting our goals by applying the best scientific studies and on-the-ground results to our efforts. by building coalitions with multiple partners. and by reaching out to the public with educational and recreational activities focused on watershed health and habitat restoration.

Willamette Riverkeeper works frequently with the Bureau of Environmental Services (BES) on restoration projects in the Portland Metro area, including BES's Stephens Creek Confluence restoration project, which will remove a large concrete pipe, restore floodplain function, reconnect Stephens Creek to the Willamette River, remove invasive weed species, and revegetate with native plants.

Grant funds will allow design work to commence on the Tryon Creek Confluence project that will enhance the functional and aesthetic value of the ecosystem and provide benefits to multiple species of fish and wildlife. Confluence projects such as this, which reconnect creeks to their floodplains, increase complexity and off-channel habitat for salmonids, reduce water temperature, and increase groundwater interactions are Willamette Riverkeeper's highest priority.

Willamette Riverkeeper fully supports BES in its pursuit of this critical grant funding for the Tryon Creek Confluence project. I urge you to give consideration to this important grant project.

Sincerely,

Travis Williams
Riverkeeper and Executive Director

FRIENDS OF TRYON CREEK STATE PARK
11321 S.W. Terwilliger Blvd • Portland, OR 97219 • (503) 636-4398 • www.tryonfriends.org

March 19, 2008

Kristen Acock, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at Tryon Creek Confluence with Willamette River

It is with great enthusiasm the Friends of Tryon Creek (Friends) offer their support for and commitment to the Bureau of Environmental Services' (BES) grant application. For over 20 years the Friends have supported public education and stream and upland habitat restoration within Tryon Creek State Natural Area. This 680 acre forest encloses the lower reaches of Tryon Creek. As a citizen based group we organize over 1,400 volunteers each year to support removal of non-native invasive plant species, construct and monitor restoration projects and present nature based education programs to over 12,000 people.

Grant funds will allow design work to commence on the Tryon Creek Confluence project that will enhance the functional and aesthetic value of the ecosystem and provide benefits to multiple species of fish and wildlife. All anadromous fish returning to Tryon Creek to spawn must pass through this area. The Friends have been working to restore spawning habitat for Pacific lamprey and cutthroat trout on the tributaries that originate in the park. This project will support migration of both these species.

The Friends of Tryon Creek fully supports BES in its pursuit of this critical grant funding for the Tryon Creek Confluence project. I urge you to give consideration to this important grant project. Please do not hesitate to contract me if you have any questions.

Sincerely,

Stephanie Wagner

Stephanie Wagner
Executive Director

Tryon Creek Watershed Council
c/o Friends of Tryon Creek SP
11321 SW Terwilliger Blvd.
Portland, OR 97219
Phone: 503-636-4398 x109
Email:tcwc@tryonfriends.org

March 11, 2008

Kristen Acock, BES Project Manager
1120 SW Fifth Ave, Room 1000
Portland, Oregon 97204

Re: Off-Channel Habitat Enhancement at Tryon Creek Confluence with Willamette River

The Tryon Creek Watershed Council (TCWC) would like to pledge our support for and commitment to the Bureau of Environmental Services (BES) for their grant application. The Tryon Creek Watershed Council works to improve stream conditions and preserve environmental resources in the Tryon Creek watershed. Our partners include City and State government agencies, other non-profit organizations, and citizen representatives. For more than ten years, we have worked with BES to identify and prioritize restoration projects throughout the watershed and to complete these projects.

Grant funds are necessary for design work to commence on the Tryon Creek Confluence project. This project is critical to the TCWC mission of restoring the watershed. It will significantly enhance the functional value of the ecosystem, as well as provide new and better habitat for multiple species of fish and wildlife.

The TCWC fully supports BES in its pursuit of this grant funding for the Tryon Creek Confluence project. Please give full consideration to this vital grant project.

Sincerely,

TPRiggsby

Terri Preeg Riggsby
Chair, TCWC

Northwest Oregon Resource Conservation & Development Council, Inc.

1080 SW Baseline, Ste. B-1, Hillsboro, OR 97123
(503) 648-3174 Ext. 108
FAX (503) 681-9772

Clackamas
Clatsop
Columbia
Multnomah
Tillamook
Washington
Yamhill

Communities working together to balance resources with quality development for present and future generations

March 12, 2008

Kristen Acock
City of Portland - BES Project Manager
1120 SW Fifth Ave., Rm. 1000
Portland, OR 97204

RE: Off-Channel Habitat Enhancement at Tryon Creek Confluence with Willamette River

The Northwest Oregon Resource Conservation & Development (RC&D) Council supports the City of Portland's Bureau of Environmental Services (BES) with their efforts to restore the ecosystem of Tryon Creek and their application for grant funds.

The Northwest Oregon RC&D Council is a non-profit organization of volunteers with eighteen sponsoring members from the seven county area of northwest Oregon. The Council helps plan and carry out activities that increase conservation of natural resources, support economic development and enhance the environment and standard of living in local communities.

Restoration and enhancement of Tryon Creek is a high priority for the Northwest Oregon RC&D Council. This project fits the mission of the Council, addresses the natural resource conservation and community development goals in the Council's area plan, and is part of the Council's partnership effort to restore fisheries in Tryon Creek.

Juvenile and adult steelhead (ESA threatened), Coho and fall Chinook are found in Tryon Creek and the creek is considered high for habitat value by the Oregon Department of Fish and Wildlife for an urban strean.

The Northwest Oregon RC&D Council wholeheartedly supports their partner, BES, in this endeavor and their pursuit of grant funding for this project.

Sincerely,

Ginny Van Loo

Ginny Van Loo - President

Received By OWEB

JUL 07 2008

Section I
APPLICANT INFORMATION

Type the information for Sections I and II **USING ONLY the pages provided. DO NOT EXCEED 2 PAGES.**

Name of project: Willamette Mission Programmatic Reconnection Project

OWEB funds requested: $1,335,135.00 **Total cost of project**: $2,047,940.00

Project location:

This project occurs at (check one): ☒ **A single site** ☐ **Multiple sites**

Mainstem Willamette
Watershed(s)

Marion ~~and Linn~~
County or counties

5S3W34, 6S3W3,4,9,10
Township, Range, Section(s)

45.077 N/-123.0535 W
Longitude, Latitude (if available)

Applicant	**Project Manager**
Name: Travis Williams	**Name:** Gerry St. Pierre
Organization: Willamette Riverkeeper	**Organization:** Willamette Riverkeeper
Address: 1515 SE Water, #102	**Address:** 1515 SE Water, #102
Portland, OR 97214	Portland, OR 97214
Phone: (503) 223-6418	**Phone:** (503) 223-6418
Fax: (503) 228-1960	**Fax:** (503) 228-1960
Email: travis@willamette-riverkeeper.org	**Email:** gerry@willamette-riverkeeper.org

Fiscal Agent	**Landowner(s)**
Name: Travis Williams	☒ **Public: Agency:** OPRD
Organization: Willamette Riverkeeper	☐ **Private: Name(s):**
Address: 1515 SE Water, #102	
Portland, OR 97214	
Phone: (503) 223-6418	
Fax: (503) 228-1960	
Email: travis@willamette-riverkeeper.org	

CERTIFICATION:

I certify that this application is a true and accurate representation of the proposed work for watershed restoration and that I am authorized to sign as the Applicant or Co-Applicant. By the following signature, the Applicant certifies that they are aware of the requirements (***see Application Instructions***) of an OWEB grant and are prepared to implement the project if awarded.

Applicant Signature: _____ Date: 6-28-08

Print Name: Travis Williams Title: Executive Director

Co-Applicant: _____ Agency: Willamette Riverkeeper

Section II
PROJECT INFORMATION

1. **Abstract.** In approximately 200 words, 1) identify the project location, 2) state the watershed issue or problem to be addressed, 3) the proposed solution including the area or other measurable units to be treated, 4) any proposed effectiveness monitoring, and 5) how OWEB funds will be used. **Willamette Mission State Park contains a remnant channel (RM 72-74) isolated from the mainstem of the Willamette since the 1940's. A dike at the inlet, an access road, and a revetment at the outlet are barriers to fish passage and have disconnected side channels and floodplain from the Willamette. Similarly, revetments along the Willamette at Bowers Rock State Park (RM 121-123) have removed back channels, alcoves and floodplain from the Willamette. We will conduct hydraulic and LiDAR studies of these sites to develop a programmatic approach for reconnection projects on the mainstem Willamette. This approach will lead to a reconnection project at Willamette Mission and a Biological Assessment submitted to NMFS leading to a programmatic Biological Opinion to support the permitting for this, and similar, projects. At Willamette Mission, we will remove barriers to year-round flow, thereby restoring natural hydraulic and geomorphologic processes, reconnecting back-channels, alcoves and floodplains, and providing off-channel refugia and habitat for juvenile and adult Chinook, coho, and steelhead. Project includes long-term water quality, vegetation, fish, reptile, amphibian and avian monitoring. Partners include Willamette Riverkeeper, OPRD, OWEB, and MMT. OWEB and MMT funding will be used for hydraulic studies, LiDAR data, engineering, permitting, construction, weed management, revegetation, project management and monitoring.**

2. **Has this project, or any element of this project, ever been submitted in a previous application(s) to OWEB?** ☐ Yes ☒ No

   If yes, what was the application number(s)?

3. **Is this project, or any element of this project, a continuation of a previously funded OWEB restoration project(s)?** ☐ Yes ☒ No

   If yes, what was the grant number(s)?

4. **Is this project a result of a previously funded OWEB Technical Assistance projects(s)?** ☐ Yes ☒ No

   If yes, what was the grant number(s)?

5. **Project Partners.** In the table below, show all proposed partners and clearly describe their contribution. Be sure to provide a dollar value for each funding source. If participation is in-kind, briefly describe the nature of the contribution in the Funding Source Column.

Funding Source Name the Partner and what their contribution is.	Cash (√)	In-Kind (√)	Secured (√)	Pending (√)	Amount/Value
OWEB	☒	☐	☐	☒	$1,335,135.00
Landowner:OPRD	☐	☒	☐	☐	$29,200.00
Meyer Memorial Trust	☒	☐	☐	☒	$654,605.00
NOAA/American Rivers	☒	☐	☐	☒	$29,000
	☐	☐	☐	☐	$
	☐	☐	☐	☐	$
	☐	☐	☐	☐	$
	☐	☐	☐	☐	$
Total Estimated Funds (add all amounts in the far-right Column):					*$2,047,940.00

*The total should equal the total cost of the project on page 1 of the application.

6. **Have any conditions been placed on other funds that may affect project completion?**
   ☐ Yes ☒ No

   If yes, explain:

Attachments — Complete and attach to the back of your application:

☒ *Project Maps: 1) Provide a vicinity map showing township, range, and section (TRS), and the project location. 2) On a USGS 7.5 min. topographic quad map, or on an aerial photo showing TRS, locate the extent of your project and site-specific activities by GPS reading if available. **Provide maps on 8½" x 11"** pages and include a legend.

☒ *Preliminary Project Designs: Provide sufficient detail to allow a reasonable evaluation of the proposal and of the effect of the project on the site. The preliminary design should include reference to appropriate standards and guidelines.

☒ *Photographs: Provide photographs to aid in understanding the situation. If color photos are necessary to convey information important for application review, supply 25 copies of each photo. **Note: If your project is funded, pre-project photos will be required in the final report.**

☒ Letters of Support from project partners or others, as appropriate.

* **IMPORTANT:** Avoid color and detail that will not photocopy clearly. Otherwise, provide 25 color copies of any maps, photos, or project designs that you want OWEB reviewers to see in color. Multiple copies must be collated and stapled into 25 separate packets for distribution to the reviewers. This is the only exception for the use of staples.

Section III
SPECIFIC RESTORATION PROJECT ACTIVITY

These essay questions and their answers are designed to step you and reviewers through a logical process from understanding and identifying the problem to "fixing" the problem and evaluating the results.

Answer the questions in 12-pt type size, single spaced, on single-sided pages. Use 10-pt type size for the tables, and use bullets where appropriate. Use **bold face** and *italics* for emphasis only. If the project involves multiple sites, be specific for each. **Refer to the Application Instructions for clarification and helpful examples.**

R1. Contextual Overview

Provide the location and significance of the project including why that location was chosen, what watershed functions are to be addressed in the project and a brief explanation of the history of the issues leading to the project. Describe the project in the context of the landscape including the key water quality, water quantity, species, habitat, land use and resource management issues (physical or social) that are proposed to be addressed in that watershed. **See the Application Instructions for clarification.**

The Willamette Mission Programmatic Reconnection Project is a reconnection/restoration project on the mainstem Willamette intended to serve as a model for similar large-scale, multi-partner/multi-agency efforts on the river. Federal and State permitting and regulatory agencies, leading academic researchers, and experts in monitoring fish, reptiles, amphibians, birds, mammals and invasive species will assist us in developing a programmatic approach to reconnecting side-channels, alcoves and floodplains to the benefit of native species. The National Marine Fisheries Service (NMFS) is committed to using this project and our approach to develop a programmatic Biological Opinion (BO) that can be used to permit such projects along the Willamette mainstem. This project relies upon funding from the OWEB SIP program and the Meyer Memorial Trust and also serves as a demonstration project for their funding partnership.

The Willamette Mission project site is located along the remnant channel created when the 1861 flood moved the mainstem Willamette to its current location. In the early 1940's, local landowners constructed a dike across the inlet to Mission Slough at Willamette river mile 74. In 1948, the U.S. Army Corps of Engineers (Corps) built a rock revetment along the outlet at river mile 71.9. In the 1970's, Oregon State Parks constructed an access road across the slough atop three 36" diameter culverts.

These actions effectively isolated Mission Slough from the Willamette, thereby altering hydraulic conditions and geomorphologic processes within the slough. The 1996 flood partially breached the inlet dike, allowing seasonal flow into the slough. In the late 1990's, the Corps proposed a section 1135 project to restore natural riverine functions, hydraulic conditions, and geomorphologic processes to this area by breaching the inlet dike, excavating an inlet channel, replacing the culverts under the access road, excavating a wider, deeper outlet channel, and replacing the access road and bridge over the outlet. The project was suspended in 2001 for financial reasons, but not before engineering design and a biological assessment were completed.

Comments on the original 1135 project criticized the proposal for over-engineering, particularly in regard to the intent to excavate and armor inlet and outlet channels. Fisheries biologists argued that excessive excavation of the inlet channel would prevent proper floodplain reconnection and function, and that armoring the excavations would restrict cold water flows from adjoining gravel beds (hyporheic flow), negatively impacting juvenile Chinook salmon known to use the slough. A less engineered approach, one that simply removes the barriers and allows the river to restore natural function to the slough and floodplain, was recommended instead and forms the basis of the current project.

River Design Group will conduct a hydraulic survey of the park during the summer of 2008 . A total station or GPS unit will be used to collect hydraulic cross sections of the Willamette River and the project site. Data from the survey will be combined with LiDAR data collected in the fall of 2008 and existing DEMs and topographic data to create a 1-dimensional HEC-RAS model. Calibration of roughness coefficients and water surfaces will be determined based on field data results. The model will be fine-tuned until it produces water surface elevations similar to actual recorded water surfaces for the Willamette River. Outputs from the model will include inundation, velocity, and shear analysis.

River Design Group will use data from the hydraulic survey, LiDAR data and the HEC-RAS model to develop the project engineering (i.e., excavations and bridge design) and risk analysis. Willamette Riverkeeper and River Design Group will develop the Biological Assessment (BA), working closely with federal and state agencies to develop a BA capable of supporting a programmatic Biological Opinion.

Work at the project site will begin with removing invasive weeds from the remnant channel in the summer of 2008 and will continue through the fall of 2009. Following barrier removal and construction, live stakes and containerized native plants will be installed at construction sites once work has been completed. Additional bare-root native plants will be installed to construction sites and along restored channels in the winter of 2010. (An option to increase the area treated for invasive weeds and planted with native plants is included in the budget section.) Long term (8-10 years) integrated weed management will treat weeds and install additional native plants as necessary to establish native riparian and floodplain plant communities. We anticipate using funds from a variety of sources to continue long-term maintenance of these plant communities.

Barrier removal will be done in the summer of 2009. We will breach the inlet dike to allow year-round flow into the remnant channel. Approximately one linear mile of historic back channel will be restored to year-round functioning, with several side channels off that and improved floodplain habitat along all channels.

The project will also replace the Beaver Island Access Road, which is built upon three failing 36" diameter corrugated metal culverts, with a clear span bridge constructed of poured-in-place concrete on concrete abutments. This will allow free flow between the newly reconnected channel below the inlet dike and the existing channel constituting Mission Lake. The bridge as proposed is less expensive than a series of open bottom arch culverts, provides better flow and fish passage, allows unrestricted recreational access (i.e., no canoe portages required), and results in a higher road surface that will allow year-round access to Beaver Island (vs. seasonal closures at present during high water events). In addition, permitting favors bridges over culverts because they maximize fish passage. Design of the bridge and the connecting channel will be determined in the engineering phase.

The project will also reengineer the outlet from Mission Lake to the Willamette. The 2001 Corps proposal involved excavating the outlet to be both wider and deeper, thereby diffusing flow and reducing velocity and turbulence just upstream from the Wheatland Ferry. This proposal would require replacing the existing bridge with a longer span to clear the wider channel. We propose more thorough hydraulic modeling incorporating LiDAR data to best engineer outlet flows for minimal impact on ferry operations. Four scenarios are likely:

1. Follow the Corps' original recommendation to excavate and widen the existing outlet channel, replacing the existing bridge with the longer span required by the wider outlet. However, State Parks staff have stated that the bridge design proposed by the Corps greatly exceeds their needs, and a simpler, less expensive bridge would suffice.
2. Breach the revetment on the west side of Beaver Island in one or more locations to allow connection between the mainstem of the Willamette and the side channels that will be reconnected by breaching the inlet dike. Parks staff have noted seasonal flooding of side channels that appear to connect to the

mainstem to the west of Beaver Island and to the historic channel we propose to reconnect. Installation of small (12 feet wide or less) culverts may be required to allow water flow and fish passage beneath the roads in this portion of the park. Excavations can be engineered to provide year-round flow or high-water flow as desired to maximize ecological benefit and minimize risk.

3. A combination of the first two scenarios that will result in more complex reconnectivity as well as reduced impacts on ferry operations.
4. Excavate a new channel approximately 1,000 – 1,200 feet upriver of the current outlet channel, thereby creating two outlets. This approach will require the excavation of 50-60,000 cubic yards of material and construction of a bridge across the new outlet channel. This is by far the most expensive and least desired option.

By reconnecting the historic channel to the river, we will allow natural processes to reconnect floodplains and side channels to the system. Fisheries studies conducted on the remnant channel show that locally spawned juvenile salmonids are using the system when high water permits seasonal flow. Studies indicate that they are not being trapped when water recedes, that hyporheic flow is improving local water quality, and that warm-water predatory fish present in Mission Lake are dormant during this period. It appears unlikely that this project will have negative impacts on juvenile salmonids, and may provide high quality off-channel refugia to migratory adult salmon.

Current conditions (i.e., seasonal flooding) result in seasonal ponding. We believe side channel reconnection will result in permanent ponds on the floodplain as well as extending the quantity and duration of seasonal ponding. The ponds and wetlands reconnected by this project have great potential to provide high quality habitat for reptiles and amphibians of interest – especially red legged frogs (Rana aurora aurora) and western pond turtles (Clemmys marmorata) – as well as wading and shore birds.

The programmatic nature of this project also requires the collection of baseline and long-term monitoring of invasive flora and fauna of interest, water quality – especially temperature and dissolved oxygen, and geomorphologic changes over time. We will establish GPS and photo-monitoring points to ensure repeatability of data collection, and collect baseline data on water quality and species presence before implementing changes. Baseline data on invasive weeds will be collected before weed control begins. Water quality (WQ) in Mission Lake will be continuously collected using data loggers, beginning in the summer of 2008. Water quality data from Mission Slough will also be collected in the winter and early spring of 2009 once seasonal flooding commences. Following construction, permanent WQ data collection from Mission Slough will commence.

Similarly, fish presence data (baseline and post-implementation) will be collected from these areas during three periods each year: mid to late fall (lowest water levels), early winter (rising water levels), and late winter (highest water levels). Fish traps will also be employed to collect additional data. Fisheries biologists will develop monitoring protocols and train project partners in protocols and data collection. Herpetologists will develop transects and protocols to monitor reptiles and amphibians, then train partners in protocols and data collection. Riverkeeper staff and volunteers will monitor birds and mammals using Riverkeepers' avian monitoring protocols, with additional input from park staff and volunteers.

Changes in geomorphology will be assessed through on-site visits and GIS analysis of aerial photographs (collected each summer through the Farm Service Agency's NAIP program). Since these sites are the basis for a programmatic model, interest in monitoring data and geomorphologic changes over time should be high. Partner agencies, researchers and others will likely supplement monitoring and data collection efforts.

An additional reason for selecting this site is proximity to large population centers. Willamette Mission State Park is located within close proximity to Salem and Portland, and draws students and other visitors interested

in environmental education. The Meyer Memorial Trust has pledged additional project funding for signage and outreach materials describing the project and its outcomes.

R2. Problems to Be Addressed

Provide information specific to the project: a) The specific problem(s) you are addressing; and b) the *root* cause(s) of the problem(s). This description should explain the watershed process or ecosystem function your project proposes to address. **DO NOT describe the project here; you will do so in question #R3.** You may add narrative in addition to the table.

Specific Problem(s)	Root Cause(s) of the Problem
▪ Lack of system complexity ▪ Lack of floodplain connection ▪ Lack of off-channel refugia	System complexity has been greatly reduced throughout the Willamette Basin. All current scientific studies indicate that reconnecting side channels and floodplains to the main channel are among the most effective restoration strategies. Removing man-made barriers to the remnant channel will increase system complexity by reconnecting side-channels and floodplains to the system, provide off-channel refugia and rearing habitat, and allow natural processes to resume.
▪ Remnant dike at inlet to Mission Slough disconnects slough from mainstem Willamette ▪ Culverts under Beaver Island Access Road are not adequate to handle restored flow ▪ Outlet is too small to handle restored flow without negatively impacting nearby Wheatland Ferry	The dike at the inlet disconnects approximately one mile of remnant channel from the mainstem Willamette and from Mission Lake. The failing and undersized culverts under the Beaver Island access road have impeded or completely blocked fish passage and water flow between the remnant channel and Mission Lake. The heavily armored outlet channel restricts flow from Mission Lake during high flow periods, resulting in high water velocities and excessive turbulence. Removing these barriers will restore two miles of remnant channel and their floodplains to the Willamette mainstem while reducing risk to the Wheatland Ferry and providing year-round access to Beaver Island.
▪ Regulatory hurdles	Permitting for reconnectivity projects such as this involves a number of regulatory agencies, including NOAA Fisheries/NMFS, USACE, Oregon DSL, and Oregon DEQ. A programmatic approach leading to a Biological Opinion and permitting would streamline future reconnectivity projects along the mainstem Willamette.

R3. Project Description

Using the table below, provide a description of the project that describes the restoration activities to occur (e.g., direct flow, remove 36" culvert, construct free spanning bridge, place 12 three log clusters between RM 44 and 52, etc.), including a description of the methodologies (e.g. juniper – burning or cutting; tree release – manual or herbicide; etc.) and the equipment planned for use. In addition, describe any Project Management functions/ activities necessary to implement the project (e.g., acquire permits or landowner approval; solicit bids, award contracts, etc.). The degree of detail should match the project complexity and technical difficulty to allow for full evaluation of technical viability. For projects involving multiple sites, be sure to identify and describe them separately, as appropriate. **This is not the place to describe the benefits of the project, but rather the specific elements of the proposed project.** You may add narrative in addition to the table.

Project Element	Proposed Action
Restoration Activity	
Remove invasive weeds	▪ Remove invasive purple loosestrife from approximately 3,200 linear feet of Windsor Slough to prevent contamination of reconnected channel. ▪ Remove invasive weeds, especially Scotch broom and Himalayan blackberry, from 125 acres of riparian, wetland, and meadow habitats. ▪ Weeds will be removed manually and with aquatic label herbicides applied with backpack sprayers.
Excavate inlet dike	▪ Ordinary Low Water (OLW) at the inlet area is 91 feet above mean sea level. Ordinary High Water (OHW) at the inlet is 101 feet. The remnant dike, partially breached by the

	1996 floods, has a low elevation of 95 feet. ▪ Breach inlet dike to approximately 3 feet below OLW to reconnect historic channel to mainstem Willamette River. The breach will have an invert elevation of 88 feet above mean sea level with a bottom width of 25 feet and a length of 325 feet. Sides of the excavation will have a 2:1 slope. Approximately 3,300 cubic yards of material will be removed.
Replace culverts under Beaver Island Road with clear-span bridge	▪ Beaver Island is currently reached by a 1970's era access road with an elevation of 97 feet. Flow beneath the road is limited to three 36 inch diameter corrugated metal culverts (each 54 feet long), with invert elevations of approximately 92 feet above mean sea level. ▪ Replace three corrugated metal culverts under seasonal road with a single free span poured-in-place concrete bridge approximately 60 feet long by 32 feet wide (2 vehicle lanes plus pedestrian/equestrian lane). ▪ Excavate existing road and shoulders to approximately 87 feet invert elevation (final invert elevation and width of excavation to be determined by hydraulic analysis and modeling). ▪ Elevate roadway to bridge using fill from on-site activities. Surface new road with asphalt. ▪ Install barriers between vehicle and pedestrian/equestrian lanes on bridge.
Outlet Option 1: Excavate and widen outlet and replace existing bridge at outlet with longer bridge *NOTE: preferred option will be selected once hydraulic survey and engineering are complete*	▪ Ordinary Low Water (OLW) at the outlet is 87 feet above mean sea level. Ordinary High Water (OHW) at the outlet is 98 feet. The current outlet is crossed by a timber and steel bridge with a width of 12 feet, a span of 31 feet, and an elevation of 100 feet. ▪ Excavate and widen outlet channel to increase flow and reduce turbulence, thereby reducing risk to and impact on operation of the Wheatland Ferry. The new channel will have a bottom width of 35 feet, and an invert elevation of 89 feet, with side slopes of 1.5:1. ▪ In addition, excavate a new 10-foot wide low-flow channel within this larger channel to an invert elevation of 86 feet with 1:1 side slopes extending up to the bed of the slough (i.e., 89 feet). ▪ The excavated channel will extend downstream to the Willamette River and upstream a maximum of 100 feet. Approximately 2,000 cubic yards of material will be removed. ▪ Replace existing bridge with longer span to accommodate changes in channel width. Replace existing bridge with 89 foot span railcar with 13 foot wide timber deck supported on precast concrete abutments. ▪ Excavate gravel bar that has formed in the outlet channel approximately 200 feet upstream of the bridge. ▪ This is a revised version of the Corps' original proposal. Revisions reduce the excavation and armoring of the channel and replace the proposed bridge with a simpler, less expensive bridge.
Outlet Option 2: Breach bank on west side of Beaver Island --	▪ One or more disconnected side channels connect at high water to the Willamette mainstem on the west and appear to connect to the historic channel to the east and south. ▪ If hydraulic modeling supports this action, excavate river bank in one or more locations to improve connectivity between the restored channel and the mainstem. ▪ Small culvert(s) – less than 12 feet wide – may be required to maintain road and trail access. (Trail width is 12 feet, roughly perpendicular to the channels; channel width varies between 6 and 10 feet.)
Outlet Option 3: A combination of options 1 and 2	▪ Option 1 is intended to minimize risk to the Wheatland Ferry. Hydraulic modeling may allow modifications to option 1 if sufficient flow can be obtained through option 2. ▪ The most likely scenario is that option 1 will proceed as outlined above to minimize risk and that option 2 will be implemented to improve connectivity and natural processes.
Outlet Option 4: Excavate new outlet channel and install bridge over excavation	▪ Hydraulic analysis and modeling ***may*** support excavation of a second outlet channel upstream of the Wheatland Ferry to reduce risk to ferry operations, although this is unlikely. ▪ Most likely location of a second channel is approximately 900 – 1,200 feet upriver of current outlet. In this location, a secondary channel would be approximately 1,000 feet long and up to 120 feet wide. Ordinary Low Water (OLW) at this location is approximately 87 feet above mean sea level. Ordinary High Water (OHW) is 98 feet. ▪ Clear and grub vegetation along proposed channel corridor. Vegetation in this area consists of a cottonwood overstory and an understory dominated by Himalayan blackberry. Blackberry can be left on site to compost; cottonwood can be used as LWD on site.

	▪ Excavate new channel to 3 feet below OLW, with a bottom width of 10 feet and 3:1 side slopes. Approximately 50,000 cubic yards of material would be excavated. ▪ Construct a bridge across the new outlet channel, using a railcar design similar to that proposed in option 1. ▪ This is the least desired option as it is the most engineered approach and significantly raises costs.
Install native trees and shrubs	▪ Install 200 live stakes and 400 container plants on area disturbed by construction (~0.5 acres) to prevent erosion as each phase is completed.. ▪ Install 64,000 native bare-root trees and shrubs and 32,000 forbs. ▪ Install browse protection to select native plants (50% of trees & shrubs installed).
Place large woody debris (LWD) on the reconnected floodplain and in the reconnected channel	▪ Use LWD (trees and rootwads) collected on site from construction activities to add complexity to the system and provide additional habitat and refugia. ▪ Most wood collected on site will be deciduous, but will be replaced by natural processes, maintaining complexity over time.
Maintain vegetation with integrated weed management	▪ Spot treat invasive weeds three times per year through Fall, 2011 using aquatic label herbicides applied with backpack sprayers. ▪ Manually cut/pull Scotch broom as required through Fall, 2011. ▪ Replace installed plants as required to maintain 80% survival of installed species by Fall, 2011. (3 years post implementation.) ▪ Monitor conditions and install additional native plants (if required) to replace vegetation lost due to changes in hydrologic conditions.
Project Management Activity	
Pre-program project coordination	▪ Modify US Army Corps of Engineers' 2001 section 1135 project proposed for the Willamette Mission site to address concerns with original design and incorporate new scientific findings. ▪ Design model project for multi-agency/multi-partner coalition (OWEB, OPRD, DSL, DOGAMI, ODFW, NMFS, USACE, Meyer Memorial Trust, Willamette Riverkeeper) resulting in programmatic approach to side channel and floodplain reconnection projects on the Willamette River as well as a programmatic Biological Opinion for such projects.
Hydraulic Study	▪ Conduct on-site surveys of Willamette Mission and Bowers Rock to develop hydraulic models and scenarios of the site for use in engineering design, regulatory permitting, community outreach, and monitoring design.
LIDAR Survey	▪ Conduct high-resolution (+/- 3" vertical accuracy) LiDAR survey of both sites to obtain detailed 3-D imagery of topography for use in hydraulic modeling, engineering design, regulatory permitting, community outreach, and monitoring design.
Biological Assessment and Regulatory Permitting	▪ Develop and submit programmatic Biological Assessment to NMFS to obtain programmatic Biological Opinion for Willamette River side channel and floodplain reconnection projects as part of regulatory process. ▪ Submit joint permit application to DSL and USACE.
Public Outreach and Education	▪ Conduct in-person and mail outreach to nearby landowners and park users to promote two-way communications, address concerns, correct misunderstandings, and incorporate local knowledge. ▪ Hold public meetings and comment period. ▪ Publicize project and benefits through local media and direct mailings. ▪ Develop and post educational signage and brochures (using non-OWEB funds).
Solicit Construction Bids	▪ Solicit bids through public advertising (e.g., DJC), that includes BOLI requirements. ▪ Review bids, including bid and performance bonds, references and BOLI requirements before awarding contract(s). ▪ Require performance bonds be posted within 14 days of contract award.
Develop and implement vegetation, wildlife and water quality monitoring plans.	▪ Set up GPS and photopoint monitoring sites before initiating on-site work. ▪ Monitor vegetation to gauge effectiveness of weed control and native revegetation efforts. ▪ Monitor presence/use of area by salmonids and other fish, reptiles and amphibians, native and migratory birds, beaver and nutria. ▪ Continuously monitor water for temperature and dissolved oxygen. ▪ Obtain baseline data before project implementation, collect data throughout the year

	through Fall, 2012 (and beyond as additional funding permits).
Secure additional funding	▪ Secure additional funds to provide for long-term maintenance and monitoring (as described above), with special attention to becoming a Model Watershed with funding from the Bonneville Environmental Foundation (BEF).

R4. Watershed Benefits

What are the proposed project watershed benefits? While many projects benefit forest or agricultural production, OWEB funding is for fish and wildlife habitat protection and enhancement. Briefly describe how the project will affect watershed functions or ecosystem processes.

This project will reconnect side-channels and floodplains to the mainstem Willamette on large public lands managed by OPRD. Our restoration strategy is to breach man-made barriers to the system and return year-round flow, thereby allowing natural processes to restore hydraulic and geomorphologic functions. The project will include removal of invasive weeds and installation of native plants to provide appropriate riparian and floodplain vegetation for these sites. Large woody debris will be placed in restored channels and floodplains to add complexity and roughness, but natural movement will be allowed (i.e., minimal cabling). Bio-engineered methods (live stakes, fascines, and containerized plants) will be used to stabilize slopes near new construction (e.g., bridges, culverts, breaches, etc.) Long-term monitoring of water quality (especially temperature and dissolved oxygen), as well as changes in plant and animal communities over time, will provide information for future reconnectivity projects, especially as we will collect baseline data before implementing changes.

R5. Project Objectives

What are the proposed project objectives? Provide specific objectives based on the location, size and significance of the project and provide information on how the objectives could be evaluated. The measurements should be able to be reported to document successful implementation. **See the Application Instructions for the distinction between project objectives and achievement of goals.**

Project Element	Specific Objectives	Measure for Evaluation
LiDAR Study	▪ Conduct LiDAR study of project sites	▪ Raw data and 1-meter ESRI Grid of LiDAR dataset for bare-earth and highest hit models
Hydraulic Study, Analysis and Modeling	▪ Conduct hydraulic study of both project sites. Collect field data that includes hydraulic cross sections of the Willamette River and project sites. Collect sections using a total station or GPS unit and incorporate into existing digital elevation models and topographic surveys as well as new LiDAR data (above). Create a 1-dimensional HEC-RAS model of the site. Calibrate roughness coefficients and water surfaces using actual field data results. Fine-tune hydraulic model until it produces water surface elevations similar to actual recorded water surfaces for the Willamette River.	▪ 1-dimensional HEC-RAS model with technical memorandum summarizing results, including inundation, velocity and shear analysis
Project design and Biological Assessment	▪ Project that reconnect historic channels and floodplains at Willamette Mission State Park. Project will address flood risks, impacts on native (especially salmonids) and invasive/non-native species, and impacts on ferry operations.	▪ RFP ready for contracting ▪ Biological Assessment based on studies, modeling and project design capable of supporting programmatic Biological Opinion
Biological Opinion and Permitting	▪ Develop programmatic approach to reconnection projects along the mainstem Willamette. Project design and Biological Assessment should lead to a programmatic Biological Opinion. ▪ Programmatic Biological Opinion leading to permits for work at both sites	▪ Biological Opinion supported by NOAA Fisheries/NMFS, US Army Corps of Engineers, Oregon Dept. of State Lands and Oregon Dept. of Environmental Quality that provides for programmatic approach to similar projects along mainstem Willamette.

		▪ Permits for project implementation.
Breach inlet dike at Mission Slough	▪ Breach inlet dike to an invert elevation 3 feet below Ordinary Low Water ▪ Stabilize slopes with bio-engineered elements	▪ Inlet channel conforming to project engineering
Remove fish passage barrier at Beaver Island access road	▪ Remove Beaver Island access road from historic channel ▪ Cross channel with clear-span bridge with elevated approaches	▪ Restored channel, bridge and road conforming to project engineering
Enlarge outlet from Mission Lake	▪ Widen and deepen existing outlet to Willamette River ▪ Excavate low-flow channel into existing outlet to an invert elevation below Ordinary Low Water ▪ Replace existing bridge with longer span ▪ Excavate gravel bar from outlet channel	▪ Channel and bridge conforming to project engineering
Excavate additional side channels on Beaver Island	▪ Excavate side channels through terraces on west side of Beaver Island to connect Willamette River with remnant channels on the island ▪ If required to maintain access, install 8-12 foot wide bottomless arch culverts under trails	▪ Channel(s) and culvert placement(s) conforming to project engineering
Excavate new outlet channel from Mission Lake Note: unlikely step	▪ If required by new hydraulic analysis and modeling, excavate secondary outlet channel from Mission Lake approximately 9,00 – 1,200 feet upriver of existing channel ▪ Install bridge across channel	▪ Channel and bridge conforming to project engineering
Treat invasive weeds	▪ Treat purple loosestrife (Lythrum salicaria) in Windsor Slough to prevent infestation of newly restored channel ▪ Cut/pull Scotch broom Cytisus scoparius ▪ Treat a total of 125 acres along the restored channel, side channels, wetlands and open meadow ▪ Reduce invasive weeds by 80% after three years	▪ % reduction
Install native wetland and riparian plants	▪ 80% survival after two years	▪ % survival
Monitor use/presence of native and invasive flora and fauna	▪ Monitor native and invasive plants to meet project goals (above) ▪ Monitor use/presence of area by native and invasive fauna of interest	▪ Growing data set to guide this and future projects
Education	▪ Develop and install informative signage	▪ Signs installed on site
Improve recreational access	▪ Improve park user access to Beaver Island (currently cut-off 3-4 months/year) ▪ Improve paddling access ▪ Improve campground use, especially by paddling groups	▪ % increase in park attendance

R6. Project Design

a) Provide a list of qualifications and experience you will require for the project designer. If a project design has been completed, identify the designer and what qualifications and experience they have.

- LIDAR Study: Watershed Sciences (Watershed Sciences is comprised of an interdisciplinary team of researchers and scientists with backgrounds in remote sensing, hydrology, geography, and environmental management. They have developed many of the tools and techniques widely used in the Pacific Northwest today, and are currently participating in research projects focused on the acquisition and use of high-resolution LiDAR data for characterizing stream channel morphology, landscape features and forest inventory.)
- Hydraulic Survey, Analysis and Modeling: River Design Group (River Design Group, Inc. is a private consulting firm specializing in river, stream and wetland restoration projects in the Pacific Northwest and Intermountain West states. Through their focused business strategy, they maintain the highest level of technical expertise and well-trained staff that works exclusively in the river environment. In addition to restoration work, expertise extends to river structures, dam removal, and fish passage. To effectively deal with the interdisciplinary nature of these projects, staff includes hydraulic engineers, fluvial

geomorphologists, hydrologists, biologists, surveyors, and geographic information specialists. Scott Wright, PE, Water Resources Engineer is the lead on this project.)

- Project Design and Engineering: River Design Group
- Biological Assessment: River Design Group, Willamette Riverkeeper and Programmatic Team from NOAA Fisheries/NMFS, US Army Corps of Engineers, Oregon Dept. of State Lands, Oregon Dept. of Environmental Quality

b) Describe the design criteria used or proposed and how those criteria take into consideration natural events and conditions (e.g., culvert design to 100-year flood event, wood placement to readjust with higher than bankfull flows, cultivation to retain at least 75% stubble, 4-strand fence to allow for wildlife passage, etc.).

- Project Design and Engineering will be based upon hydraulic surveys and LiDAR data collected from both sites and used to create a 1-dimensional HEC-RAS model calibrated to field indicators and historical water surfaces such as the 1996 flood. (The original Corps proposal for Willamette Mission also employed a HEC-RAS model. While that model has since been lost, summary data is available in hard copy and will be compared to the new model for further validation.) Inundation, velocity and shear analysis from the model will be used for risk analysis (e.g., flooding of adjacent properties in a 100-year flood event; impacts on Wheatland Ferry, capture of project areas by restored flow, gravel deposition, etc.) and project engineering, including breaching the dike and revetments, bridge design to 100-year flood event, and wood placement to bankfull events.
- Field data collected for the model includes hydraulic cross sections of the Willamette River and the project sites. Sections will be collected using a total station or GPS unit and combined with LiDAR data collected in the fall of 2008 and existing DEMs and topographic data to create a 1-dimensional HEC-RAS model. Calibration of roughness coefficients and water surfaces will be determined based on actual field data results. The hydraulic model will be fine-tuned until the model produces water surface elevations similar to actual recorded water surfaces for the Willamette River. Outputs from the model will include inundation, velocity, and shear analysis.

R7. Design Alternatives

Were alternative designs or solutions considered? ☒ **Yes** ☐ **No**

If yes, explain why the design or approach proposed was chosen. If no, explain why alternative approaches were not explored.
Project design at Willamette Mission is based upon the 2001 Corps proposal, with revisions suggested by reviewers. The Corps proposed to breach the inlet dike, excavate an inlet channel, and armor their work. At one point, they considered a water control structure to regulate flow into the historic channel, but dropped that from the final design. We propose to breach the inlet dike and allow the river to shape its own inlet channel. Design alternatives will be considered once the new hydraulic model is completed

The Corps also proposed replacing the three 36 inch diameter culverts under the Beaver Island Access Road with a single open bottom arch culvert (20 feet wide, 7 feet 4 inches high, and 63 feet long), and elevating the road by two feet. We are proposing to replace the existing road and culverts with a clear-span bridge and elevated approaches over an excavated channel connecting Mission Slough to Mission Lake. This design removes fish passage barriers, maximizes flow through the historic channel, provides a portage-free water trail through the park, and provides year-round access to Beaver Island. In addition, permitting agencies greatly prefer bridges to culverts when approving barrier-removal projects. Final design will be based upon the hydraulic study and modeling.

The Corps engineered changes to the outlet channel, replacing the existing bridge to accommodate the wider channel they planned. They also proposed armoring the altered outlet channel. These changes were intended to reduce risk to operation of the Wheatland Ferry. We are proposing a similar project, but do not intend to armor the channel, and will install a simpler bridge across the outlet since OPRD staff have stated that they do not need a bridge as robust (or expensive) as that proposed by the Corps. We also intend to use the HEC-RAS model to determine changes in the outlet design that may help the ferry operators address gravel deposition problems they are currently encountering.

We are also planning to investigate design alternatives that would provide additional (re)connection between the historic channel, its floodplain, and the mainstem Willamette or breach the revetment upriver from the current outlet to provide a second outlet channel from Mission Lake. The first alternative would improve connection(s) between the mainstem to the west of Beaver Island with one or more small seasonal channels that connect to the river at high flow events. These side channels appear to have a hydraulic connection to the historic channel, but it unclear at this time if these are surface or ground water connections. Connectivity would likely involve minor excavation to improve flow, and the installation of small open arch culverts (less than 12 feet wide) to support the existing service road.

The second alternative, excavation of a new outlet channel from Mission Lake, would only be done if hydraulic analysis and modeling show no other way to mitigate impacts on the Wheatland Ferry. Such a channel would cross Beaver Island approximately 900 – 1,200 upriver of the current outlet channel. In this location, a new channel would be approximately 1,000 feet long and up to 120 feet wide, and would require the excavation of 50,000 cubic yards of material as well as the installation of a new bridge wide enough to span the channel. Presumably, a railcar bridge similar to that proposed for the existing outlet would be used.

R8. Project Schedule

Use the table below to show the anticipated schedule for the project. Add or change the list of project elements to fit your project. **See the Application Instructions for clarification and an example.**

Project Elements	Start Date	End Date	Description
Site Prep – Weed Removal	July '08	June '09	Remove purple loosestrife (Lythrum salicaria) to prevent spread into project site; cut/spray Scotch broom (Cytisus scoparious), Himalayan blackberry (Rubus discolor), and other invasive weeds from project site (~125 acres). Cut/pull broom; spray other weeds with aquatic-label herbicides using backpack sprayers.
Project Monitoring – baseline assessment	July '08	June '09	Establish photo-monitoring and GPS control points. Survey invasive weeds before treatment. Survey fish use (especially salmonids) during low water (late fall), rising water (mid-December) and highest water (mid-winter). Survey for amphibians, reptiles, birds and mammals of interest throughout the year (depending upon life cycles) to collect baseline (i.e., pre-implementation) data on use/presence.
Hydraulic Study	Aug '08	Jan '09	Conduct on-site surveys (Aug '08) to determine bathymetry. Develop hydraulic model of the site, incorporating LiDAR data (see below), to provide various modeling scenarios to determine the approximate flow through the site pre- and post-project. Model will be useful for permitting and floodplain/floodway issues and community outreach.
LiDAR Study	Aug '08	Nov '08	LiDAR study will be conducted in late summer at lowest water levels. Data processing will result in high resolution (+/- 13 cm vertical; 30 cm horizontal accuracy) topo maps and GIS vector data for use in project planning and permitting.
Project Engineering	Nov '09	Jan '09	Use hydraulic model and LiDAR data to engineer excavations and bridge design as well as to perform risk assessment.
Biological Assessment/Opinion	Oct '08	Feb '09	Use hydraulic model and LiDAR data to develop a Biological Assessment (BA) that can serve as a template for a Biological Opinion (BO) to cover all similar reconnection projects on the

			Willamette River.
Public Outreach	Sept '08	Aug '09	Educate and inform public, especially nearby landowners, park users and transportation officials of project. Hold public meetings, engage public in discussion, conduct door to door outreach.
Permit Applications	Jan '09	March '09	Apply for and secure permits from regulatory agencies.
Materials Acquisition	July '08	Nov '11	Acquire water quality monitoring equipment (Aug '08), fish traps (Oct '08), plant materials (Summer '09, Winter '10 and Fall '11).
Bid Solicitation	March '09	April '09	Solicit bids by advertising in the Daily Journal of Commerce for contractors with relevant experience; require performance bonds to ensure project quality and completion.
Contracting	April '09	May '09	Review bids, bonds and references. Select contractor(s).
Construction	June '09	Sept '09	Phase I: replace Beaver Island Access Road/Culvert with clear span bridge and elevated approaches Phase II: widen and lengthen existing outlet channel, including excavation of low water outlet through the channel. Replace existing bridge with longer span. Phase II – Alternative: connect existing side channel(s) to mainstem; install culvert(s) to maintain road access Phase II – Alternative: excavate new outlet channel 1,000 – 1,200 feet upriver of current outlet channel. Install bridge across new outlet. Phase III: breach revetments on west side of Beaver Island Phase IV: breach inlet dike Install cofferdams and other containment devices as necessary during each phase; install bio-engineered erosion control at completion of each phase
Project Inspection	June '09	Sept '09	Inspect each phase of construction and sign-off at completion of each phase
Post Project Implementation Review	Oct '09	Dec '09	Conduct review and publish findings
Project Maintenance	Sept '09	Nov '11	Ensure reduction in targeted weeds by 80% and survival of at least 80% of installed species by November, 2011. Treat invasives three times/year, replant natives, and/or replace browse protection as required to ensure targets are met. Note: long-term maintenance of bridges, roads, and trails will be the responsibility of OPRD
Project Monitoring – ongoing assessment	Sept '09	Nov '12	Use established photo-monitoring and GPS control points; establish new points as necessary. Survey invasive weeds post treatment. Survey fish use (especially salmonids) during low water (late fall), rising water (early winter) and highest water (mid-winter). Survey for amphibians, reptiles, birds and mammals of interest throughout the year (depending upon life cycles) to collect data on use/presence after project implementation.

R9. Project Relationship to Regional Priorities

If the project specifically implements a plan or larger conservation effort, identify the effort and the specific role of this project. Explain whether the project implements a regional plan (e.g., ESA Recovery Plan, Coastal Coho Assessment, NWPCC Subbasin Plan, Groundwater Management Area). Specifically identify the relationship between the proposed project and the OWEB Basin Priorities. Priorities can be found on the OWEB website at: http://www.oregon.gov/OWEB/restoration_priorities.shtml. **(See the Application Instructions for helpful links to various regional plans).**

This project meets all Recommended Conservation Actions specified in the Oregon Conservation Strategy (OCS) for this area (WV-03, Willamette River floodplain)

- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology
- Maintain or restore riparian habitat and ecological function; ensure sufficient habitat complexity for wildlife
- Promote early detection and suppression of invasive weeds

Reconnection projects in the Willamette River floodplain have been prioritized by:

- The Willamette River Basin Planning Atlas (cited by OWEB for projects on the mainstem Willamette)
- The Willamette Restoration Initiative
- Oregon Biodiversity Project Conservation Opportunity Area
- The Nature Conservancy Ecoregion Assessment (and TNC's Willamette Valley Synthesis Map project)
- Willamette Basin Alternative Futures

R10. Other Related Conservation Actions

a) Explain how the project complements other efforts under way or completed in the watershed. Identify other restoration, technical assistance, monitoring, assessment or education projects, conservation actions and ecological protection efforts in the watershed and explain how this project relates to those actions.

This project, located on a large parcel of land owned by OPRD on the Willamette River greenway, is a pilot project for large-scale channel/floodplain reconnection projects on the mainstem of the Willamette. As such, it provides a model for such projects, will result in a programmatic Biological Opinion that can be used for similar projects on the mainstem, meets important restoration goals as defined by the Willamette River Basin Planning Atlas, ODFW, OWEB, TNC and others, and provides public education at sites regularly visited by school groups and others. Further, the monitoring proposed as part of this project will provide baseline (i.e., pre-implementation) and long-term data on use and presence of fish, amphibians, reptiles and birds of interest/concern. Because this project is on the mainstem, it also provides direct benefit to restoration, conservation, and ecological protection projects on the tributaries.

b) If the project is a continuation of previously completed activities, describe the results of the previous project(s) and identify what you have learned from the implementation of similar project(s).

R11. Project Inspection

Identify who will inspect and sign off on the completed project.

Name of Person & Agency/Organization	Telephone Number or Email Address	Project Element to be Inspected
Gerry St.Pierre, Willamette Riverkeeper	503.223.6418 gerry@willamette-riverkeeper.org	Overall project lead
Ryan Sparks	503.393.1172, ext 23 ryan.sparks@state.or.us	Park Manager: inspect roads, trails and bridges
Scott Wright, PE, River Design Group	541.738.2920 swright@riverdesigngroup.net	Hydraulic Survey and modeling Project Engineering, final inspection of all engineered project elements

R12. Educational/Public Awareness Opportunities

Explain whether and how you will raise public awareness about the project (e.g., install a project partner or interpretive sign, write an article for the local paper, lead a site tour for local citizens). **See the Application Instructions for clarification of eligible education and outreach costs.**

Project success depends on public awareness. We will contact landowners with properties adjoining the project site by mail and in person to inform them of project plans and expected outcomes during the summer of 2008. We will also notify park users (equestrians, fishers, cyclists, paddlers, birders, etc.) of planned change and solicit feedback. Public meetings will be advertised and conducted in accordance with rules governing the permitting process; historic information, landowner concerns, and public feedback will be solicited and addressed. We have identified potential (and perceived) risks, and expect to alleviate concerns by sharing data and project design that address risk.

Signage describing the project, its outcomes, and native ecosystems will be developed and installed as part of this project using funds from the Meyer Memorial Trust.

Parks staff estimate a 30% increase in public use of Willamette Mission State Park as the result of improving access to Beaver Island. Staff also estimate in increase in recreation canoeing and use of the tent campground by canoe-in campers.

Willamette Mission State Park, because of its historical significance and proximity to Salem, hosts numerous educational visits each year from area schools and the Straub Environmental Learning Center. Field trips focused on biology and ecology are common here and return visitors will be able to see changes over time. Signage and brochures funded by the Meyer Memorial Trust will improve the educational experience, and the long-term monitoring actions at both sites will provide researches with pre- and post-implementation data on the effects of back-channel and floodplain reconnections.

R13. Project Maintenance

Use the table below to document how the project will be maintained over time. State who will maintain the project. Identify their affiliation and provide contact information.

Name of Person & Agency/Organization	Telephone Number or Email Address	What will be done and for how long?
Gerry St. Pierre, Willamette Riverkeeper	503.223.6418 gerry@willamette-riverkeeper.org	Monitor and maintain project: weed control, survival of installed native plants, use/presence of fish, reptiles, amphibians and birds.
Ryan Sparks, OPRD	503.393.1172, ext 23 ryan.sparks@state.or.us	Park manager: monitor and maintain structures (bridges, etc.), support integrated weed management with in-kind labor by park staff

R14. Budget Development

There are a number of assumptions used to develop any budget. This does not mean you must provide a line by line description of costs. Use this response to provide a clear understanding of what the budget estimate was based on.

a) Explain how costs were determined for the budget elements. Describe if contractor conversations, past projects or other cost figures were used for each major element of the budget. This is particularly important for lump sum elements in the budget. For project management costs describe the time and activities that would be involved.

- Costs for LiDAR acquisition & processing, hydraulic survey & modeling, project engineering, permitting and implementation were determined by contractor conversations, based on their experiences with projects of similar scope.
- Costs for weed control and native plant installation were based on past projects and long-term experience with contractors.
- Costs for monitoring equipment were based on price quotes from dealers.
- Project management costs include only time spent in the following activities: project planning (including meetings with stakeholders, contractors, landowner, etc), project design consultation with engineers and hydrologists, on-site project supervision and management, public outreach, monitoring design and implementation, volunteer training and management.

b) If there are any unusual cost factors, explain them. For example, if the fencing costs are unusually high because of steep, rocky terrain and unroaded access, this is the place to explain the cost elements on the budget page.

- Although general project scope is known, it is impossible to accurately estimate implementation costs until surveys and engineering are complete. Therefore, costs for this project are based on the high end of estimated prices. Actual costs will likely be lower, assuming the studies and engineering support current project design and that project timeline does not change significantly.
- Budget is based upon most expensive scenario for reducing impacts on Wheatland Ferry (option 4, which creates a second outlet channel from Mission Lake approximately 1,000 – 1,200 feet upriver of current outlet). The price difference between this scenario and the most likely scenario (option 2, which modifies the existing outlet, replaces the bridge spanning that outlet) is approximately $300,000.00.
- This project includes an aggressive weed management and revegetation schedule. These elements could be scaled back considerably if necessary. The budget for these items is $694,000, but could be reduced to $150,000 or so if weed management and revegetation are limited to a narrow riparian fringe along the historic channel.

Project Effectiveness Monitoring

ONLY RESPOND TO THIS QUESTION IF YOU ARE PLANNING ON CONDUCTING EFFECTIVENESS MONITORING BEYOND POST-IMPLEMENTATION STATUS REPORTING

R15. Effectiveness Monitoring

If requesting funding to perform effectiveness monitoring, describe the data to be gathered and how it will inform the projects restoration objectives, the monitoring protocols for each objective, data management techniques, and analysis to be conducted. Explain why this project is appropriate for effectiveness monitoring or, if other projects are involved in the monitoring, identify those projects and explain the hypothesis to be tested by the evaluation.

In addition to the description, provide a table similar to the example below.

See the Application Instructions for clarification and an example.

Measuring What	Objective of the Measurement	Frequency and Duration of Measurements	Protocols to be used	Who Will Monitor? (name, affiliation, phone)
Water Quality (dissolved oxygen, temperature)	Determine changes over time	Continuous (via dataloggers)	Equipment manufacturer's protocols	Jason Adams, OPRD Staff, Willamette Riverkeeper
Fish use/presence	Determine changes over time	Three times/year (late fall, early winter, late winter): monitor 6 sites, every 6 hours for 72 hours. Also set fish traps in 3 locations and check daily	TBD	Jason Adams, OSU 541.758.4080
Amphibian use/presence	Determine changes over time, focus on	Varies by species	TBD	David Vesely, Oregon Wildlife Institute, 541.745.5025
Reptile use/presence	Determine changes over time	Varies by species	TBD	David Vesely
Bird use/presence	Determine changes over time	Weekly during migration windows	TBD	OPRD Staff, Willamette Riverkeeper
Mammal use/presence	Determine changes over time	Casual observation of beaver and nutria presence	TBD	OPRD Staff, Willamette Riverkeeper

Do not submit this page if you are not applying for effectiveness monitoring funding.

Section IV
WATERSHED RESTORATION BUDGET

IMPORTANT: Read the application instructions. Attach additional lines, if necessary.

OLD

CAPITAL BUDGET

	A	B	C	D	E	F
Itemize projected costs under each of the following categories.	**Unit Number** (e.g., # of hours)	**Unit Cost** (e.g., hourly rate)	**In-Kind Match**	**Cash Match Funds**	**OWEB Funds**	**Total Costs** (add columns C, D, E)
PRE-IMPLEMENTATION. Must occur *after* the OWEB grant agreement has been fully executed, unless it is a city or county charge for processing the Land Use form. OWEB funds will be disbursed only upon receipt of all required permits and licenses.						
Project Coordination (Riverkeeper)	200 hrs	50		10,000		10,000
Project Management (Riverkeeper)	60 hrs	70		4,200		4,200
		SUBTOTAL (1)		14,200		14,200
PROJECT MANAGEMENT. Includes *staff or contractors* who coordinate project implementation. Line items should identify who will be responsible for project management and their affiliation.						
Project Coordination	2000 hrs	50		34,000	66,000	100,000
Project Management	120 hrs	70		2,400	6,000	8,400
		SUBTOTAL (2)		36,400	72,000	108,400
IN-HOUSE PERSONNEL. Includes *only* Applicant employee costs and the portion of their time devoted to this project.						
Photo-point & GPS set-up	48 hrs	50		800	1,600	2,400
Monitoring activities	426 hrs	50		7,000	14,300	21,300
		SUBTOTAL (3)		7,800	15,900	23,700
CONTRACTED SERVICES. Labor, supplies, and materials to be provided by non-*staff* for project implementation.						
Hydraulic Study & Modeling (Mission)	1 LS	36,000		36,000		36,000
Hydraulic Study & Modeling (Bowers)	1 LS	36,000		36,000		36,000
LiDAR Study (both sites)	1 LS	27,500		27,500		27,500
Bio Assessment & Permitting	1 LS	42,500			42,500	42,500
Project Engineering @ Mission	1 LS	30,000			30,000	30,000
Excavate Inlet	1 LS	55,000			55,000	55,000
Remove culverts at access road, excavate channel, and install bridge	1 LS	275,000		75,000	200,000	275,000
Excavate new outlet from Mission Lake and install bridge	1 LS	450,000		150,000	300,000	450,000
Excavate gravel bar near existing Mission Lake outlet	1 LS	10,000		3,500	6,500	10,000
Install culverts on side channels to mainstem	3 LS	8,000		8,000	16,000	24,000
Install culverts beneath bike path	2 LS	6,000		4,000	8,000	12,000
Cut invasive weeds	80 acres	600	7,300	8,700	32,000	48,000
Spray invasive weeds	625 hrs	300	7,300	60,000	120,200	187,500
Spray invasive weeds	375 hrs	250	7,300	28,000	58,450	93,750
Spray invasive weeds	615 hrs	225	7,300	45,000	86,075	138,375
Cut & install live stakes	200 each	0.50			100	100
Install containerized native plants	400 each	1.25			500	500
Install browse protection	32,400 ea	0.50		5,400	10,800	16,200
Install bare-root native plants	64,000 ea	0.50		10,000	22,000	32,000
Install forbs	32,000 ea	0.50		5,000	11,000	16,000
Develop & produce signs and other educational materials	1 LS	4,500		4,500		4,500
		SUBTOTAL (4)	29,200	506,600	999,125	1,534,925

TRAVEL. Mileage, per diem, lodging, etc. Must use current State of Oregon rate.						
Mileage	16,000 mi	$0.505			8,080	8,080
		SUBTOTAL (5)			8,080	8,080
SUPPLIES/MATERIALS. Refers to items that typically are "used up" in the course of the project. Costs to OWEB must be directly related to on-the-ground work.						
Containerized native plants	400 ea	3.50		400	1,000	1,400
Bare-root native plants	64,000 ea	1.00		21,000	43,000	64,000
Browse protection	32,400 ea	0.50		5,500	10,700	16,200
Native forbs	32,000 ea	0.50		5,500	10,500	16,000
		SUBTOTAL (6)		32,400	65,200	97,600
CAPITAL EQUIPMENT. List equipment costing only **$250 or more per unit**. Useful life of *capital* equipment is for the duration of project and will be used only for this project **(see next page for Non-Capital Equipment).**						
Hach Hydrolab MS5	6 ea	6,500		13,000	26,000	26,000
		SUBTOTAL (7)		13,000	26,000	26,000
EFFECTIVENESS MONITORING. This only applies if you are conducting Effectiveness Monitoring ***(see Application Instructions and R15)***.						
Fauna Monitoring – Year 1	8,500/yr			2,500	6,000	8,500
Fauna Monitoring – Year 2 - 5	20,500/yr			27,000	55,000	82,000
		SUBTOTAL (8)		29,500	61,000	90,500
CAPITAL SUBTOTAL [Add all subtotals, (1-8) above]			29,200	639,900	1,247,305	1,916,405

NON-CAPITAL BUDGET

EDUCATION/OUTREACH. Refers to informational and promotional activities associated with the project.						
Public Outreach	80 hrs	50			4,000	4,000
Public Outreach Management	24 hrs	70		1,680		1,680
Sign Installation	10 hrs	50		500		500
SUBTOTAL (9)				2,180	4,000	6,180
EQUIPMENT. List equipment costing only **$250 or more per unit**. Refers to items with a useful life of generally 2 years or more.						
SUBTOTAL (10)						
NON-CAPITAL TOTAL [Add two subtotals, (9-10) above]				2,180	4,000	6,180

FISCAL ADMINISTRATION

Not to exceed 10% of the Capital Subtotal (1-8) and the Non-Capital Total (9-10). Refers to costs associated with accounting; auditing (fiscal management); contract management (complying with the terms and conditions of the grant agreement); and fiscal reporting expenses for the OWEB grant, including final report expenses for the grant.

FISCAL ADMIN. Compute by adding the **Capital Subtotal** and **Non-Capital Total** and multiplying both by 0.10 or less.						
SUBTOTAL (11)				38,525	76,830	115,355
POST-IMPLEMENTATION STATUS REPORTING. Costs associated with annual reporting requirements typically required for each grant (***see Application Instructions***).						
5 years reporting	2,000/yr			3,000	7,000	10,000
	/yr					
SUBTOTAL (12)				3,000	7,000	10,000
CAPITAL TOTAL [Add the two Subtotals in this Fiscal box (11-12) to the Capital Subtotal from (1-8) above]			29,200	681,425	1,331,135	2,041,760

BUDGET TOTAL

BUDGET TOTAL [Add Non-Capital Total and Capital Total, from above]	29,200	683,605	1,335,135	2,047,940

ATTACHMENT A

MATCH FUNDING FORM

Document here the match funding shown on the budget page of your grant application

OWEB accepts all non-OWEB funds as match. An applicant may not use *another OWEB grant* to match an OWEB grant. However, an applicant who benefits from a pass-through OWEB agreement with another state agency, by receiving either staff expertise or a grant from that state agency, may use those benefits as match for an OWEB grant. (Example: A grantee may use as match the effort provided by ODFW restoration biologists because OWEB funding for those positions is the result of a pass-through agreement).

At the time of application, match funding does not have to be *secured*, but you must show that at least 25% of match funding has been *sought*. On this form, you do not necessarily need to show authorized signatures ("secured match"), but the more match that is secured, the stronger the application. Identify the type of match (cash or in-kind), the status of the match (secured or pending), and either a dollar amount or a dollar value (based on local market rates) of the in-kind contribution.

If you have questions about whether your proposed match is eligible or not, visit our website at http://www.oregon.gov/OWEB/GRANTS/grant_app_materials.shtml, or contact your local OWEB regional program representative (contact information available in the instructions to this application).

Project Name: Willamette Mission Programmatic Reconnection Project Applicant: Willamette Riverkeeper

Match Funding Source	Type (√ one)	Status (√ one)*	Dollar Value	Match Funding Source Signature/Date*
Meyer Memorial Trust	☒ cash ☐ in kind	☐ secured ☒ pending	$654,605.00	
NOAA/American Rivers	☒ cash ☐ in kind	☒ secured ☐ pending	$29,000.00	
OPRD	☐ cash ☒ in kind	☒ secured ☐ pending	$29,200.00	
	☐ cash ☐ in kind	☐ secured ☐ pending		
	☐ cash ☐ in kind	☐ secured ☐ pending		
	☐ cash ☐ in kind	☐ secured ☐ pending		
	☐ cash ☐ in kind	☐ secured ☐ pending		
	☐ cash ☐ in kind	☐ secured ☐ pending		

* **IMPORTANT:** If you checked the "Secured" box in the status Column for any match funding source, you must provide either the signature of an authorized representative of the match source in the final Column, or attach a letter of support from the match funding source that specifically mentions the dollar amount you show in the Dollar Value Column.

ATTACHMENT B

LAND USE INFORMATION FORM

This information is needed to determine if the proposed project complies with statewide planning goals and is compatible with local comprehensive plans (ORS 197.180). The form must be submitted before OWEB releases project funds. OWEB will release project funds only if the project either is not regulated by, or is compatible with, the local comprehensive plan and zoning ordinance. If a project is regulated by the local comprehensive plan and zoning ordinance, OWEB will void grant agreements for projects the county determines to be incompatible with the local comprehensive plan and zoning ordinance. If the county requires additional local approvals for a project regulated by the local comprehensive plan and zoning ordinance, OWEB will not release project funds until these conditions are satisfied.

1. TO BE COMPLETED BY THE APPLICANT/GRANTEE

Applicant/Grantee Name: Willamette Riverkeeper

Project Name: Willamette Mission Programmatic Reconnection Project

2. TO BE COMPLETED BY CITY/COUNTY OR TRIBAL PLANNING OFFICIAL

Complete this section only after section 1, above, has been completed. Check the box below that applies:

☐ This project is not regulated by the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is compatible with the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is not compatible with the local comprehensive plan and zoning ordinance.

☐ Compatibility of this project with the local planning ordinance cannot be determined until the following local approvals are obtained:

_____ Conditional Use Permit
_____ Plan Amendment
_____ Other
_____ Development Permit
_____ Zone Change

An application has ____ has not ____been made for the local approvals checked above.

_____ _____

* Signature of Local Official — Date

Print Name: _____ Phone: _____

Title: _____ Email: _____

Must be an authorized signature from your local City/County or Tribal Planning Department, regardless of which box is checked above.

ATTACHMENT C

ACKNOWLEDGEMENT OF PUBLIC RECORD INFORMATION

OAR 695-005-0030 (4) states that "All applications that involve physical changes or monitoring on private land must include a landowner signature signifying their approval and understanding that all monitoring information obtained on their property is public record. An explanation must accompany the application if any of the information required on the application cannot be provided. The landowner's signature will be required prior to the release of the grant agreement if the application is approved for funding."

Therefore, EITHER the Applicant must sign and date in the "For the Applicant" section below, OR all private landowners participating in the project must complete this form at the application stage (use additional pages, if necessary) by signing in the "For the Landowner(s)" section below.

The project will occur on (check one):

☒ Public land only (STOP: No need to complete the rest of the form)

☐ Private land only ☐ Public and private land (If you check either of these boxes, complete either of the boxes below)

EITHER

For the Applicant: I am unable to secure all landowner signatures at this time as not all landowners have been identified at the time of application. I understand that should OWEB fund this project, that OAR 695-005-0030 (4) requires me to secure all participating private landowner signatures prior to the release of an OWEB grant agreement for this project.

_____ _____

Applicant Signature Date

OR

For the Landowner(s): By my signature below, I certify my understanding and approval that should the Oregon Watershed Enhancement Board fund part, or all, of this proposal, that all monitoring information obtained on my property as a result of this project is public record. I understand that if I refuse to comply with the terms of this form, I will jeopardize my ability to receive OWEB compensation for my participation in this project.

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

ATTACHMENT D

RESTORATION METRICS FORM

OWEB receives a portion of its funds from the federal government and is required to report how its grantees have used those funds. Complete both sections of the form below as they apply to your project. The information you provide is used for federal reporting purposes.

Section 1 Project Overview

Answer all five questions below, even if you have answered a similar question in a previous section in the grant application.

1. **Land Use Setting: CHECK ONE BOX ONLY.**

☐ **Urban/Suburban/Exurban** *(Projects located within urban growth boundaries or rural residential areas)*	☒ **Rural** *(Projects located outside urban growth boundaries or rural residential areas.)*

2. **Dominant Watershed Setting: CHECK ONE BOX ONLY.** Example: Your project involves managing erosion in the upland area with some erosion control extended to the riparian area. Because most of the work is to occur in the upland area, you would check only the Upland box below.

☐ **Estuary** *(where freshwater meets and mixes with saltwater of ocean tides.)*	☐ **Riparian** *(adjacent to a water body, within the active floodplain.)*
☒ **Instream** *(below the ordinary high-water mark or within the active channel — includes fish passage.)*	☐ **Upland** *(above the floodplain.)*
	☐ **Groundwater** *(Projects that recharge groundwater or primarily affect the subsurface water table.)*
☐ **Wetland** *(areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.*	

3. **Total Acres Treated:** 125 **Total Stream Miles Treated:** 3

4. **Project Priority Identification:** Name the primary watershed/subbasin plan or assessment in which this project type is identified as a priority. **See Application Section III, question #R9.**

   Oregon Conservation Strategy: WV-03, Willamette River floodplain

5. **Project Monitoring:** Identify monitoring activities planned. Check as many boxes as apply. **See Application Section III, question #R15.**

☒ Fish presence/absence/abundance/distribution survey(s)	☒ Riparian vegetation (Presence/Absence)
☐ Instream Habitat surveys	☒ Spawning surveys
☐ Macroinvertebrates	☐ Upland vegetation (Presence/Absence)
☒ Noxious weed (Presence/Absence)	☒ Water quality
☒ Photo points	☐ Water quantity
☒ Other (explain): Reptile, Amphibian, Avian presence/absence/abundance/distribution surveys	

Section 2 Project Activities

Provide values for each Project Activity applicable to your application. Leave blank any Project Activity or metric line that is not appropriate to your application. All data are pre-project and are therefore proposed, not completed.

Fish Passage Improvement Projects: *Projects that affect or provide fish migration. For partial barriers, include total miles made accessible by the project.* Check all proposed activities.

☐ Install fish passage structure *(e.g., fish ladder, fishway, etc.)*	☐ Removal of stream crossings
☒ Remove/replace culverts	☐ Removal of irrigation/push up dams
☒ Other (explain): Breach dike and revetment	

3 Number of fish passage blockages removed or improved

1 Estimated miles of stream made accessible by removal of barriers *other* than culverts

1 Estimated miles of stream made accessible by the improvement or removal of culverts (i.e., record the miles of stream to the next barrier or the extent of fish use)

Water Quality Projects: *Projects that result in an improvement of water quality parameters.* Check all boxes that apply:

☐ Bacteria	☐ Nutrients (name):	☒ Temperature
☒ Dissolved Oxygen	☒ Pesticides	☐ Toxics
☐ Heavy Metals (name):	☐ pH	☒ Turbidity
☒ Nitrates	☒ Phosphorus	
☐ Other (explain):		

Instream Habitat Projects: *Projects that increase or improve the physical conditions within the stream environment to provide needed habitat conditions.* Check all proposed activities.

☐ Bank stabilization	☐ Channel reconfiguration	☒ Large wood placement
☐ Boulder placement	☐ Deflectors/barbs	☒ Off-channel habitat
☐ Carcass placement	☒ Floodplain connectivity	☐ Spawning gravel placement
☒ Other (explain): Side channel connectivity		☐ Weirs/grade control

0.5 Estimated miles of stream to be stabilized (i.e., to be bioengineered or engineered to resist the erosive forces of flowing water). *Stream sides treated* ☐ one ☒ two (Do not double count miles if a second side was treated)

0 Estimated miles of stream to be treated that **are not** bank stabilization. Count one side of the stream only.

TBD Pieces of wood per mile.

Riparian Habitat Projects: *Projects above the ordinary high-water mark of the stream and within the floodplain of the stream.* Check all proposed activities.

☐ Beaver management	☐ Manage sediment inputs	☐ Riparian habitat protection
☐ Conservation grazing management	☒ Non-native/noxious plant control	☐ Vegetation management (specify):
☒ Floodplain nurse log placement	☐ Riparian fencing	☐ Voluntary tree retention
☐ Manage nutrient inputs	☒ Riparian planting	☐ Water gap development
☐ Off-stream livestock water development		
☐ Other (explain):		

60 Estimated riparian acres to be planted.

60 Estimated riparian acres to be treated for non-native/noxious plant species.

60 Estimated total riparian acres to be treated.

3 Estimated miles of riparian streambank to be treated. *Stream sides treated* ☒ one ☐ two (Do not double count miles if a second side was treated)

Upland Habitat Projects: *Projects implemented above the floodplain.* Check all proposed activities.

☐ Conservation tillage	☐ Reduction of nutrient inputs	☐ Sediment control basins
☐ Grazing management	☐ Restore historic natural habitats	☐ Terracing
☐ Non-native/noxious plant control	☐ Upland habitat protection	☐ Upland erosion control; planting/seeding
☐ Reduction of fuels	☐ Upland livestock water development	
☐ Vegetation management (e.g., juniper control)		
☐ Other (explain):		

_____ Estimated total acres of upland habitat to be treated for non-native/noxious species.
_____ Estimated total acres of upland habitat to be treated.
_____ Estimated number of livestock watering sites.

Estuarine Habitat Projects: *Projects that result in improvement or increase in the availability of estuarine habitat.* Check all proposed activities.

☐ Dike breaching/removal	☐ Non-native/noxious plant control	☐ Tide gate modification
☐ Estuarine channel modification	☐ Estuarine habitat protection	☐ Tide gate removal
☐ Estuarine habitat creation	☐ Removal of existing fill material	
☐ Other (explain):		

_____ Estimated total estuarine acres to be treated for non-native/noxious plant species.
_____ Estimated total acres to be reconnected to the estuary.
_____ Estimated total estuarine acres to be treated.

Wetland Habitat Projects: *Projects designed to create or improve wetland areas.* Check all proposed activities.

☐ Manage nutrient inputs	☒ Vegetation planting	☐ Wetland habitat enhancement
☐ Manage sediment inputs	☐ Wetland creation (from upland)	☐ Wetland habitat protection
☒ Non-native/noxious plant control	☒ Wetland restoration (reestablishment of hydrology)	
☐ Other (explain):		

30 Estimated total wetland acres to be treated for non-native/noxious plant species
_____ Estimated total wetland acres created (new wetland created from uplands)
30 Estimated total wetland acres restored (wetland hydrology reintroduced to a drained site)
30 Estimated total wetland acres enhanced (existing wetland improved to benefit function)

Road Projects: *Projects designed to improve road impacts to watersheds.* Check all proposed activities.

☐ Road drainage system improvements	☐ Road sediment and delivery control
☐ Road obliteration/decommissioning	☐ Road surface improvement
☐ Road reconstruction	☒ Other (explain): Replace seasonal road with elevated bridge

0.25 Estimated miles of road to be treated.

Water Management Projects: *Projects designed to improve water efficiency, quantity, and timing within the watershed.* Check all proposed activities.

☐ Convert gravity diversion to pumps or infiltration galleries	☐ Irrigation systems for improved water conservation	☒ Recharge groundwater/aquifer
☒ Create off-channel flood storage	☐ Irrigation systems for improved water quality	☐ Reduce water loss in irrigation delivery
☐ Install storm water runoff treatment	☐ Protect instream flow	☒ Other (explain): improve hyporheic flow

_____ Estimated amount of water (cubic feet per second) returned during the critical water period, April-October.
_____ Estimated number of acres to be treated for irrigation system improvements.

APPLICATION CHECKLIST

Instructions: Use this form as an important cross-check to ensure that your application is complete. An incomplete application will jeopardize your application's review.

General

- ☑ Only one copy of the application is included with the packet (other applications should be sent separately)
- ☑ The application and attachments are on 8 ½ x 11" paper
- ☑ The application and attachments are single-sided and single-spaced
- ☑ The application and attachments are not stapled or bound (sets of color photos and color maps excepted; see check box immediately below)
- ☑ Where color photos or color maps are provided, I have included 25 copies of each; and if there are multiple sets, they are collated and stapled into 25 separate packets (no other documents or attachments are stapled).

Section I – Applicant Information

- ☑ All questions in this section have been answered
- ☑ The OWEB Dollars Requested and the Total Project Cost mirror the totals shown on the budget page
- ☑ The project location is complete
- ☑ All contact information — for the Applicant and fiscal agent — is complete and current

Section II – Project Information

- ☑ All questions in this section have been answered

Section III – Specific Restoration Project Activity

- ☑ All applicable questions in this section have been answered
- ☑ Make sure that you have made an informed distinction between Effectiveness Monitoring and Post-Project Status Review.

Section IV - Budget Page

- ☑ Columns A and B have been completed, where appropriate
- ☑ Fiscal Administration does not exceed 10% of the OWEB subtotal (subtotal row, Column E)
- ☑ The totals shown in the last row add up and are accurately reflected in Section I of the application

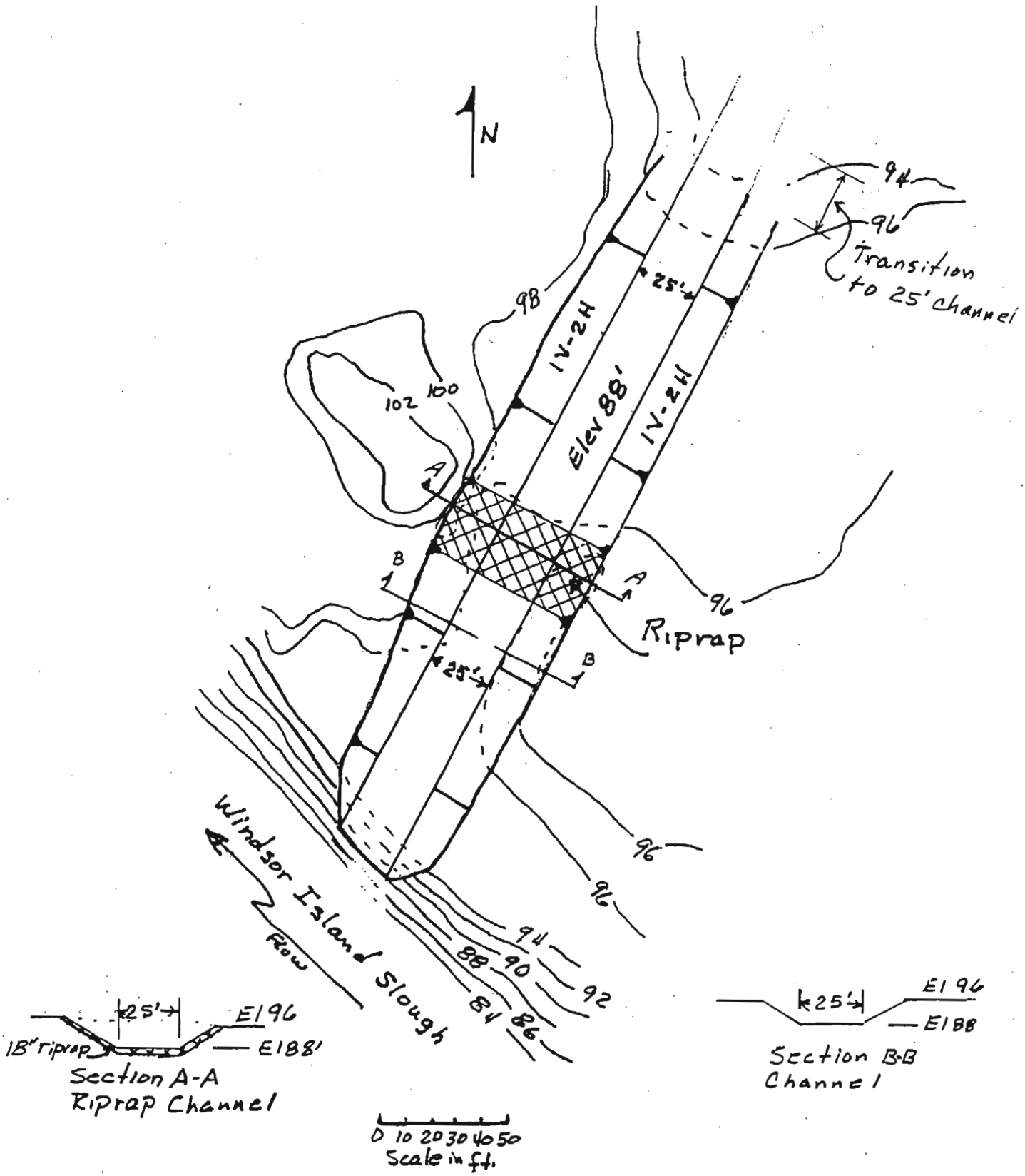
Supplemental Information

Required Attachments

- ☑ ATTACHMENT A - Match Funding form – show that at least 25% match has been sought (authorized signatures are not required at the application stage, but are strongly encouraged)
- ☑ ATTACHMENT B - Land Use form (required only for applications involving on-the-ground activities to ensure compatibility with the local comprehensive plans and zoning ordinances) — completed as relevant, signed, and dated by local official
- ☑ ATTACHMENT C – Acknowledgement of Public Record Information form – completed, signed, and dated
- ☑ ATTACHMENT D - Restoration Metrics form — completed, as relevant

Optional Attachments

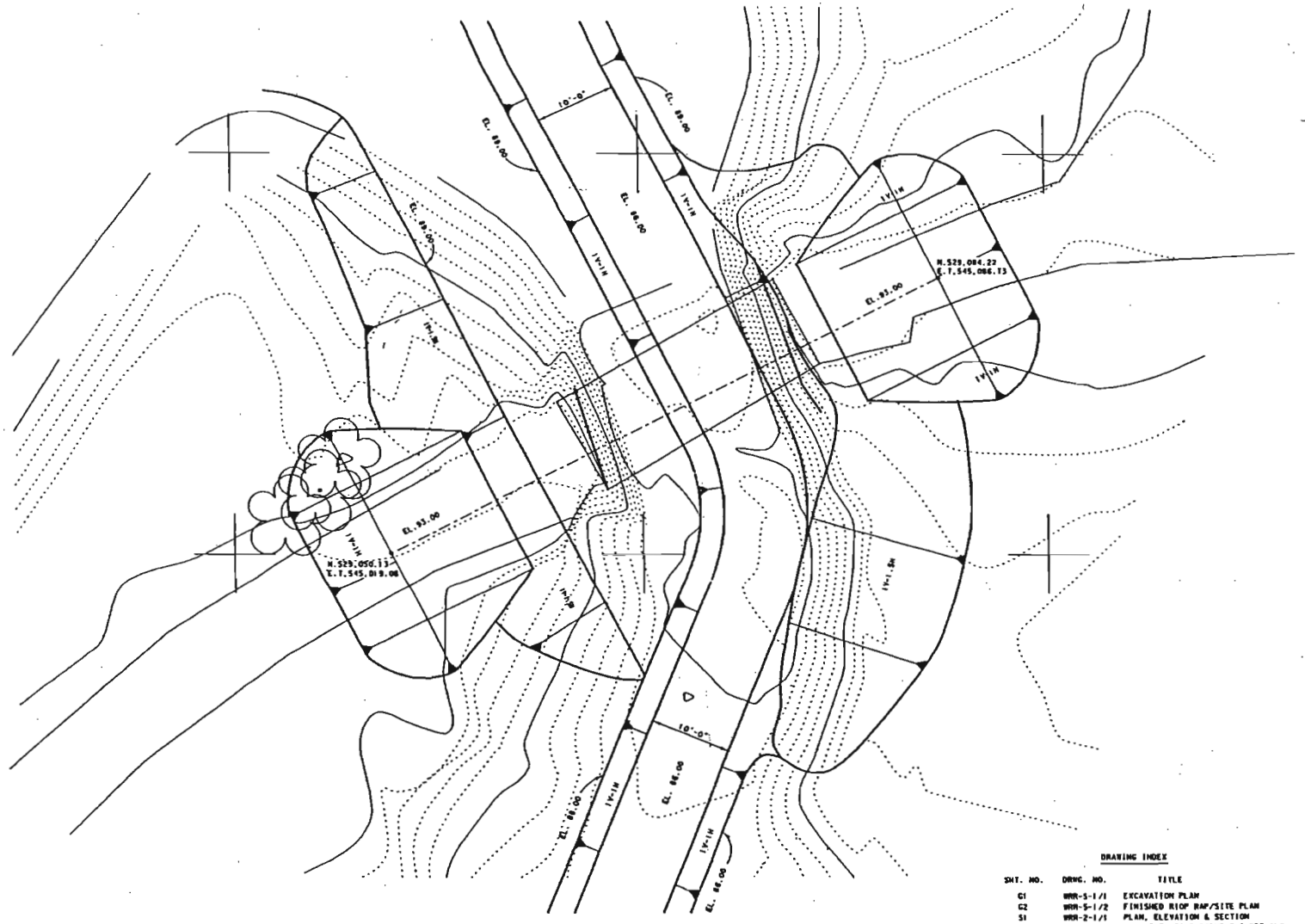
- ☑ Project Maps
- ☐ Preliminary Project Designs
- ☐ Photographs
- ☑ Letters of Support from key project partners or others, as appropriate.



2001 USACE Design - may be modified

Willamette Mission State Park – 1135

Upstream Plug Excavation Plan



REPLACEMENT OUTLET BRIDGE EXCAVATION PLAN

SCALE: 1" = 10'

10' 0 10'

DRAWING INDEX

SHT. NO.	DRWG. NO.	TITLE
G1	WRR-S-1/1	EXCAVATION PLAN
G2	WRR-S-1/2	FINISHED RIOP RAP/SITE PLAN
S1	WRR-2-1/1	PLAN, ELEVATION & SECTION
S3	WRR-2-1/2	ABUTMENT REINFORCEMENT & DETAILS

INFORMATIONAL DRAWINGS

DRWG. NO.	TITLE
BR442	160 PRECAST PRESTRESSED SLAB
BR445	STANDARD PRECAST PRESTRESSED BOXES & SLABS
BR450	STANDARD PRECAST PRESTRESSED CONCRETE SLAB
BR250	PEDESTRIAN RAIL ON SIDEWALK MOUNTED CONCRETE PARAPET

US Army Corps of Engineers
Portland District

Description | Date | Revision

Designed by: A. HANNAH
Drawn by: M. PHILLIPS
Checked by: J. HUNT
Submitted by:
Date: 23 MAY 2001
CADD File Name: 01.DGN
Supervisory Manager: D. CAMBLE

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
PORTLAND, OREGON

WILLAMETTE RIVER
OREGON
WILLAMETTE MISSION STATE PARK
ECOSYSTEM RESTORATION
REPLACEMENT OUTLET BRIDGE
GEOTECHNICAL

EXCAVATION PLAN

DRAWING STATUS:
BCOE

DRAWING NO.
WRR-S-1/1

SHEET
01

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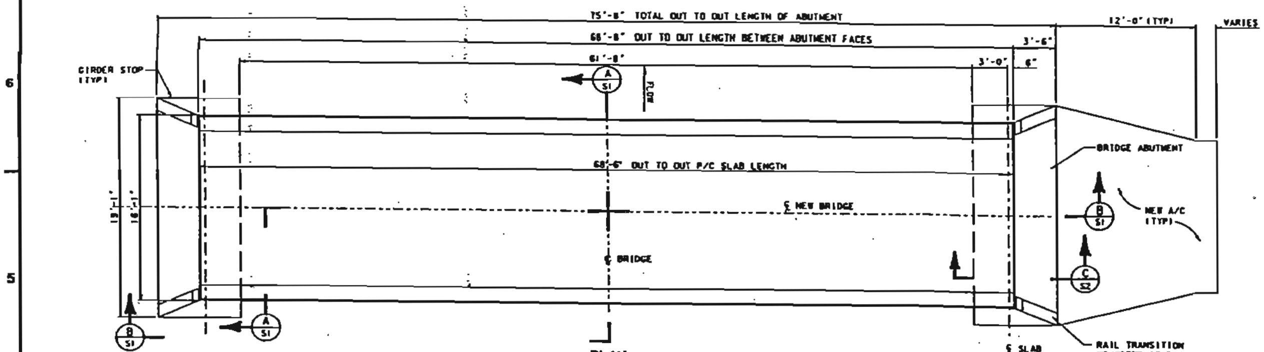
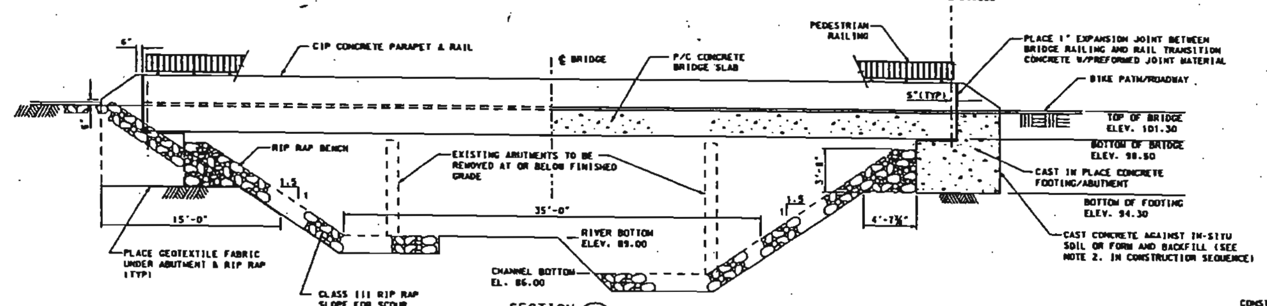
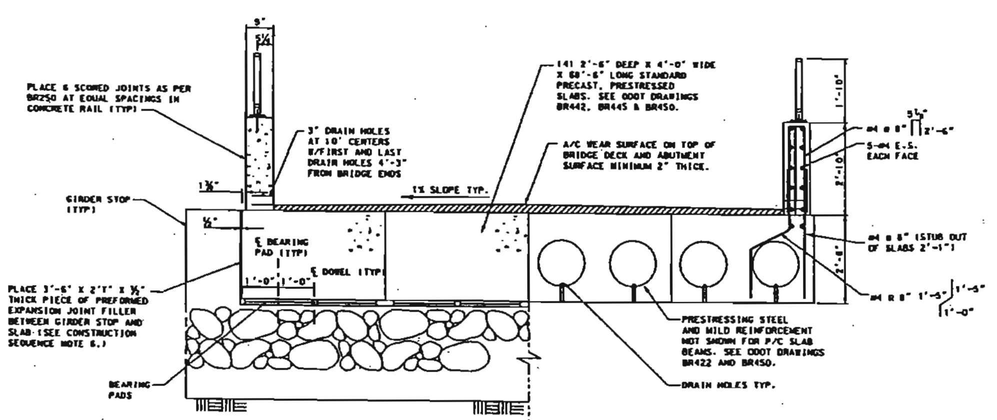
2001 USACE DESIGN - MAY BE MODIFIED



PLAN



SECTION B/S1
SCALE: ⅛" = 1'-0"



SECTION A/S1
SCALE: ⅜" = 1'-0"

SCALE: ⅛" = 1'-0"
SCALE: ⅜" = 1'-0"

GENERAL NOTES:

1. PRECAST, PRESTRESSED CONCRETE SLABS SHALL BE CONTRACTOR DESIGNED AND SHALL BE DESIGNED FOR ALL DEAD LOADS AND AASHTO HS20 TRUCK OR LANE LOADING W/15% IMPACT. EACH INDIVIDUAL SLAB SHALL BE DESIGNED FOR A MINIMUM OF 0.333 LANES OF LIVE LOAD. SEE "DESIGN ASSUMPTIONS" AND "DESIGN NOTES" ON ODOT DWG. BR450 FOR MORE ON LOADINGS AND DESIGN.
2. CAST IN PLACE CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
3. RAIL TRANSITION CONCRETE SHALL HAVE THE SAME CROSS SECTION DIMENSIONS AND SIMILAR REINFORCEMENT AS THE CIP PARAPET CONCRETE.
4. ALL REINFORCING STEEL BARS SHALL CONFORM TO ASTM A615. GRADE 60.
5. SEE INFORMATIONAL ODOT DRAWINGS BR422, BR445, BR450, BR250 FOR PRECAST PRESTRESSED SLABS AND RAILING. THESE STANDARD DRAWINGS ARE IN METRIC.

ABBREVIATIONS:

A/C	= ASPHALTIC CONCRETE
℄	= CENTERLINE
CLR	= CLEAR
C.J.	= CONSTRUCTION JOINT
DWG.	= DRAWING
⌀	= DIAMETER
EA.	= EACH
E.S.	= EQUAL SPACE
NO.	= NUMBER
O.C.	= ON CENTER
P/C	= PRECAST
U.N.O.	= UNLESS NOTED OTHERWISE

LEGEND:

COMPACTED SUBGRADE
EXISTING FILL
GROUT
NEW CONCRETE
RIP RAP
ASPHALT

CONSTRUCTION SEQUENCE:

1. DEMOLISH AND REMOVE EXISTING BRIDGE AND ROADWAY. DEMOLISH AND REMOVE BOTH EXISTING ABUTMENTS DOWN TO OR BELOW FINISHED GRADE (EL. 86.00 OR EL. 89.00). SEE SECTION B/S1
2. THE CONTRACTOR SHALL ATTEMPT TO EXCAVATE THE SOIL FOR THE VERTICAL ABUTMENT FACES AT A NEAR VERTICAL PLANE AND CAST THE ABUTMENT CONCRETE DIRECTLY AGAINST THE IN-SITU SOIL FACES. IF THIS CANNOT BE ACCOMPLISHED, THEN THE CONTRACTOR MAY SLOPE THE EXCAVATION FACES THEN FORM AND BACKFILL THE VERTICAL ABUTMENT FACES. THE BACKFILL SHALL BE COMPACTED WITH LIGHT-WEIGHT TAMPERS AS PER SPECIFICATION SECTION 02500.
3. PLACE ABUTMENT CONCRETE UP TO EL. 96.72.
4. PLACE GROUT PADS AND INSTALL ELASTOMERIC BEARING PADS. INSTALL PRECAST PRESTRESSED SLABS. INSTALL, TENSION AND GROUT TIE RODS.
5. DRILL 2" DIAMETER HOLES INTO ABUTMENT FOR DOWELS. INSTALL DOWELS W/PLATE WASHERS AND NUTS. PLACE MASTIC IN 4" SQUARE DOWEL RECESS ON TOP OF PLATE WASHER. DO NOT GROUT BETWEEN DOWEL AND 2" DIAMETER HOLE.
6. PLACE 1" THK. EXPANSION JOINT AND ½" THK. SIDE/GIRDER STOP PREFORMED JOINT FILLER AT ENDS OF SLABS AND SIDES OF SLABS, RESPECTIVELY.
7. PLACE THE REST OF ABUTMENT CONCRETE UP TO EL.101.05.
8. PLACE CONCRETE FOR PARAPET. INSTALL METAL PEDESTRIAN RAILING.
9. REMOVE ENOUGH OF EXPANSION JOINT PREFORMED JOINT FILLER TO MAKE ROOM FOR BACKER ROD AND JOINT SEALANT. INSTALL BACKER ROD AND POURED JOINT SEALANT INTO EXPANSION JOINT.
10. PLACE A/C ONTO BRIDGE DECK AND ABUTMENT. PLACE A/C ONTO AREAS OF ROADWAY THAT HAVE BEEN DEMOLISHED AND JOIN UP TO EXISTING ROADWAY (SEE SPECIFICATION SECTION 02513).
11. SAW CUT EXPANSION JOINT AND SOIL ABUTMENT INTERFACE.

US Army Corps of Engineers
Portland District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
PORTLAND, OREGON

Designed by: J. HURT | Date: 22 MAY 2001
Drawn by: M. PHILLIPS | CADD File Name: S1.DGN
Checked by: M. SAKKA | Technical Manager: R. GAMBLE
Submitted by: DONALD R. CHAMBERS, P.E. Chief, Structural & Arch. Design

WILLAMETTE RIVER — OREGON
WILLAMETTE MISSION STATE PARK
ECOSYSTEM RESTORATION
STRUCTURAL — REPLACEMENT OUTLET BRIDGE
PLAN, ELEVATION, & SECTION

DRAWING STATUS: BCOE
DRAWING NO. WRR-2-1/1
SHEET S-1

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2001 USACE DESIGN - MAY BE MODIFIED

Oregon
Theodore R. Kulongoski, Governor

Parks and Recreation Department
Parks and Prisons Program
10991 Wheatland Road NE
Gervais, OR 97026
(503) 393-1172
Fax (503) 393-8863

March 28, 2008

Willamette Riverkeeper
1515 SE Water Avenue, #102
Portland, OR 97214

RE: Restoration Project Concurrence

Oregon Parks and Recreation Department (OPRD) is the owner and manager of Willamette Mission State Park, Bowers Rock State Park, and Molalla River State Park. Willamette Riverkeeper is an active partner in restoring these OPRD properties.

OPRD fully supports and concurs with Riverkeeper's restoration projects at these and other sites along the Willamette River. OPRD also supports Riverkeeper's overall goals to protect and restore habitat for native salmonids, increase channel diversity and floodplain reconnection, and restore native ecosystems.

OPRD fully supports Willamette Riverkeeper in its pursuit of critical grant funding for restoration projects on public lands along the Willamette. I urge you to give consideration to this important grant project to restore and protect the Willamette.

Thank you for your time and consideration. If you have any questions, please contact me at 503-393-1172, ext.21.

Sincerely,

Dennis Wiley
District Manager, Willamette District
Oregon Parks and Recreation Department

Section IV
WATERSHED RESTORATION BUDGET

IMPORTANT: Read the application instructions. Attach additional lines, if necessary.

CAPITAL BUDGET

	A	B	C	D	E	F
Itemize projected costs under each of the following categories.	**Unit Number** (e.g., # of hours)	**Unit Cost** (e.g., hourly rate)	**In-Kind Match**	**Cash Match Funds**	**OWEB Funds**	**Total Costs** (add columns C, D, E)
PRE-IMPLEMENTATION. Must occur *after* the OWEB grant agreement has been fully executed, unless it is a city or county charge for processing the Land Use form. OWEB funds will be disbursed only upon receipt of all required permits and licenses.						
Photo-point & GPS set-up	48	$50.00			$2,400	$2,400
Hydraulic Survey & Modeling @ Mission	1	$30,000.00		$30,000		$30,000
Hydraulic Survey & Modeling @ Bowers	1	$30,000.00		$30,000		$30,000
LiDAR Study (both sites)	1	$9,300.00		$9,300		$9,300
Bio Assessment & Permitting	1	$42,500.00		$42,500		$42,500
Project Engineering @ Mission	1	$25,000.00		$25,000		$25,000
Project Coordination (Gerry @ WRK)	160	$50.00		$8,000		$8,000
Project Management (Travis @ WRK)	72	$70.00		$5,040		$5,040
		SUBTOTAL (1)	**$0**	**$149,840**	**$2,400**	**$152,240**
PROJECT MANAGEMENT. Includes *staff or contractors* who coordinate project implementation. Line items should identify who will be responsible for project management and their affiliation.						
Project Coordination (Gerry @ WRK)	1380	$50.00			$69,000	$69,000
Project Management (Travis @ WRK)	40	$70.00			$2,800	$2,800
		SUBTOTAL (2)	**$0**	**$0**	**$71,800**	**$71,800**
IN-HOUSE PERSONNEL. Includes *only* Applicant employee costs and the portion of their time devoted to this project.						
		SUBTOTAL (3)	**$0**	**$0**	**$0**	**$0**
CONTRACTED SERVICES. Labor, supplies, and materials to be provided by non-*staff* for project implementation.						
Excavate outlet, replace bridge	1	$87,500			$87,500	$87,500
Replace culvert w/ bridge	1	$275,000.00			$275,000	$275,000
Excavate 3 channels to connect side channels to mainstem	3	$8,000			$24,000	$24,000
Excavate inlet	1	$55,000.00			$55,000	$55,000
Install culverts over bike path	2	$6,000.00			$12,000	$12,000
Cut invasive weeds	80	$600.00	$7,300		$40,700	$48,000
Spot treat invasive weeds - Yr 1 June	80	$350.00			$28,000	$28,000
Spot treat invasive weeds - Yr 1 Aug	80	$325.00			$26,000	$26,000
Spot treat invasive weeds - Yr 1 Oct	80	$300.00			$24,000	$24,000
Spot treat invasive weeds - Yr 2 Spring	80	$300.00			$24,000	$24,000
Spot treat invasive weeds - Yr 2 Summer	80	$275.00	$7,300		$14,700	$22,000
Spot treat invasive weeds - Yr 2 Fall	80	$250.00			$20,000	$20,000
Spot treat invasive weeds - Yr 3 Spring	80	$225.00			$18,000	$18,000
Spot treat invasive weeds - Yr 3 Summer	80	$225.00	$7,300		$10,700	$18,000
Spot treat invasive weeds - Yr 3 Fall	80	$225.00			$18,000	$18,000
Spot treat invasive weeds - Yr 4 Spring	80	$225.00			$18,000	$18,000
Spot treat invasive weeds - Yr 4 Summer	80	$225.00	$7,300		$10,700	$18,000

Spot treat invasive weeds - Yr 4 Fall	80	$225.00			$18,000	$18,000
Cut & install live stakes - Yr 1	200	$0.50			$100	$100
Install containerized native plants - Yr 1	400	$1.25			$500	$500
Install browse protection - Yr 1	400	$0.50			$200	$200
Install bare-root native plants - Yr 2	20,000	$0.60			$12,000	$12,000
Install browse protection - Yr 2	10,000	$0.50			$5,000	$5,000
Install forbs - Yr 3	6000	$0.60			$3,600	$3,600
		SUBTOTAL (4)	**$29,200**	**$0**	**$745,700**	**$774,900**
TRAVEL. Mileage, per diem, lodging, etc. Must use current State of Oregon rate.						
Mileage	12000	$0.585		$3,500	$3,520	$7,020
		SUBTOTAL (5)	**$0**	**$3,500**	**$3,520**	**$7,020**
SUPPLIES/MATERIALS. Refers to items that typically are "used up" in the course of the project. Costs to OWEB must be directly related to on-the-ground work.						
Containerized native plants - Yr 1	400	$3.50			$1,400	$1,400
Browse protection - Yr 1	400	$0.50			$200	$200
Bare-root native plants - Yr 2	20,000	$1.00			$20,000	$20,000
Browse protection - Yr 2	10,000	$0.50			$5,000	$5,000
Native forbs - Yr 3	6000	$0.60			$3,600	$3,600
Vemco mini log TR	6	$170.00		$1,020		$1,020
Oxygen test lab	1	$240.00		$240		$240
Reagent	8	$65.00		$520		$520
Hip waders	2	$150.00		$300		$300
Range finder	1	$200.00		$200		$200
		SUBTOTAL (6)	**$0**	**$2,280**	**$30,200**	**$32,480**
CAPITAL EQUIPMENT. List equipment costing only **$250 or more per unit**. Useful life of *capital* equipment is for the duration of project and will be used only for this project **(see next page for Non-Capital Equipment).**						
		SUBTOTAL (7)	**$0**	**$0**	**$0**	**$0**
EFFECTIVENESS MONITORING. This only applies if you are conducting Effectiveness Monitoring ***(see Application Instructions and R15)***.						
Flora, Fauna & WQ Monitoring - baseline	1	$4,000.00		$4,000		$4,000
Flora, Fauna & WQ Monitoring - Yr 1	1	$35,900.00		$35,900		$35,900
Flora, Fauna & WQ Monitoring - Yr 2-4	3	$23,700.00		$71,100		$71,100
		SUBTOTAL (8)	**$0**	**$111,000**	**$0**	**$111,000**
CAPITAL SUBTOTAL [Add all subtotals, (1-8) above]			**$29,200**	**$266,620**	**$853,620**	**$1,149,440**

NON-CAPITAL BUDGET

EDUCATION/OUTREACH. Refers to informational and promotional activities associated with the project.						
Gerry -- Public Outreach	80	$50.00		$4,000		$4,000
Travis -- Public Outreach	24	$70.00		$1,680		$1,680
Sign development & production	1	$4,500.00		$4,500		$4,500
Sign Installation (WRK Staff)	1	$500.00		$500		$500
SUBTOTAL (9)			**$0**	**$10,680**	**$0**	**$10,680**
EQUIPMENT. List equipment costing only **$250 or more per unit**. Refers to items with a useful life of generally 2 years or more.						
Traceable thermometer	1	$400.00		$400		$400
GPS	2	$200.00		$400		$400
Digital recorder	1	$300.00		$300		$300
SUBTOTAL (10)			**$0**	**$1,100**	**$0**	**$1,100**
NON-CAPITAL TOTAL [Add two subtotals, (9-10) above]			**$0**	**$11,780**	**$0**	**$11,780**

FISCAL ADMINISTRATION

Not to exceed 10% of the Capital Subtotal (1-8) and the Non-Capital Total (9-10). Refers to costs associated with accounting; auditing (fiscal management); contract management (complying with the terms and conditions of the grant agreement); and fiscal reporting expenses for the OWEB grant, including final report expenses for the grant.

FISCAL ADMIN. Compute by adding the **Capital Subtotal** and **Non-Capital Total** and multiplying both by 0.10 or less.						
6% admin fee				$17,424	$52,250	$69,674
SUBTOTAL (11)				**$17,424**	**$52,250**	**$69,674**
POST-IMPLEMENTATION STATUS REPORTING. Costs associated with annual reporting requirements typically required for each grant (***see Application Instructions***).						
5 years reporting	$500/yr	5			$2,500	$2,500
SUBTOTAL (12)			**$0**	**$0**	**$2,500**	**$2,500**
CAPITAL SUBTOTAL (1-8)			**$29,200**	**$266,620**	**$853,620**	**$1,149,440**
CAPITAL TOTAL [Add the two Subtotals in this Fiscal box (11-12) to the Capital Subtotal from (1-8) above]			**$29,200**	**$284,044**	**$908,370**	**$1,221,614**

BUDGET TOTAL

BUDGET TOTAL [Add Non-Capital Total and Capital Total, from above]	**$29,200**	**$295,824**	**$908,370**	**$1,233,394**

OREGON WATERSHED ENHANCEMENT BOARD

MEMORANDUM

DATE: October 8, 2008

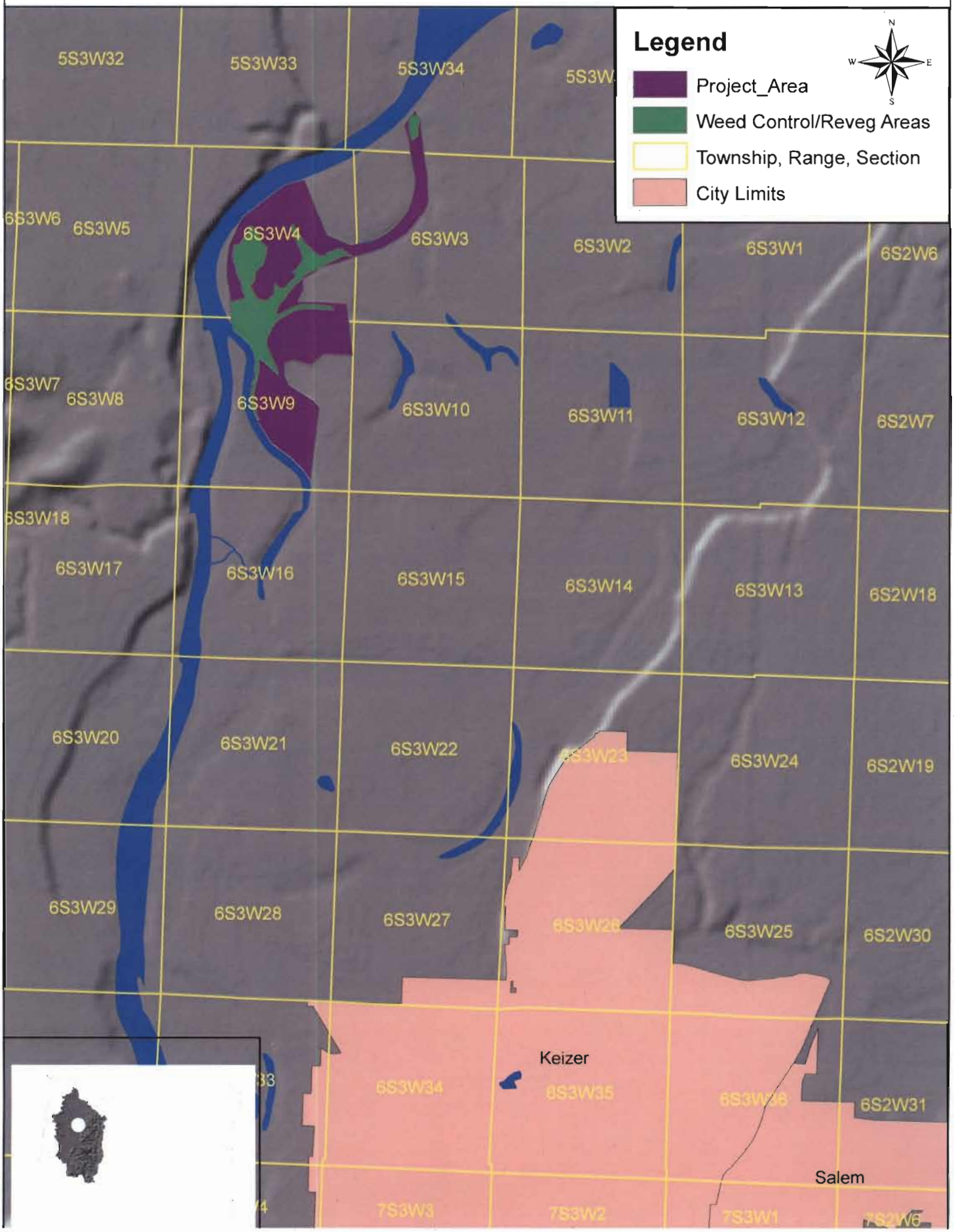
TO: File 208-3090-6927
Willamette Mission Programmatic Reconnection Project

FROM: Rachel Schwindt, SIP Specialist

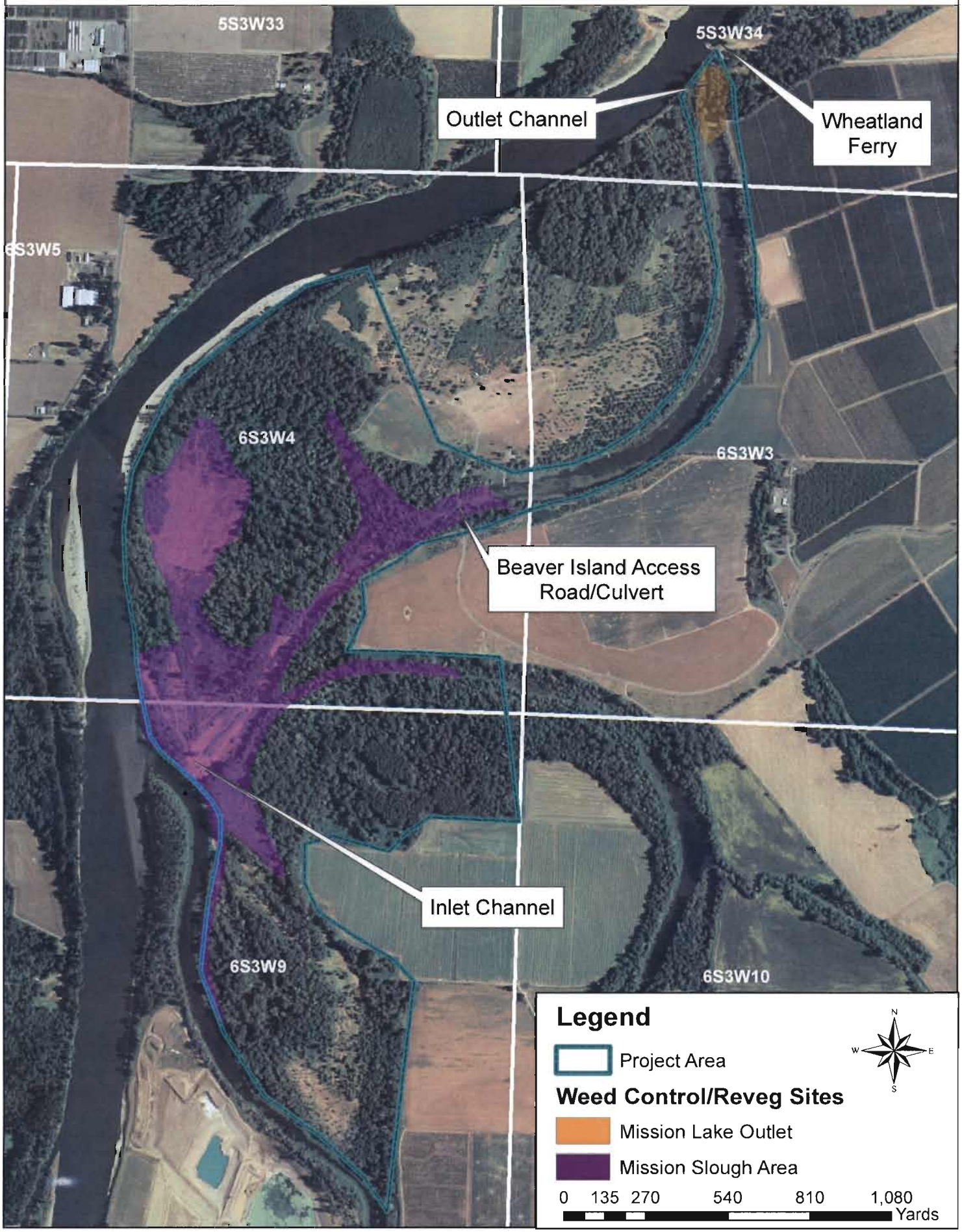
SUBJECT: Award reduction due to costs associated with post implementation status reporting

The grant agreement amount of $908,370.00 reflects a reduction of $7,500.00 from the original application budget for excessive post implementation status reporting costs. The grantee had added field time into the reporting costs which was not necessary.

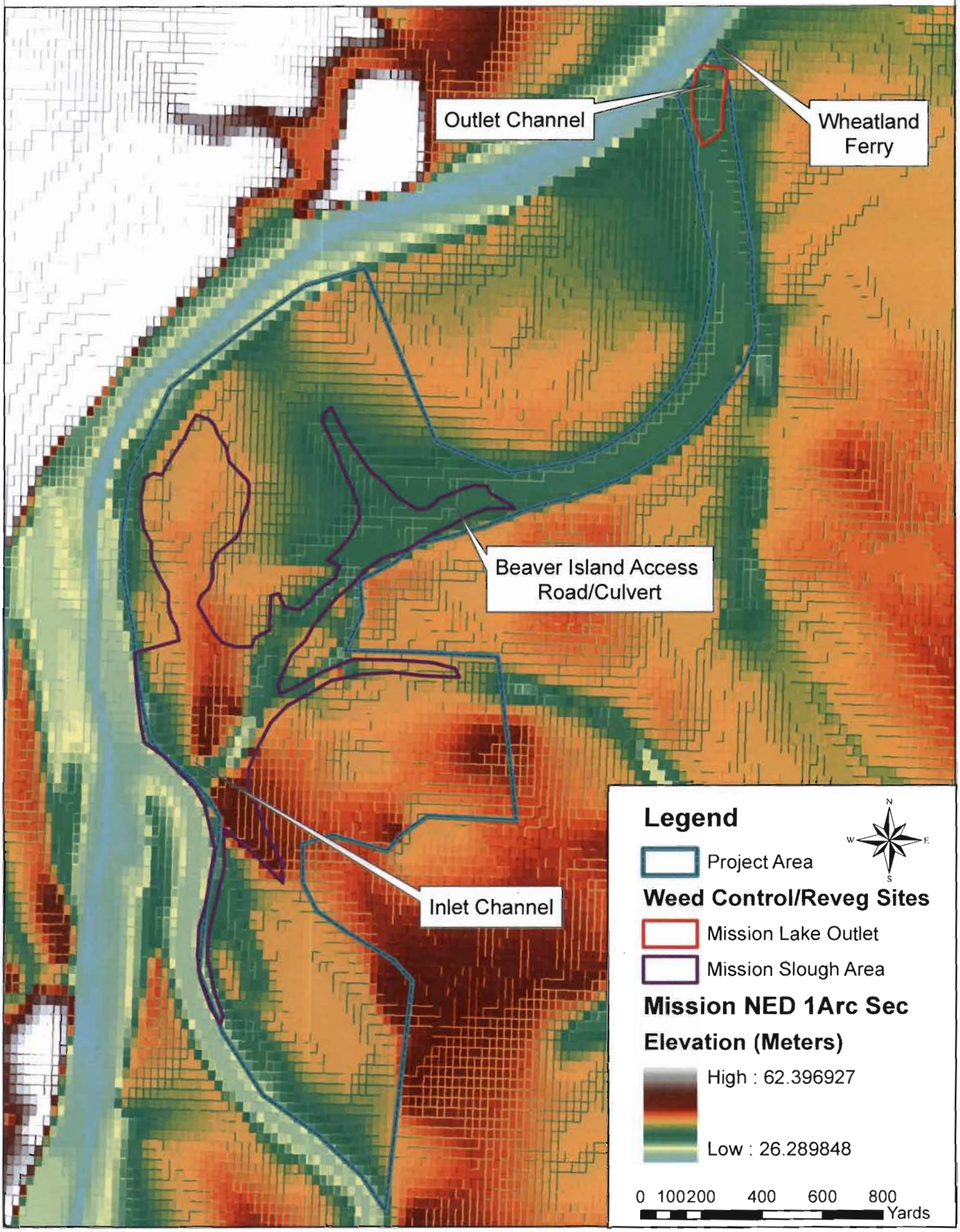
Mission Bottom Reconnnection Project



Mission Bottom Channel Reconnection
Project Vicinity Map



Mission Bottom Channel Reconnection
Elevation Map



Proj. # chng
208-3090-6900
from 209-3023
See flagged email dtd 9/18/08

209-3023

AI N

Received By OWEB
APR 21 2008

Type the information for Sections I and II **USING ONLY the pages provided. DO NOT EXCEED 2 PAGES.**

Name of project: South Meadow Floodplain Enhancement Phase III

OWEB funds requested: $273,472.00 **Total cost of project**: $499,372.00

Project location:

This project occurs at (check one): ☒ **A single site** ☐ **Multiple sites**

Coast Fork Willamette
Watershed(s)

Lane
County or counties

T18, R2W, S18, 19 55
Township, Range, Section(s)

Longitude, Latitude (if available)

Applicant	**Project Manager**
Name: Chris Orsinger	**Name:** Chris Orsinger
Organization: Friends of Buford Park & Mt. Pisgah	**Organization:** Friends of Buford Park & Mt. Pisgah
Address: PO Box 5266	**Address:** PO Box 5266
Eugene, OR 97405	Eugene, OR 97405
Phone: 541-344-8350	**Phone:** 541-344-8350
Fax: NA	**Fax:** NA
Email: director@bufordpark.org	**Email:** director@bufordpark.org

Fiscal Agent	**Landowner(s)**
Name: Sara Nelson, Office/Fiscal Manager	☒ **Public: Agency:** Lane County (Parks Division)
Organization: Friends of Buford Park & Mt. Pisgah	☐ **Private: Name(s):** Todd Winter
Address: PO Box 5266	3040 N. Delta Highway
Eugene OR 97405	Eugene, OR 97408
Phone: 541-344-8350	541-682-2000
Fax: NA	541-682-2009
Email: office@bufordpark.org	Todd.Winter@co.lane.or.us

CERTIFICATION:

I certify that this application is a true and accurate representation of the proposed work for watershed restoration and that I am authorized to sign as the Applicant or Co-Applicant. By the following signature, the Applicant certifies that they are aware of the requirements (***see Application Instructions***) of an OWEB grant and are prepared to implement the project if awarded.

Applicant Signature: Christopher Orsinger Date: 4/18/2008

Print Name: Chris Orsinger Title: Executive Director

Co-Applicant: _____ Agency: _____

Section II
PROJECT INFORMATION

1. **Abstract.** In approximately 200 words, 1) identify the project location, 2) state the watershed issue or problem to be addressed, 3) the proposed solution including the area or other measurable units to be treated, 4) any proposed effectiveness monitoring, and 5) how OWEB funds will be used.

1) LOCATION: South Meadow at Lane County's Buford Park.

2) PROBLEM: Lack of side channel & backwater habitat for aquatic species, salmonids, turtles; loss of native riparian vegetation, reduced interaction of river with its floodplain, and degraded water quality (high temperature, turbidity).

3) PROPOSED SOLUTION: 1) increase frequency of flows to ¾ mile-long side channel complex on Coast Fork Willamette and revegetate 4.5 riparian acres, 2) restore prairie and turtle nesting habitat on 10 acres, 3) plant native herbaceous understory vegetation in floodplain reforestation areas on 16 acres, and 4) control invasive vegetation on 8 acres along the side channel.

These measures restore floodplain function by increasing mainstem-side channel interaction, restoring native vegetation on 38.5 acres, reducing water temperature and turbidity as restored vegetation in side channel and floodplain terrace shades and traps sediments. More frequent flows will improve access to 5-acre backwater and side channel that provide rearing and refugia habitat for juvenile Spring Chinook, other salmonids, western pond turtles, red-legged frog and northwestern salamanders, etc.

4) MONITORING: Hydrologic, vegetation, avian and herpetile by volunteers supervised by staff.

5) OWEB funds will support personnel, contracted services to accomplish excavation, contract field crews for planting, irrigation and weed control, supplies, educational signage, and monitoring.

2. **Has this project, or any element of this project, ever been submitted in a previous application(s) to OWEB?** ☒ Yes ☐ No

   If yes, what was the application number(s)? **208-3006, 208-3042**

3. **Is this project, or any element of this project, a continuation of a previously funded OWEB restoration project(s)?** ☒ Yes ☐ No

   If yes, what was the grant number(s)? Phase I: 203-164. Phase II: 206-094 & 205-184

4. **Is this project a result of a previously funded OWEB Technical Assistance projects(s)?** ☐ Yes ☒ No

   If yes, what was the grant number(s)?

5. **Project Partners.** In the table below, show all proposed partners and clearly describe their contribution. Be sure to provide a dollar value for each funding source. If participation is in-kind, briefly describe the nature of the contribution in the Funding Source Column.

Funding Source Name the Partner and what their contribution is.	Cash (√)	In-Kind (√)	Secured (√)	Pending (√)	Amount/Value
OWEB	☒	☐	☐	☒	$273,472.00
Landowner: Lane County (Parks Division)	☐	☒	☐	☒	$6,750.00
Oreg. Dept of Fish & Wildlife: FY08-09	☒	☐	☒	☐	$86,000.00
US Fish & Wildlife Svc. (Partners Prog.)	☒	☐	☐	☒	$20,000.00
National Fish & Wildlife Foundation	☒	☐	☒	☐	$50,000.00
ODFW - Fish monitoring	☐	☒	☒	☐	$3,500.00
Friends of Buford Park & Mt. Pisgah	☒	☐	☒	☐	$12,900.00
Friends of Buford Park & Mt. Pisgah - Professional & gen'l volunteers, tractor	☐	☒	☐	☒	$46,750.00
Total Estimated Funds (add all amounts in the far-right Column):					*$499,372.00

*The total should equal the total cost of the project on page 1 of the application.

6. **Have any conditions been placed on other funds that may affect project completion?**
   ☐ **Yes** ☒ **No**
   If yes, explain:

Attachments — Complete and attach to the back of your application:

☒ *Project Maps: 1) Provide a vicinity map showing township, range, and section (TRS), and the project location. 2) On a USGS 7.5 min. topographic quad map, or on an aerial photo showing TRS, locate the extent of your project and site-specific activities by GPS reading if available. **Provide maps on 8½" x 11"** pages and include a legend.

☒ *Preliminary Project Designs: Provide sufficient detail to allow a reasonable evaluation of the proposal and of the effect of the project on the site. The preliminary design should include reference to appropriate standards and guidelines.

☒ *Photographs: Provide photographs to aid in understanding the situation. If color photos are necessary to convey information important for application review, supply 25 copies of each photo. **Note: If your project is funded, pre-project photos will be required in the final report.**

☒ Letters of Support from project partners or others, as appropriate.

* **IMPORTANT:** Avoid color and detail that will not photocopy clearly. Otherwise, provide 25 color copies of any maps, photos, or project designs that you want OWEB reviewers to see in color. Multiple copies must be collated and stapled into 25 separate packets for distribution to the reviewers. This is the only exception for the use of staples.

Section III
SPECIFIC RESTORATION PROJECT ACTIVITY

These essay questions and their answers are designed to step you and reviewers through a logical process from understanding and identifying the problem to "fixing" the problem and evaluating the results.

Answer the questions in 12-pt type size, single spaced, on single-sided pages. Use 10-pt type size for the tables, and use bullets where appropriate. Use **bold face** and *italics* for emphasis only. If the project involves multiple sites, be specific for each. **Refer to the Application Instructions for clarification and helpful examples.**

R1. Contextual Overview

Provide the location and significance of the project including why that location was chosen, what watershed functions are to be addressed in the project and a brief explanation of the history of the issues leading to the project. Describe the project in the context of the landscape including the key water quality, water quantity, species, habitat, land use and resource management issues (physical or social) that are proposed to be addressed in that watershed. **See the Application Instructions for clarification.**

The **"South Meadow"** is an approximately 200-acre floodplain site located within Lane County's 2,363-acre Howard Buford Recreation Area (HBRA) along the Coast Fork of the Willamette River. The park is located at the confluence of the Coast and Middle Forks of the Willamette River (see Lane County Context map).

Since 1999, Friends of Buford Park & Mt. Pisgah (FBP) has been working in partnership with Lane County and other entities to enhance habitat and floodplain function on **HBRA's South Meadow**.

Why the project location was chosen

A 1996 ODFW study of the 25 square mile Mt. Pisgah area produced the *Alternatives Team Report for the Coast Fork/Middle Fork Confluence Area of the Willamette River (1997).* The "Alternatives Team" report, developed by representatives from more than 12 government agencies and organizations, recommended the South Meadow as one of several priority areas for floodplain and riparian habitat restoration.

Watershed Functions & History of Issues Leading to the project

As a result of population growth and development in the southern Willamette Valley, many of the region's river systems, riparian forests, floodplains, and wetlands have been converted to agricultural or urban uses, degraded or permanently developed. Ecological services such as filtration of sediments and biodegrading organic pollutants, floodwater interception and storage, wildlife habitat, and other watershed functions have been and continue to be compromised by human activities. Channelization of the river through USACOE or private revetments was one of the causes. Filling backwater sloughs to facilitate agricultural uses was another cause. The operation of upstream dams has, since their construction in the 1950s, altered stream flows; the reduction of peak winter flows has reduced the frequency of floods that form and maintain channel morphology and associated habitat. The invasion of non-native plants, fish, and wildlife also impacts habitat quality in floodplain areas.

Historic Conditions

Modification of the floodplain habitats on the project site has been extensive. Before the first Euro-American settlers arrived, the 200-acre "South Pasture" was part of a broad floodplain connected by a meandering river within a branched channel system and dominated by a mosaic of floodplain ecotypes. Douglas fir, bigleaf maple, Oregon ash, black cottonwood, and willows historically dominated the South Meadow. In addition, a relatively small prairie occupied the central portion of the South Meadow (according to the U.S. General Land Survey notes from 1850s). By 1936, aerial photography shows the site had been largely cleared for cultivation or pasture.

Over the last 100 years the river has been simplified and restricted into a single low-flow channel. Interaction between the floodplain and the river is now limited to large, infrequent flood events. In a recent presentation to the DEQ in Eugene, Stan Gregory, fisheries biologist and professor at OSU, noted that "what was once a 2 year event on the Coast Fork is now considered a 100 year flood due to the USACE's flow management practices and extensive landscape modification throughout the basin."

Much of the historic topography has been modified through years of successive plowing and tilling. In the 1950s, the Army Corps of Engineers (ACOE) built levees along the South Meadow site on both banks of the river to reduce flooding and constrain channel migration. Two small dams operated by the ACOE, Dorena and Cottage Grove, regulate the hydrologic flow regime of the river. The introduction and spread non-native plant species has significantly altered the understory of remnant forests found on site.

Pre-project Condition of South Meadow

Prior to restoration actions initiated in 1999, the South Meadow site was predominantly exotic pasture and open grassland dominated by exotic forbs and grasses. Seasonal channels were lined with cottonwood and ash. Native trees and understory shrubs and plants dominated the forested areas. Open areas had high higher frequency of invasive exotic species, including Armenian blackberry and Scot's broom and Canadian thistle, which in places was dense and competed with native species. Scot's broom and Armenian blackberry grew around stumps and fencelines. The site was grazed until 2003 when the landowner terminated the lease on this site. A founder population of English ivy (*Hedera helix*) was present (removed Spring 2000 and being monitored). Reed canary grass (*Phalaris arundinaceae*) had begun to colonize backwater areas connected to the river and commonly lines the riverbank. The western section along the river supports a unique prairie with native Buckbrush (*Ceonothus cunneatus*), as well as a mature big leaf maple-Oregon ash forest with diverse native understory vegetation and significantly fewer exotics.

Water Quality
The Oregon Department of Environmental Quality 303D list shows that the reach of the Coast Fork of the Willamette River between its mouth and the Cottage Grove reservoir exhibits the following parameters that limit water quality:

- temperature (summer),
- bacteria (year round), and
- toxics – mercury in fish tissue (year round).

Exotic Wildlife
Bullfrogs (*Rana catesbeiana*), opossums (*Didelphus virginianus*), feral cats (*Felis domestica*), and European starlings (*Sturnus vulgaris*) are exotic animal species which may be present within the vicinity of the project area.

Sensitive Native Fish & Wildlife
ODFW fish biologists in 2005 documented that the following native fish species utilize the lower Coast Fork one mile downstream from the project site:

Spring Chinook:	Juveniles found in screw trap (2005)
Winter Steelhead:	Utilize streams on Buford Park and found in screw trap (2005).
Cutthroat Trout.	Juveniles found in screw trap (2005)
Pacific Lamprey:	Found in screw trap (2005). Believed to spawn in Coast Fork gravels and silty bottoms (Jeff Ziller, ODFW District Fish Biologist)

Western Pond Turtles
The Coast Fork next to the project site is home to the largest of three known reproductively healthy western pond turtle populations *(Clemmys marmorata marmorata)* in the Willamette Valley with a healthy age structure. As such, it represents a critical population to the future survival of western pond turtles in Oregon (Dr. Dan Holland, *Western Pond Turtle: History & Habitat*, Bonneville Power Administration, 1994*)*. The project will improve this turtle's aquatic, basking and nesting habitat.

Red-legged frog: Adult frogs are found in the 5-acre backwater created as part of Phase II in this project, and will benefit from exotic weed control and native plantings.

Northwest Salamander: This sensitive species breeds in the new 5-acre backwater created during Phase II, and will benefit from exotic weed control and native plantings.

Western Meadowlark: Oregon's state bird depends on native prairies for its nesting and foraging, and is found on Buford Park. Because Meadowlarks do not use exotic pasture grass habitat, the restored native prairie plantings will expand habitat for the state bird.

R2. Problems to Be Addressed

Provide information specific to the project: a) The specific problem(s) you are addressing; and b) the *root* cause(s) of the problem(s). This description should explain the watershed process or ecosystem function your project proposes to address. **DO NOT describe the project here; you will do so in question #R3.** You may add narrative in addition to the table.

Specific Problem(s)	Root Cause(s) of the Problem
1) A severe lack of off-channel backwater and side channel habitat for aquatic species, including migrating Spring Chinook salmon and Winter steelhead, as well as resident species, such as Western Pond Turtles.	**Causes** include revetments, reduced peak flows due to flood control dam operations, and channelization, which has contributed to the downcutting of the Willamette's Coast Fork, in some cases to bedrock. Less frequent, lower peak flows, combined with past efforts to armor river banks and fill side channels to prevent erosion or flooding, have reduced the river's ability to form side channels, alcoves and backwaters that provide aquatic habitat.
2) The reduced frequency of the river's interaction with its floodplain has impaired beneficial watershed functions, such as filtration of water during floods, flood interception and detention, and reduction of peak flood flows.	**Causes** include revetments, reduced peak flows due to dam operations, channelization, which have contributed to the downcutting of the Willamette's Coast Fork, in some cases to bedrock.
3) Degraded water quality on the Coast Fork Willamette, specifically higher temperatures and turbidity.	**Causes:** The loss of mature native riparian floodplain vegetation, which 1) traps sediments and filters water during flood events, and 2) help lower stream temperatures by shading and cooling surface water and the alluvial soils through which subsurface waters flow.
4) Loss of native riparian floodplain vegetation communities (meadow, forest, shrub or emergent wetland) that A) provide habitat structure and food for fish & wildlife, B) filter water during flood events, and C) help lower stream temperatures by shading and cooling alluvial soils through which subsurface waters flow.	**Causes** include 1) conversion of riparian floodplain vegetation for gravel mining, agriculture, and urban uses; 2) altered hydrology and flow regimes resulting from dam operations, levees, and revetments; 3) lower water tables (due to erosion of channel bed from channelization) that reduce soil moisture needed by riparian vegetation, and 4) invasive, exotic weeds that degrade and displace native plant communities.

R3. Project Description

Using the table below, provide a description of the project that describes the restoration activities to occur (e.g., direct flow, remove 36" culvert, construct free spanning bridge, place 12 three log clusters between RM 44 and 52, etc.), including a description of the methodologies (e.g. juniper – burning or cutting; tree release – manual or herbicide; etc.) and the equipment planned for use. In addition, describe any Project Management functions/ activities necessary to implement the project (e.g., acquire permits or landowner approval; solicit bids, award contracts, etc.). The degree of detail should match the project complexity and technical difficulty to allow for full evaluation of technical viability. For projects involving multiple sites, be sure to identify and describe them separately, as appropriate. New: **This is not the place to describe the benefits of the project, but rather the specific elements of the proposed project.** You may add narrative in addition to the table.

Project Element	Proposed Action
MEASURE 1: Increase the frequency and duration of side channel flows. ***(Please refer to site plan and grading plans Sheet 4 & 5.)***	▪ Constructed in Phase I (2003), the "Upstream Inlet" achieves the *South Meadow Management Plan's* goal to increase the area inundated by two-year floods. Water enters the Upstream Inlet (at an elevation of 476.5') 2.6 days per year on average. ▪ Phase III (2009) will further increase the frequency that the entire 4115' side channel is active in a "flow through" condition by excavating three side channel segments: 1) Inlet segment: 265' 2) Middle Segment: 430' 3) Lower Segment: 420' ***TOTAL length of lowered side channel = 1115'*** ▪ FBP will work closely with contractor to select appropriate construction equipment to implement excavation and site grading. This will likely include two (2) types of track-hoes, two (2) types of bull dozers, two off-road dump trucks, two (2) types belly scrapers, a grader, and roller/compacter. ▪ **Inlet segment:** ***(Refer to Grading Plan Sheet 5.)*** ▪ Lower a second, existing "Downstream Inlet" to allow flows into the side channel at events equal or greater than 5,670 cfs (USGS Goshen gage), which occurs 20 to 25 days per year on average. ▪ The proposed new "Downstream Inlet" was selected to maximize channel length and long term stability, minimize excavation and disturbance to existing mature trees, improve stream complexity and protect downstream elements of the side channel which afford high quality backwater conditions. ▪ *Detailed description:* Lower to 472.43'and widen the existing "Downstream Inlet" from station point 41+15 to 38+50 (265 linear feet). The bottom width of the inlet will be 5' with side slopes not greater than 1:2 as presented in Section View 3 on **Grading Plan Sheet 5**. At least one fir or cedar log with root wad intact, minimum 30 feet long and 18 inch diameter, will be buried at the inlet to provide grade control. Additional logs of similar dimension and character will be buried at station points 39+50 and 37+50. ▪ **Middle Segment:** ***(Refer to Grading Plan Sheet 5.)*** ▪ To facilitate "flow through" conditions, we will excavate soil between station points 35+50 and 31+20 (430 linear feet). Logs will be buried at grade at station points 35+00 (invert elevation equals 471.75') and 33+00 (invert elevation equals 471.50'). Geo-textile fabric will be installed along the channel bottom as well as channel banks within areas of excavation. A CF7 or equivalent fabric will be used to blanket the channel bottom and CS2 or equivalent fabric will be used to blanket the channel banks. The gradient of this segment will not exceed a slope of 0.2%. ▪ **Lower Segment:** ***(Refer to Grading Plan Sheet 4.)*** ▪ To facilitate flows and maintain existing large trees, we will excavate a third channel segment adjacent to and west of the existing side channel between 24+50 and 21+25 (325'). The new channel segment will connect to a side channel pool that does not require excavation. At the downstream edge of the pool, we will excavate soil to lower an obstruction between 20+10 and 19+15 (95') in order to facilitate flows into the large backwater created in Phase II (2006). ▪ Channel bottom width will be 5' and channel banks will have a slope not to exceed 1:2 as presented on Grading Plan Sheet 4. The gradient of this segment will not exceed a slope of 0.075%. Geo-textile fabric will be installed along channel banks to protect exposed soils from erosion during the establishment period of vegetation planted post excavation.

MEASURE 1: Control invasive vegetation within the 4.5 acre footprint of the modified side channel.	▪ Phase III channel excavation will expose 4.5 acres of soil in all three channel segments. Prior to successful revegetation, the exposed soils are vulnerable to colonization by invasive weeds. The seasonally inundated areas can be colonized by water-borne weed seeds during high water events. ▪ Therefore, a critical project task will be to aggressively and proactively control invasive weeds before, during and after excavation and planting. ▪ We will employ an integrated weed control approach combining manual removal, mowing and herbicide application, adapting to site specific conditions. Due to concerns for fish and wildlife, only herbicides approved for use near waterways will be utilized. ***Site Preparation to control invasive vegetation*** ▪ The project area will be mowed during the early summer of 2008. ▪ In September 2008, the project area will be sprayed with a boom-mounted applicator to control Armenian blackberry. ▪ In March 2009, large populations of shining geranium will be spot sprayed with a backpack applicator. Other plants will be removed manually within mixed communities of desired native plants. ▪ Volunteers will salvage native plants in excavation zones and care for them in the FBP nursery, then plant after excavation in Fall 2009.
MEASURE 1: Place large wood within the side channel corridor.	▪ During excavation, place large wood with root wads at inlet and along channel corridor. ▪ Harvest large woody debris (approx. 25 Douglas fir trees 18-30" dbh with and without rootwads) from a 1-acre area of oak savanna adjacent to South Meadow in July 2009. Forestry equipment to support log harvest may include a rubber track-wheeled cut to length harvester, buncher/feller as well as yarder/loader/forwarder. ▪ Live tree stumps removed in excavation areas along the side channel will be re-planted to stabilize channel banks and bed against erosion during larger flood events. ▪ Install large woody debris at or below the bank full elevation at several locations within each channel segment to increase habitat complexity, improve forage diversity, and afford cover for fish and herpetiles from predators.
MEASURE 1: Install native plantings within the 4.5 acre footprint of the modified side channel.	▪ Plant fascines (bundles of live woody cuttings) to stabilize the channel banks and bed against erosion during larger flood events. ▪ Following installation of biodegradable erosion control fabric, seed and plant the three excavated channel segments (4.5 acres) during Fall 2008 and Winter 2009. ▪ Reduce planting costs by emphasizing use of seed mixes and shrub fascines. Reduce the quantity of bare root woody plantings that have higher labor costs for installation and maintenance.
MEASURE 2: Use displaced soils to restore prairies and create turtle nesting habitat on 10 acres.	▪ The largest successfully reproducing population of western pond turtles in the Willamette Basin is located on the Coast Fork Willamette near Buford Park (Dr. Dan Holland, *Western Pond Turtle: Habitat & History,* Bonneville Power Administration, 1994). ▪ Soil displaced by excavation will be retained on site and utilized to convert exotic perennial pasture grass to upland prairie with inclusions of ephemeral pools and turtle nesting habitat on 10 acres. This will advance the restoration of diverse plant communities and expand habitat for declining species, as called for in the *South Meadow Management Plan.* ▪ Broadcast spray 10 acre area. Initiate control in September 2008 with additional applications during Spring 2009. Subsequent spot spray applications for remnant invasives. ▪ Spot spray applications within 1-acre log harvest area (oak savanna) in October 2008. ▪ After herbicide treatment cycle (Summer 2009), burn stubble (preferably one week before excavation begins) with mint burner or equivalent to ensure positive contact between soils to ensure a good growing medium for deep root development (per suggestion of Steve Smith, USFWS). ▪ Sort excavated soil to ensure that organic layer from within each excavation zone placed at the foundation of a created upland. ▪ Sort all excavated rock and set aside for road and trail construction. ▪ Create south facing prairies with clay soils that turtles need for nesting. Following site preparation to control weeds and expose surface (mineral) soils, other soils displaced by excavation will be deposited within designated areas. Grading will create micro-topography within the floodplain featuring small hummocks with southern orientation to maximize solar warming for nest incubation. Clay based soils from excavation will be concentrated on south-facing slopes to provide suitable material favored by turtles for nest construction. ▪ Broadcast desired soils over footprint of treatment area with belly scraper.

Continued... *MEASURE 2: Use displaced soils to restore prairies and create turtle nesting habitat on 10 acres.*	▪ Utilize a bulldozer to create and refine the finished grade in consultation with FBP-STAC member Bill Castillo (retired ODFW District Biologist). ▪ Apply a complex seed mix of grasses and forbs sourced from Mt. Pisgah to restore the desired prairie on 10 acres in Fall 2009. The seed mix will feature up to 30 species produced at the Friends of Buford Park nursery, including key nectar and host plants for butterflies, forage for migratory birds, and suitable habitat for ground nesting birds to build successful nests. ▪ The seed mix will be applied using a pull behind open broadcast seeder and "cut" with corn cob to ensure accurate seeding rates. ▪ Riverbank lupine and other native annual species will be seeded later in late winter and early spring to minimize potential loss from frost heave.
MEASURE 3: Control invasive vegetation to improve habitat quality for Oregon Conservation Strategy (OCS) key species on 8 acres. *NOTE: This weed control effort on 8 acres along the side channel is in addition to weed control efforts on 4.5 acres in Measure 1, 10 acres in Measure 2 and 16 acres in Measure 4.*	▪ Focus weed control along the entire side channel corridor to protect years of investment to restore native vegetation in the 3/4-mile long side channel. ▪ Control invasive species (especially Armenian blackberry, shining geranium and Canadian thistle) on 8 acres along the entire 4115' side channel corridor. ▪ Utilize proven, site specific methods to control invasive vegetation and demonstrate effectiveness of innovative, integrated weed control treatments including a combination of manual, mechanical, and chemical approaches for target species in forested areas adjacent to excavation on 8 acres. ▪ Prescriptions will be consistent with the "Oregon Aquatic Habitat Restoration and Enhancement Guide." The range of exotic control methods are described in more detail in the *South Meadow Management Plan* (pages 23-25). ▪ Selected areas where few native populations are observed will be seeded in the Fall 2009 and/or Spring 2010. ▪ In Fall 2009, plant native plants salvaged by volunteers from areas of excavation within the control zone.
MEASURE 4: Cultivate native herbaceous vegetation in the understory of reforestation areas to improve habitat and reduce maintenance on 16 acres	▪ Control existing exotic herbaceous vegetation with herbicides within 16-acre reforestation area (Fall 2008-Fall 2009). ▪ Prune, fertilize and mulch selected trees (planted 1999-2002) during the winter 2009 to improve vigor and encourage growth above deer browse height. ▪ Consider using pull-behind infrared propane burner to reduce litter in advance of seeding (late winter 2009). ▪ Plant a mix of native herbaceous seed (5 or more species of grasses and forbs that can persist in sun or shade) between areas of mulch placement, utilizing a pull behind open top broadcast seeder and/or (4-5') no-till drill. ▪ Mow understory annually in late summer to disperse native seed crop (2009-11).

R4. Watershed Benefits –

What are the proposed project watershed benefits? While many projects benefit forest or agricultural production, OWEB funding is for fish and wildlife habitat protection and enhancement. Briefly describe how the project will affect watershed functions or ecosystem processes.

Benefits of completing Phase III of South Meadow floodplain enhancement include:

1. restoring more frequent interaction between the river and its floodplain. This will help increase the river's opportunities for channel migration, island formation and large wood recruitment into the mainstem.
2. restoring more frequent side channel flows that will maintain native plant communities,
3. improving fish passage and the duration of pool accessibility,
4. improving water quality (reduced turbidity and sedimentation) when floodwaters flow through restored planting areas (see related Measures 2 & 4),
5. creating refugia from flood events for fish & aquatic species,
6. The native plantings and habitat enhancements will benefit the following Oregon Conservation Strategy priority habitats and species amongst others:

   Oak woodlands:
   - Western gray squirrel
   - Songbird assemblage, including western wood pewee, white breasted nuthatch, chipping sparrow

   Grasslands:
   - Western meadowlark

   Wetlands:
   - Red legged frog

   Riparian:
   - Northwestern pond turtle
   - breeding riparian songbirds
   - great blue heron
   - bald eagle

   Columbia (Willamette as tributary) River:
   - Chinook
   - Steelhead
   - Oregon Chub

   Freshwater aquatic:
   - Western brook lamprey and Pacific lamprey

7. "Measure 4: Cultivating native herbaceous understory on 16 acres" will have several benefits. Converting the understory to native vegetation will reduce the annual maintenance cost of multiple rounds of mowing. Periodic mowing has been necessary to suppress weed seeds from spreading into restored areas and minimize competition for young trees from the exotic pasture grass community. By reducing the mowing to one late season, this measure will reduce soil compaction in the root zone of young trees and improve the vigor of the trees. Furthermore, the native plants will improve habitat structure for ground nesting birds, small mammals, and herpetiles that are adversely affected by the current mowing regime within the reforestation area.

R5. Project Objectives

What are the proposed project objectives? Provide specific objectives based on the location, size and significance of the project and provide information on how the objectives could be evaluated. The measurements should be able to be reported to document successful implementation. **See the Application Instructions for the distinction between project objectives and achievement of goals.**

Project Element	Specific Objectives	Measure for Evaluation
Increase the frequency and duration of side channel flows.	*Lower / modify three (3) side channel segments:* - Inlet segment: 265' (lower to 472.4' elevation) - Middle Segment: 430' - Lower Segment: 420' - *TOTAL area of side channel modification = 1115'*	*Confirm through monitoring that inlet activates at design frequency (when Goshen gage reads 5670 cfs). Survey excavated channel segments to confirm elevation, length, gradient as compared to construction plans.*
Control invasive vegetation	*85% reduction of target invasive species by 2011.*	*Compare % cover of invasive species in restored acreage to baseline monitoring data.*
Place large wood within the side channel corridor	*5-10 logs placed within the side channel at or below the seasonal high water line*	*Number and size of LWD placed within side channel corridor*
Native riparian plantings	*75% survival after 2 years*	*% survival after 2 years.*
Create turtle nesting habitat.	*10 acres of suitable habitat within close proximity to side channel corridor*	*Acres of enhanced ground. % bare ground within treatment area and assessment of soils and hydrology.*

R6. Project Design

a) Provide a list of qualifications and experience you will require for the project designer. If a project design has been completed, identify the designer and what qualifications and experience they have.

Since 2001, we have contracted with nationally recognized river restoration firm, Interfluve, Inc. to perform hydrologic and topographic analysis for the site and surrounding floodplain areas. In February 2002, Inter-fluve completed a detailed ground survey to obtain channel profiles and 6" contours to support final hydraulic modeling, design and construction drawings for the proposed hydrologic modification. Mike Brunfelt of Interfluve was project manager. Mike McAllister of Interfluve performed hydraulic engineering and modeling. With assistance from a committee of biologists and hydrologists, a design was developed and construction drawings completed in Spring 2003 and submitted with permit application. All necessary permits were obtained in the Summer 2003 for both Phase I & Phase II channel and backwater excavation. As we prepare for each phase of excavation, the project design is reviewed by Interfluve, the committee, as well as staff fish biologists at the local ODFW, USACE, and USFS offices in the upper Willamette. Jason Blazar, FBP stewardship coordinator, continues to prepare construction drawings for review and implementation, calculates excavation volumes drafts budgets, and directs construction crews in the field.

b) Describe the design criteria used or proposed and how those criteria take into consideration natural events and conditions (e.g., culvert design to 100-year flood event, wood placement to readjust with higher than bankfull flows, cultivation to retain at least 75% stubble, 4-strand fence to allow for wildlife passage, etc.).

Extensive modeling was conducted to evaluate stream velocities within the side channel correlated with major flood events. The side channel complex was designed to have relatively low velocities during floods. The "branched" channels disperse floodwaters across the site. Three existing pools create hydraulic "pillows" that reduce erosive forces. Grade control strategies, including placement of large woody debris and erosion control fabrics, has been incorporated into the project design to minimize catastrophic impacts to the site immediately following excavation prior to establishment of

recently planted vegetation. Project phasing has allowed native plantings to mature and help stabilize excavated areas. During a number of greater than bank full flood events, we observed water entering the side channel is sediment laden, but water leaving the side channel is much less turbid, and minimal erosion occurred. The mature vegetation and existing side channel design can better accommodate the more frequent flows and volumes that Phase III will allow.

R7. Design Alternatives

Were alternative designs or solutions considered? ☒ **Yes** ☐ **No**

If yes, explain why the design or approach proposed was chosen. If no, explain why alternative approaches were not explored.

Several alternative strategies were considered during the design process including more frequent side channel connectivity, more extensive side channel connectivity, as well as completely and extensively lowering the flood terrace. The current design seeks to maximize long term habitat benefit against short term implementation cost. It also increases the acreage planted with natives.

In April 2007, we submitted to OWEB a design that included an "alcove" that would have provided positive grade and fish escape from two pools in the side channel. We had believed NOAA would not permit a project that did not provide positive grade and fish escape. OWEB declined to fund this design.

We did consider USFWS' Steve Smith's suggestion to fill the pools with gravels from excavation, but we opted to retain the seasonal wetland habitat (from groundwater discharge) provided by these pools.

The current Phase III design reduced the March 2007 scope of channel excavation and eliminated the "alcove." The current design alternative was developed after a September 2007 site visit and meeting with permitting staff from NOAA Fisheries, DSL and USCOE. NOAA staff indicated that the proposed lowering of the inlet restored desireable river function, and that the potential risk of listed fish becoming trapped in existing pools did not warrant filling the side channel pools, nor did it necessitate excavating to create "positive grade" through the .75 mile long side channel to facilitate fish escape. This reduced the extent of excavation previously believed necessary to obtain a permit. Consequently, in October 2007, we deleted the alcove from the design that we submitted to OWEB in April 2007, and expanded the acreage of native revegetation to increase riparian habitat for other species.

R8. Project Schedule

Use the table below to show the anticipated schedule for the project. Add or change the list of project elements to fit your project. **See the Application Instructions for clarification and an example.**

Project Elements	Start Date	End Date	Description
PRE-IMPLEMENTATION			
Permit Applications	Fall 2008	Spring 2009	▪ Finalize design with consideration of monitoring data & no-rise (fill placement) analysis. ▪ Take pre-project photographs for monitoring. ▪ Secure updated permit from Oregon Division of State Lands and USACE; consultation with NOAA-NMFS.
Materials Acquisition	Spring 2009	Summer 2009	▪ Order all supplies & materials to support implementation of site preparation and construction including hazard fencing, silt fencing, closure signage, straw bales, plant materials, erosion control fabrics, ground cloth, rock, etc. ▪ Harvest logs for grade control, LWD placement .

Bid Solicitation	Winter 2009	Spring 2009	▪ Solicit bids for arbor/forestry services, agricultural support services (i.e. brush mastication, herbicide application, mint burner, plow/disc), site construction/excavation.
Contracting	Spring 2009	Spring 2009	▪ Contract and schedule tasks associated with arbor/forestry services, agricultural support services (i.e. brush mastication, herbicide application, mint burner, plow/disc), and site construction.
IMPLEMENTATION			
Site preparation	Fall 2008 Fall 2008	Spring 2009 Summer 2009	▪ Control invasive species including CIRARV, GERLUC, PHAARU & RUBARM along side channel corridor from inlet to outlet on 8 acres ▪ implement site preparation activities within footprint of enhancement area, fill placement zone, and log 'donor site' on 15.5 acres
Construction	Summer 2009	Fall 2009	▪ Stakeout project, install hazard fencing, and erosion control "best management practices" (BMP) (silt fence, straw bales, etc) in designated locations. ▪ Implement excavation & construction of channel modification, grade control elements. Place LWD, distribute soils displaced by excavation within designated locations, install erosion control fabric, re-set hazard fencing, remove erosion control BMP elements. ▪ Survey areas of excavation and soil placement concurrent with construction. ▪ Improve maintenance access corridor through South Meadow.
Trail Construction/Signage	Fall 2009	Fall 2010	▪ Construct Phase I of floodplain interpretative trail, including installation of educational signage.
Riparian reforestation & revegetation	Fall 2008	Spring 2009	▪ Initiate control of herbaceous vegetation within 16-acre reforestation area and prune select trees. ▪ Place mulch and nurture trees within 16.0 acre reforestation area implement ▪ Revegetate areas of disturbance, including installation of fascines and woody plants. ▪ Broadcast seed mixes associated with each measure (Measure #1: 4.5 acres, Measure #2: 11 acres (includes log 'donor site'), Measure #3: 8.0 acres, and Measure #4: 16 acres)
PROJECT COMPLETION			
Project Completion Inspection (2009)	Fall 2009	Fall 2009	▪ Conduct post-construction survey to document "as-built" condition of side channel modifications. ▪ Project inspection by ODFW and FBP project manager. Take project completion photos to document that inlet and other channel segments were lowered, woody debris placed, and plantings installed, etc.
Post-Project Inspection (2012)	Spring 2012	Spring 2012	▪ Site inspection to review side channel function control of invasive vegetation, and establishment of native plantings
Post Project Implementation Review	Fall 2009	Spring 2012	▪ Host and lead tours showcasing floodplain restoration measures for watershed councils and general public. ▪ Publish, distribute FBP Rookery newsletter with feature article on Phase III implementation. ▪ Present South Meadow floodplain restoration measures at OWEB conference.

Monitoring	Fall 2008 Spring 2009 Fall 2011	Spring 2009 Summer 2011 Spring 2012	▪ Conduct baseline monitoring including site documentation from fixed photo points, observation of site hydrology and fish surveys with a focus upon salmonids. ▪ Collaborate with local ODFW fish biologists to monitor side channel corridor for salmonids as well as other native fish species. ▪ Collaborate with local ODFW fish biologists to monitor minnow traps in backwater area for presence of Oregon Chub. ▪ Conduct avian monitoring and utilize data to guide stewardship activities. ▪ Recruit, train supervise interns from Univ. of Oregon and LCC to assist with effectiveness monitoring. ▪ Effectiveness monitoring: Compare post-project and baseline observations.
Project Maintenance	Spring 2009	Fall 2011	▪ Harvest hay from pastures not yet planted with natives. ▪ Maintain Phase I reforestation zones (periodic mowing and invasive control). ▪ Maintain Phase II project area (invasive control and irrigation of Phase II plantings). ▪ Maintain Phase III project area (irrigation, invasive species control) for 2 year period. Install supplemental plantings after assessment of monitoring data in accord with adaptivie management principles.

R9. Project Relationship to Regional Priorities

If the project specifically implements a plan or larger conservation effort, identify the effort and the specific role of this project. Explain whether the project implements a regional plan (e.g., ESA Recovery Plan, Coastal Coho Assessment, NWPCC Subbasin Plan, Groundwater Management Area). Specifically identify the relationship between the proposed project and the OWEB Basin Priorities. Priorities can be found on the OWEB website at: http://www.oregon.gov/OWEB/restoration_priorities.shtml. **(See the Application Instructions for helpful links to various regional plans).**

The project seeks to implement the ***South Meadow Management Plan (2002)*** (plan on file in OWEB office), which resulted from an inter-agency ***Alternatives Team Report for the Coast Fork/Middle Fork Confluence Area of the Willamette River (1997).*** The "Alternatives Team" report, developed by representatives from more than 12 government agencies and organizations, recommended the South Meadow site as a priority opportunity for floodplain and riparian habitat restoration. The report identified floodplain restoration opportunities in the 25 square mile area centered the 2,363-acre Buford Park. The project is also consistent with the ***Howard Buford Recreation Area Master Plan (1994),*** adopted jointly by Lane County, and the Cities of Eugene and Springfield. This project also advances numerous floodplain restoration recommendations contained in Oregon's ***Willamette Restoration Initiative (2000),*** which the state is working to implement to restore salmon populations and improve water quality and ecological values in the Willamette basin.

OWEB Basin Priorities mirror actions contained in the ***Coast Fork Willamette Watershed Council (CFWC) Watershed Assessment and Action Plan,*** which identified the Mt. Pisgah area and Coast Fork/Middle Fork Confluence area as priority opportunity areas. The proposed measures are consistent with recommendation in the action plans, particularly efforts to enhance salmonid and turtle habitat, to restore floodplain function, and restore riparian habitats. Both the CFWC and the Middle Fork Willamette

Watershed Council support this project (see letters of support), and have co-sponsored tours of this restoration project.

More recently, the Corps of Engineers has recognized the project as an example of the kind of restoration action that may be recommended in the agency's ongoing ***Upper Willamette Floodplain Restoration Study***.

This project is consistent with strategies identified by the ***Oregon Conservation Strategy (2006, ODFW)*** for the Mt. Pisgah sub-area of the Willamette Valley to improve key habitats (including aquatic, grasslands and oak savanna, and riparian) for key species (including Great blue heron and NW Pond Turtle). Recommended conservation actions include:

- Actively manage uplands to promote and maintain oak savanna and prairie habitats
- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology
- Maintain or restore riparian habitat and ecological function; ensure sufficient habitat complexity for wildlife
- Promote early detection and suppression of invasive weeds

R10. Other Related Conservation Actions

Explain how the project complements other efforts under way or completed in the watershed. Identify other restoration, technical assistance, monitoring, assessment or education projects, conservation actions and ecological protection efforts in the watershed and explain how this project relates to those actions.

The project complements other restoration activities underway or planned in the Coast Fork watershed. For example:

- ODFW's release of Spring Chinook in Mosby Creek, an upstream tributary of the Coast Fork Willamette. The South Meadow project has created enhanced juvenile rearing and refugia habitat;
- Native riparian revegetatation at Creswell's Garden Lake Park;
- Native riparian revegetatation, East Regional Park in Cottage Grove; and
- Native riparian and wetland revegetation at the Lane County's Short Mountain Wetland Mitigation Bank (on a 265-acre Coast Fork parcel) at the confluence of the Coast Fork and Camas Swale.

a) If the project is a continuation of previously completed activities, describe the results of the previous project(s) and identify what you have learned from the implementation of similar project(s).

- Phase I removed human-placed channel obstructions (4 farm road fills, 2 revetments, one inlet fill), and excavated 4 channel segments to link existing side channel reaches and create a branched side channel network. This phase also planted 18,000 trees and shrubs of 25 species on over 30 acres and controlled weeds on 40 acres (2000 to 2004).

- Phase II excavated a 1400' long perennial, 5-acre backwater habitat and converted 12 acres from exotic to diverse native plant communities on 12 acres (2006-07).

- Phase III is the current project proposal (2008-2011).

R11. Project Inspection

Identify who will inspect and sign off on the completed project.

Name of Person & Agency/Organization	Telephone Number or Email Address	Project Element to be Inspected
Michael Pope, BPA Wildlife Mitigation Coordinator ODFW 3406 Cherry Ave., NE Salem, OR 97303	541-947-6086 Michael.D.Pope@state.or.us	All
Chris Orsinger, Project Manager Friends of Buford Park & Mt. Pisgah Eugene, OR 97405	541-344-8350 director@bufordpark.org	All

R12. Educational/Public Awareness Opportunities

Explain whether and how you will raise public awareness about the project (e.g., install a project partner or interpretive sign, write an article for the local paper, lead a site tour for local citizens). **See the Application Instructions for clarification of eligible education and outreach costs.**

OWEB FUNDED EDUCATION

OWEB funding is requested to match FBP secured funds for design and installation of interpretive signage at a viewpoint of the backwater created in 2006.

***Note**: A South Meadow floodplain interpretive trail has been designed (see color map), but we will seek separate funding to build the trail.*

NON-OWEB FUNDED EDUCATION ACTIVITIES

FBP will use non-OWEB funds to conduct other outreach activities in which the restoration project is featured, such as:

A. Tours of project for groups and general public (approx 6 times/year)
B. Post Project press release and media tours of project area;
C. Articles in our semi-annual newsletter, *The Rookery;*
D. General outreach and volunteer recruitment to general public to assist with project;
E. Targeted outreach to businesses during United Way "Day of Caring;"
F. Targeted outreach to high school and college youth for scientific monitoring and other project related internships;
G. Project poster and information at booths at community events;
H. Presentations to community groups.

The South Meadow project is as a model for at least five other local floodplain restoration projects. The projects include:

1) Middle Fork Willamette Watershed Council's 27-acre restoration project at Lost Creek/Middle Fork confluence, Elijah Bristow State Park. FBP provided technical assistance.
2) The 865-acre Green Island project at the McKenzie/Willamette Confluence. McKenzie River Trust plans similar channel restoration, revegetation, exotic control methods.
3) An upstream 265-acre site with a half-mile of river frontage, which Lane County purchased in 2003. Floodplain reforestation and wetland restoration are underway as called for in the county's management plan.
4) Restoration of the Springfield Millrace, mill ponds, and associated floodplain habitat by City of Springfield with matching funding from U.S. Army Corps of Engineers.
5) Native plantings at Garden Lake Park in Creswell, a project of the Coast Fork Watershed Council.

R13. Project Maintenance

Use the table below to document how the project will be maintained over time. State who will maintain the project. Identify their affiliation and provide contact information.

Name of Person & Agency/Organization	Telephone Number or Email Address	What will be done and for how long?
Chris Orsinger Friends of Buford Park & Mt. Pisgah PO Box 5266 Eugene, OR 97405 Maintenance team includes: - Jason Blazar, stewardship coordinator - Hal Hushbeck, Field crew supervisor - Stewardship field crew	541-344-8350 director@bufordpark.org	Annual maintenance objectives are identified by Friends of Buford Park through seasonal monitoring and assessment of adaptive management strategies. This includes: 1. Vegetation management of native plantings, including control of invasive weeds, for a 2-year period (at minimum). 2. Irrigation and care for new plantings within areas of disturbance for a 2-year period.

R14. Budget Development

There are a number of assumptions used to develop any budget. This does not mean you must provide a line by line description of costs. Use this response to provide a clear understanding of what the budget estimate was based on.

a) Explain how costs were determined for the budget elements. Describe if contractor conversations, past projects or other cost figures were used for each major element of the budget. This is particularly important for lump sum elements in the budget. For project management costs describe the time and activities that would be involved.

Two previous project phases informed budget development. We have developed a comprehensive work plan that identifies the specific tasks for each of the four (4) measures described in this proposal (and shown on the color site plan). Each work plan task was assigned the necessary staff time, contracted services, supplies and materials necessary to accomplish the task. Those values were linked via a spreadsheet to the project budget included. Steve Smith, Regional Review Team lead on this project, reviewed the work plan in Fall 2007. We updated the work plan and budget in April 2008 to adjust for inflation, especially for fuel/mileage, landscape/excavation costs, personnel, etc.

b) If there are any unusual cost factors, explain them. For example, if the fencing costs are unusually high because of steep, rocky terrain and unroaded access, this is the place to explain the cost elements on the budget page.

Excavation costs were estimated based on $6 per cubic yard, with adjustments to recognize the additional handling of soils to segregate clay soils to create turtle nesting habitat and bury organic soils to suppress germination of weed in the seed bank.

To conserve the park's botanical values, we use primarily genetically local native seed and plants from FBP's on-site native plant nursery. The supplies and materials section of the budget has two line items for native and herbaceous seed and native plants. Those line items will support the purchase of seed and plants at fair market value (or less) from outside vendors/nurseries or from our on-site nursery.

Project Effectiveness Monitoring

R15. Effectiveness Monitoring

If requesting funding to perform effectiveness monitoring, describe the data to be gathered and how it will inform the projects restoration objectives, the monitoring protocols for each objective, data management techniques, and analysis to be conducted. Explain why this project is appropriate for effectiveness monitoring or, if other projects are involved in the monitoring, identify those projects and explain the hypothesis to be tested by the evaluation.

- Hydrologic monitoring will provide critical information to evaluate to determine whether to release Oregon Chub into alcove, as ODFW has proposed.
- Hydrologic monitoring & fish surveys demonstrate compliance with regulatory permit obligations and indicate usages of new habitat.
- Topograpic survey will confirm that project has been constructed as designed, and provides baseline data for on-going study by Univ. of Oregon Geography Department re: fluvial change in side channel /floodplain restoration endeavors
- Avian & herpetile surveys inform the timing of seasonal stewardship activities, guide future enhancement objectives, as well as provide critical information regarding project effectiveness
- Monitoring data can help watershed councils, ODFW, USACE, plan floodplain restoration for upper Willamette and at McKenzie River Trust's Green Island.
- Monitoring data guides management of park's globally endangered habitats and will inform development of Buford Park Habitat Management Plan.
- Monitoring data can inform future floodplain restoration design on the planned 1,200-acre Wildish acquisition near Coast Fork-Middle Fork confluence.

In addition to the description, provide a table similar to the example below.

See the Application Instructions for clarification and an example.

Measuring What	Objective of the Measurement	Frequency and Duration of Measurements	Protocols to be used	Who Will Monitor? (name, affiliation, phone)
Determine if (Measure 1) excavated inlet and related excavations achieved design objectives: Increase the frequency and duration of side channel flows.	1) Measure presence, elevation, & duration of surface water inundation in excavated side channel.	1) Twice/week during the period October-June & once/month July-September (or as dictated by unexpected drops in base flow) in conjunction with monitoring digital stream gages hourly upstream and on-site for 3 years.	1) Collect water elevation as measured visually on 9 staff gages across site including a new staff gage in phase III alcove, mechanically at 3 piezometer wells, and digitally at 1 piezometer well and 2 stream gages. Repair or replace damaged monitoring stations as needed.	1) Jason Blazar, FBP Stewardship Coordination Consultant, 541-543-6869. Assisted by Jeff Bandow, M.S., Geography (volunteer), who supervises University of Oregon interns who collect data (continuation of a successful volunteer effort in place since 2003).
Determine if (Measure 1) excavated inlet and related excavations achieved design objectives: Increase the frequency and duration of side channel flows	2) Measure accurate construction of design elevation of side channel bottom.	2) During and immediately after site construction.	2) Standard topographic longitudinal survey and select cross sections utilizing existing system of benchmarks onsite post construction.	2) Jason Blazar (contact info above) will supervise a contract surveyor, possibly Inter-fluve, Inc or Jeff Bandow.

Determine if (Measure 1) excavated inlet and related excavations achieved design objectives: Increase the frequency and duration of side channel flows	3) Measure presence of salmonids and other fish utilizing habitat.	3) 2-3 times/ season (October-April) + once during the summer if warranted by hydrology Annually for 3 years.	3) Seine, electroshock, or trap in alcove for juvenile salmonids and other fish in accordance with ODFW sampling permit from NOAA including species list and population estimate of sample size as well as ocular surveys during high water events.	3) Jeff Ziller & Kelly Reis, district fish biologist, ODFW, 541-726-3515 with assistance from Jason Blazar.
Determine if (Measure 1) excavated inlet and related excavations achieved design objectives: Increase the frequency and duration of side channel flows	4) Measure site condition before & after implementation of excavation, including completion of grant funded planting objectives as well as maturation of habitat over time.	4) Annually for 3 years.	4) Standard OWEB photopoint protocol.	4) Jason Blazar (contact info above)
Determine if revegetation and reforestation efforts were effective as described in association with Measures 1, 2, and 4.	1) Plant survival growth (height and habit), and damage. 2) Evaluate completion, survival establishment, and growth of plantings 3) presence/absence of birds species including nest locations to guide seasonal management as well as change in species richness over time	1) Spring monitoring for 3 years (through 2011) 2) Spring photopoints for 3 years (through 2011) 3) Monitoring began 2003. We plan to continue annually until 2011 (3 years) and then once every 5 years.	1) 21 monitoring plots established in 2004. 2) Standard OWEB photopoint protocol. 3) Standard point-count protocol + modified area search (between station points) along bird monitoring route established in 2003.	1) University of Oregon Dept. of Environmental Studies (Service Learning Program). 2) Jason Blazar, FBP Stewardship Coordination Consultant. 541-543-6869. 3) Jason Blazar, FBP Stewardship Coordination Consultant. 541-543-6869, will supervise 2 to 3 volunteer ornithologists. This continues an avian monitoring begun in 2003.
Determine if control of invasive vegetation efforts were effective as described in Measure 3 to improve habitat quality for Oregon Conservation Strategy (OCS) key species on 8 acres along side channel as well as on the 4.5 acres planted in Measure 1, the 10 acres in Measure 2 and 16 acres in Measure 4.	1) Presence/absence of invasive vegetation including population (size and density) estimate with observations on effect of control treatments.	1) Annually in late winter-Spring through 2011 (3 years)	1) Ocular survey for presence, GPS mapping, photo documentation, and notes of invasive plant location & population density and results of weed control measures.	1) Jason Blazar, FBP Stewardship Coordination Consultant, 541-543-6869

South Meadow Floodplain Enhancement • Phase III • Measures I-IV • 2008-11 Budget OLD

CAPITAL BUDGET	Quantity (Unit no.)	Unit (i.e, hours, each, foot)	Unit Cost	In-kind Match	Total Cash Match Funds	OWEB Funds	Total (cash & in-kind) Costs
PRE-IMPLEMENTATION							
Project design & engineering			$7,000		$3,500	$3,500	$7,000
Permitting			$3,000		$1,500	$1,500	$3,000
Baseline monitoring			$2,000		$1,000	$1,000	$2,000
Pre-implementation Subtotal (1)					**$6,000**	**$6,000**	**$12,000**
PROJECT IMPLEMENTATION							
PROJECT MANAGEMENT (Unit cost is hourly wages. Payroll taxes/benefits is separate line item)							
Project Manager	392	hours	$28		$6,000	$4,976	$10,976
Payroll taxes/benefits (total for above positions)	$10,976	x 25%	0.25			$2,744	$2,744
Project Management Subtotal (2)					**$6,000**	**$7,720**	**$13,720**
IN-HOUSE PERSONNEL (Unit cost is hourly wages. Payroll taxes/benefits is separate line item)							
Stewardship Assistant (crew leader)	2288	hours	$17		$12,000	$26,896	$38,896
Volunteer coordinator	136	hours	$16		$600	$1,576	$2,176
Payroll taxes/benefits (total for above positions)	$41,072	x 25%	0.25		$4,500	$5,768	$10,268
FBP volunteer labor crews	750	hours	$12	$9,000			$9,000
FBP Volunteer prof. tech. consulting services (1)	125	hours	$50	$6,250			$6,250
Lane County Parks Division (inkind service)	50	hours	$135	$6,750			$6,750
In-House Personnel Subtotals (3)				**$22,000**	**$17,100**	**$34,240**	**$73,340**
CONTRACTED SERVICES (Labor for instream work, tree planting, technical consultation, project management, etc.)							
Stewardship Coordination Consultant	1,104	hours	$28		$13,400	$17,512	$30,912
Seasonal Stewardship Crews (2)	6320	hours	$15		$40,200	$54,600	$94,800
Hydro engineer analysis, survey, etc (3)	1	contract	$5,000		$3,000	$2,000	$5,000
Gator or equivalent field vehicle (lease)	36	months	$300		$7,200	$3,600	$10,800
Short-term equipment rental (4)	1	various	$9,500	$2,500	$2,500	$4,500	$9,500
Excavation & Landscape services (5)	1	contract	$65,000	$7,500	$25,000	$32,500	$65,000
Contracted Services Subtotal (4)				**$10,000**	**$91,300**	**$114,712**	**$216,012**
TRAVEL							
Mileage	4000	miles	$0.50		**$800**	**$1,200**	$2,000
Travel Subtotal (5)					**$800**	**$1,200**	**$2,000**
SUPPLIES/MATERIALS (Fertilizer, seed, fencing, boulders, logs, plants, film, etc.)							
Fuel	1500	gallons	$3.50		$1,500	$3,750	$5,250
Native & sterile Herbaceous seed	750	pounds	$35		$6,000	$20,250	$26,250
Native plants	1700	plants	$2	$3,000		$400	$3,400
Planting supplies (fertilizer, mulch etc)	1	Misc.	$15,000		$6,000	$9,000	$15,000
Construction supplies & materials (6)	1	Misc.	$26,500	$4,000	$5,000	$17,500	$26,500
Equipment repair & maintenance	3	budget item	$1,000		$3,000		$3,000
Tools (7)	1	Misc.	$7,200		$3,500	$3,700	$7,200
Weed control (8)	1	Misc.	$20,100		$10,200	$9,900	$20,100
Supplies/Materials Subtotal (6)				**$7,000**	**$35,200**	**$64,500**	**$106,700**
CAPITAL EQUIPMENT							
Brush cutter with handlebars	1	equipment	$500			$500	$500
Tractor implement: Grapple	1	implement	$1,800			$1,800	$1,800
Tractor implements: Native seed spreader	1	implement	$4,200		$2,000	$2,200	$4,200
Capital Equipment Subtotal (7)					**$2,000**	**$4,500**	**$6,500**
EFFECTIVENESS MONITORING							
Annual Photo-points	$1,000	per year	1			$1,000	$1,000
Monitor Hydrology	$5,000	per year	1	$2,000		$3,000	$5,000
Reptile/Amphibian survey	$2,000	per year	1	$1,000		$1,000	$2,000
Avian point count survey	$2,000	per year	1	$1,000		$1,000	$2,000
Plant survival census	$2,500	per year	1	$1,500		$1,000	$2,500
Fish surveys with focus upon salmonids	$5,000	per year	1	$3,500		$1,500	$5,000
Invasive vegetation survey	$2,500	per year	1			$2,500	$2,500
Effectiveness monitoring Subtotal (8)				**$9,000**		**$11,000**	**$20,000**
CAPITAL Sub-Totals (1-8)				**$48,000**	**$158,400**	**$243,872**	**$450,272**

South Meadow Floodplain Enhancement • Phase III • Measures I-IV • 2008-11 Budget

	Quantity (Unit no.)	Unit (i.e, hours, each, foot)	Unit Cost	In-kind Match	Total Cash Match Funds	OWEB Funds	Total (cash & in-kind) Costs
NON-CAPITAL BUDGET							
EDUCATION & OUTREACH							
Interpretive Signage at Backwater Viewpoint	1	sign	4000		$2,000	2000	$4,000
Education/Outreach Subtotal (9)					**$2,000**	**$2,000**	**$4,000**
NON-CAPITAL EQUIPMENT							
43 hp Tractor mower (in-kind value)	36	months	$250	$9,000			$9,000
Non-Capital Equipment Subtotal (10)				**$9,000**			**$9,000**
NON-CAPITAL TOTAL (9-10)				**$9,000**	**$2,000**	**$2,000**	**$13,000**
FISCAL ADMINISTRATION							
Fiscal Administration/Contract Mgmt/Project Completion Report (Ex. C) (8%)					$8,500	$24,000	$32,500
Fiscal Administration Subtotal (11)					**$8,500**	**$24,000**	**$32,500**
POST-IMPLEMENTATION STATUS REPORTING: Costs associated with Exhibit D reports							
Grant Reporting/Annual report preparation	$1,200	/yr	3			$3,600	$3,600
Post Implementation Status Reporting Subtotal (12)						**$3,600**	**$3,600**
CAPITAL TOTAL (1-8 + 11-12)				**$48,000**	**$166,900**	**$271,472**	**$486,372**
BUDGET TOTALS (1-12)				**$57,000**	**$168,900**	**$273,472**	**$499,372**

BUDGET NOTES

(1) Volunteer Consulting Biologists: Includes FBP Stewardship Technical Advisory Committee contributions.
(2) Contracted Seasonal Stewardship Crew: See detailed work plan for task allocations.
(3) Construction Surveys: Several permanent benchmarks and surveys before, concurrent with and after excavation to assure design hydrology.
(4) Equipment Rental (short term): Steam-roller; infrared burner; tractor implements, such as 15" chipper, no-till seed drill, etc.
(5) Excavation & Landscape Services: Includes project excavation and diverse site preparation tasks to control weeds, such as sod removal, steam/burn weeds, brush rake to remove weedy root wads, tree removal & limbing, native plant salvage, mowing, construction, silt fencing.
(6) Construction Supplies: logs for channel, non-woven road fabric, erosion control fabric and fencing, native hay, routes, survey stakes/paint/flagging, hazard fencing, terra seed application, etc.
(7) Tools: Chain saw, hand tools, propane burner "cart" (for flaming weeds along roads and trails), mower decks, broadcast herbicide sprayers and and injection gun, protective clothing, crew rain gear, gloves.
(8) Weed Control: herbicides, mulch (e.g., hogged fuel), corn gluten weed block, etc.,plastic and fabric for solarization & smothering.

Shaded quantities and unit costs are calculated from linked project work plan.

ATTACHMENT A

MATCH FUNDING FORM

Document here the match funding shown on the budget page of your grant application

OWEB accepts all non-OWEB funds as match. An applicant may not use *another OWEB grant* to match an OWEB grant. However, an applicant who benefits from a pass-through OWEB agreement with another state agency, by receiving either staff expertise or a grant from that state agency, may use those benefits as match for an OWEB grant. (Example: A grantee may use as match the effort provided by ODFW restoration biologists because OWEB funding for those positions is the result of a pass-through agreement).

At the time of application, match funding does not have to be *secured*, but you must show that at least 25% of match funding has been *sought*. On this form, you do not necessarily need to show authorized signatures ("secured match"), but the more match that is secured, the stronger the application. Identify the type of match (cash or in-kind), the status of the match (secured or pending), and either a dollar amount or a dollar value (based on local market rates) of the in-kind contribution.

If you have questions about whether your proposed match is eligible or not, visit our website at http://www.oregon.gov/OWEB/GRANTS/grant_app_materials.shtml, or contact your local OWEB regional program representative (contact information available in the instructions to this application).

Project Name: South Meadow Floodplain Enhancement Phase III Applicant: Friends of Buford Park & Mt. Pisgah

Match Funding Source	Type (√ one)	Status (√ one)*	Dollar Value	Match Funding Source Signature/Date*
Oregon Dept. of Fish & Wildlife– Project support - 2008-09	☒ cash ☐ in kind	☒ secured ☐ pending	$86,000.00	Oct 19,'07 See letter
National Fish & Wildlife Foundation: More Fish	☒ cash ☐ in kind	☒ secured ☐ pending	$50,000.00	Award letter forthcoming
U.S. Fish & Wildlife Service – Partners program	☒ cash ☐ in kind	☐ secured ☒ pending	$20,000.00	
Friends of Buford Park	☒ cash ☐ in kind	☒ secured ☐ pending	$12,900.00	4/18/08
Friends of Buford Park: Contributed supplies, volunteer svcs	☒ cash ☐ in kind	☐ secured ☒ pending	$46,750.00	4/18/08
Oregon Dept. of Fish & Wildlife– Fish Monitoring	☐ cash ☒ in kind	☒ secured ☐ pending	$3,500.00	Oct 18/'07 See letter
Lane County Parks Division: Staff time	☐ cash ☒ in kind	☐ secured ☒ pending	$6,750.00	
	☐ cash ☐ in kind	☐ secured ☐ pending		

* **IMPORTANT:** If you checked the "Secured" box in the status Column for any match funding source, you must provide either the signature of an authorized representative of the match source in the final Column, or attach a letter of support from the match funding source that specifically mentions the dollar amount you show in the Dollar Value Column.

ATTACHMENT B

LAND USE INFORMATION FORM

This information is needed to determine if the proposed project complies with statewide planning goals and is compatible with local comprehensive plans (ORS 197.180). The form must be submitted before OWEB releases project funds. OWEB will release project funds only if the project either is not regulated by, or is compatible with, the local comprehensive plan and zoning ordinance. If a project is regulated by the local comprehensive plan and zoning ordinance, OWEB will void grant agreements for projects the county determines to be incompatible with the local comprehensive plan and zoning ordinance. If the county requires additional local approvals for a project regulated by the local comprehensive plan and zoning ordinance, OWEB will not release project funds until these conditions are satisfied.

1. TO BE COMPLETED BY THE APPLICANT/GRANTEE

Applicant/Grantee Name: Friends of Buford Park & Mt. Pisgah

Project Name: South Meadow Floodplain Enhancement Phase III

2. TO BE COMPLETED BY CITY/COUNTY OR TRIBAL PLANNING OFFICIAL

Complete this section only after section 1, above, has been completed. Check the box below that applies:

☐ This project is not regulated by the local comprehensive plan and zoning ordinance.

☒ This project has been reviewed and is compatible with the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is not compatible with the local comprehensive plan and zoning ordinance.

☐ Compatibility of this project with the local planning ordinance cannot be determined until the following local approvals are obtained:

_____ Conditional Use Permit
_____ Development Permit
_____ Plan Amendment
_____ Zone Change
_____ Other

An application has _____ has not X been made for the local approvals checked above.

Previously Reviewed by Thom Lansfear, Lane County Planner. – Chris Orsinger

* Signature of Local Official

Date

Print Name: _____ Phone: _____

Title: _____ Email: _____

Must be an authorized signature from your local City/County or Tribal Planning Department, regardless of which box is checked above.

ATTACHMENT C

ACKNOWLEDGEMENT OF PUBLIC RECORD INFORMATION

OAR 695-005-0030 (4) states that "All applications that involve physical changes or monitoring on private land must include a landowner signature signifying their approval and understanding that all monitoring information obtained on their property is public record. An explanation must accompany the application if any of the information required on the application cannot be provided. The landowner's signature will be required prior to the release of the grant agreement if the application is approved for funding."

Therefore, EITHER the Applicant must sign and date in the "For the Applicant" section below, OR all private landowners participating in the project must complete this form at the application stage (use additional pages, if necessary) by signing in the "For the Landowner(s)" section below.

The project will occur on (check one):

☒ Public land only (STOP: No need to complete the rest of the form)

☐ Private land only ☐ Public and private land (If you check either of these boxes, complete either of the boxes below)

EITHER

For the Applicant: I am unable to secure all landowner signatures at this time as not all landowners have been identified at the time of application. I understand that should OWEB fund this project, that OAR 695-005-0030 (4) requires me to secure all participating private landowner signatures prior to the release of an OWEB grant agreement for this project.

_____ _____

Applicant Signature Date

OR

For the Landowner(s): By my signature below, I certify my understanding and approval that should the Oregon Watershed Enhancement Board fund part, or all, of this proposal, that all monitoring information obtained on my property as a result of this project is public record. I understand that if I refuse to comply with the terms of this form, I will jeopardize my ability to receive OWEB compensation for my participation in this project.

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

_____ _____

Landowner Signature Date

ATTACHMENT D

RESTORATION METRICS FORM

OWEB receives a portion of its funds from the federal government and is required to report how its grantees have used those funds. Complete both sections of the form below as they apply to your project. The information you provide is used for federal reporting purposes.

Section 1 Project Overview

Answer all five questions below, even if you have answered a similar question in a previous section in the grant application.

1. **Land Use Setting: CHECK ONE BOX ONLY.**

☐ **Urban/Suburban/Exurban** *(Projects located within urban growth boundaries or rural residential areas)*	☒ **Rural** *(Projects located outside urban growth boundaries or rural residential areas.)*

2. **Dominant Watershed Setting: CHECK ONE BOX ONLY.** Example: Your project involves managing erosion in the upland area with some erosion control extended to the riparian area. Because most of the work is to occur in the upland area, you would check only the Upland box below.

☐ **Estuary** *(where freshwater meets and mixes with saltwater of ocean tides.)*	☒ **Riparian** *(adjacent to a water body, within the active floodplain.)*
☐ **Instream** *(below the ordinary high-water mark or within the active channel — includes fish passage.)*	☐ **Upland** *(above the floodplain.)*
	☐ **Groundwater** *(Projects that recharge groundwater or primarily affect the subsurface water table.)*
☐ **Wetland** *(areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.*	

3. **Total Acres Treated:** 38.5 **Total Stream Miles Treated:** .75

4. **Project Priority Identification:** Name the primary watershed/subbasin plan or assessment in which this project type is identified as a priority. **See Application Section III, question #R9.**

   NPPC Willamette Sub-basin Plan, Coast Fork Watershed Council 2-year Action Plan

5. **Project Monitoring:** Identify monitoring activities planned. Check as many boxes as apply. **See Application Section III, question #R15.**

☒ Fish presence/absence/abundance/distribution survey(s)	☒ Riparian vegetation (Presence/Absence)
☐ Instream Habitat surveys	☐ Spawning surveys
☐ Macroinvertebrates	☒ Upland vegetation (Presence/Absence)
☒ Noxious weed (Presence/Absence)	☐ Water quality
☒ Photo points	☒ Water quantity
☐ Other (explain):	

Section 2 Project Activities

Provide values for each Project Activity applicable to your application. Leave blank any Project Activity or metric line that is not appropriate to your application. All data are pre-project and are therefore proposed, not completed.

Fish Passage Improvement Projects: *Projects that affect or provide fish migration. For partial barriers, include total miles made accessible by the project.* Check all proposed activities.

☐ Install fish passage structure *(e.g., fish ladder, fishway, etc.)*	☐ Removal of stream crossings
☐ Remove/replace culverts	☐ Removal of irrigation/push up dams
☒ Other (explain): Facitliate fish passage by lowering inlet and two other channel segments in a 3/4-mile long side channel complex on Coast Fork Willamette	

3 Number of fish passage blockages removed or improved

.75 Estimated miles of stream made accessible by removal of barriers *other* than culverts

_____ Estimated miles of stream made accessible by the improvement or removal of culverts (i.e., record the miles of stream to the next barrier or the extent of fish use)

Water Quality Projects: *Projects that result in an improvement of water quality parameters.* Check all boxes that apply:

☐ Bacteria	☐ Nutrients (name):	☒ Temperature
☒ Dissolved Oxygen	☐ Pesticides	☐ Toxics
☐ Heavy Metals (name):	☐ pH	☒ Turbidity
☒ Nitrates	☐ Phosphorus	
☐ Other (explain):		

Instream Habitat Projects: *Projects that increase or improve the physical conditions within the stream environment to provide needed habitat conditions.* Check all proposed activities.

☐ Bank stabilization	☒ Channel reconfiguration	☒ Large wood placement
☐ Boulder placement	☐ Deflectors/barbs	☒ Off-channel habitat
☐ Carcass placement	☒ Floodplain connectivity	☐ Spawning gravel placement
☐ Other (explain):		☐ Weirs/grade control

.75 Estimated miles of stream to be stabilized (i.e., to be bioengineered or engineered to resist the erosive forces of flowing water). *Stream sides treated* ☐ one ☒ two (Do not double count miles if a second side was treated)

.75 Estimated miles of stream to be treated that **are not** bank stabilization. Count one side of the stream only.

5 Pieces of wood per mile.

Riparian Habitat Projects: *Projects above the ordinary high-water mark of the stream and within the floodplain of the stream.* Check all proposed activities.

☐ Beaver management	☐ Manage sediment inputs	☐ Riparian habitat protection
☐ Conservation grazing management	☒ Non-native/noxious plant control	☐ Vegetation management (specify):
☐ Floodplain nurse log placement	☐ Riparian fencing	☐ Voluntary tree retention
☐ Manage nutrient inputs	☒ Riparian planting	☐ Water gap development
☐ Off-stream livestock water development		
☐ Other (explain):		

30.5 Estimated riparian acres to be planted.

38.5 Estimated riparian acres to be treated for non-native/noxious plant species.

38.5 Estimated total riparian acres to be treated.

.75 Estimated miles of riparian streambank to be treated. *Stream sides treated* ☐ one ☒ two (Do not double count miles if a second side was treated)

Upland Habitat Projects: *Projects implemented above the floodplain.* Check all proposed activities.

☐ Conservation tillage	☐ Reduction of nutrient inputs	☐ Sediment control basins
☐ Grazing management	☒ Restore historic natural habitats	☐ Terracing
☒ Non-native/noxious plant control	☐ Upland habitat protection	☐ Upland erosion control; planting/seeding
☐ Reduction of fuels	☐ Upland livestock water development	
☐ Vegetation management (e.g., juniper control)		
☒ Other (explain): Remove encroaching fir from oak habitat; place in channel		

1 Estimated total acres of upland habitat to be treated for non-native/noxious species.

1 Estimated total acres of upland habitat to be treated.

_____ Estimated number of livestock watering sites.

Estuarine Habitat Projects: *Projects that result in improvement or increase in the availability of estuarine habitat.* Check all proposed activities.

☐ Dike breaching/removal	☐ Non-native/noxious plant control	☐ Tide gate modification
☐ Estuarine channel modification	☐ Estuarine habitat protection	☐ Tide gate removal
☐ Estuarine habitat creation	☐ Removal of existing fill material	
☐ Other (explain):		

_____ Estimated total estuarine acres to be treated for non-native/noxious plant species.

_____ Estimated total acres to be reconnected to the estuary.

_____ Estimated total estuarine acres to be treated.

Wetland Habitat Projects: *Projects designed to create or improve wetland areas.* Check all proposed activities.

☐ Manage nutrient inputs	☐ Vegetation planting	☒ Wetland habitat enhancement
☐ Manage sediment inputs	☐ Wetland creation (from upland)	☐ Wetland habitat protection
☒ Non-native/noxious plant control	☐ Wetland restoration (reestablishment of hydrology)	
☐ Other (explain): Note: Wetland acres here is a portion of the 38.5 riparian..		

1.5 Estimated total wetland acres to be treated for non-native/noxious plant species

0 Estimated total wetland acres created (new wetland created from uplands)

0 Estimated total wetland acres restored (wetland hydrology reintroduced to a drained site)

1.5 Estimated total wetland acres enhanced (existing wetland improved to benefit function)

Road Projects: *Projects designed to improve road impacts to watersheds.* Check all proposed activities.

☐ Road drainage system improvements	☐ Road sediment and delivery control
☐ Road obliteration/decommissioning	☐ Road surface improvement
☐ Road reconstruction	☐ Other (explain):

_____ Estimated miles of road to be treated.

Water Management Projects: *Projects designed to improve water efficiency, quantity, and timing within the watershed.* Check all proposed activities.

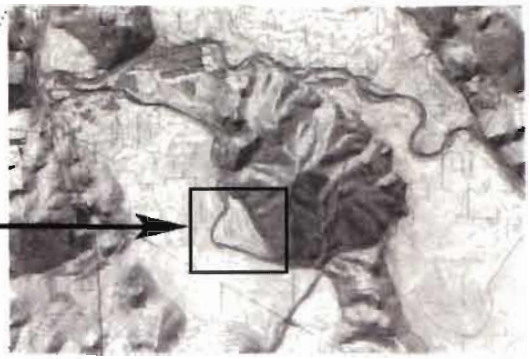
☐ Convert gravity diversion to pumps or infiltration galleries	☐ Irrigation systems for improved water conservation	☐ Recharge groundwater/aquifer
☐ Create off-channel flood storage	☐ Irrigation systems for improved water quality	☐ Reduce water loss in irrigation delivery
☐ Install storm water runoff treatment	☐ Protect instream flow	☐ Other (explain):

_____ Estimated amount of water (cubic feet per second) returned during the critical water period, April-October.

_____ Estimated number of acres to be treated for irrigation system improvements.

Lane County Context Map

South Meadow Floodplain Restoration Project Site
Township T-18; Range R2W; Sections 18, 19, 55



BENTON COUNTY
LINN COUNTY
DOUGLAS COUNTY
DOUGLAS COUNTY
DESCHUTES COUNTY
KLAMATH COUNTY
Junction City
Cheshire
Triangle Lake
Fern Ridge Res.
Alvadore
Elmira
Noti
Walton
Veneta
Coburg
Marcola
Vida
Leaburg
Walterville
Springfield
EUGENE
Goshen
Jasper
Crow
Pleasant Hill
Dexter
Lowell
Fall Creek Res.
Dexter Res.
Lookout Point Res.
Creswell
Cottage Grove
Dorena Lake
Cottage Grove Lake
Culp Creek
Blue River Lake
Blue River
McKenzie Bridge
Cougar Res.
Westfir
Oakridge
Waldo Lake
Hills Creek Res.
99
5
126
58
242

Oregon Counties
Lane County

LEGEND

ROADS
RIVERS
COUNTY BOUNDARY
RESERVOIRS & LAKES

N
W
E
S

Scale
0 10 15 Miles
0 10 20 Kilometers

OREGON
Fish & Wildlife

Oregon Watershed Enhancement Board
775 Summer St., NE, Suite 360
Salem, OR 97301-1290

October 19, 2007

Dear OWEB,

I am writing in support of the Friends of Buford Park and Mt. Pisgah's (FBP) grant application to the Oregon Watershed and Enhancement Board (OWEB) to restore part of the Coast Fork of the Willamette floodplain on Buford Park. The Oregon Department of Fish and Wildlife (ODFW) through Bonneville Power Administration funding supported considerable restoration work by FBP on South Meadow in Buford Park and Sorenson pasture. Much of this work includes restoration of riparian forests and floodplain functions (reconnecting backwater habitats). The results of the restoration activities have been remarkable and highly productive.

Oregon's Conservation Strategy identified the confluence of the Middle Fork and Coast Fork of the Willamette including Buford Park/Mt. Pisgah as a high priority area for conservation. The integration of upland oak woodland and riparian floodplain restoration has produced an extraordinary opportunity to benefit multiple fish and wildlife species. The work to date (Phases 1 and 2) by FBP on restoring a bottomland hardwood forest on Sorenson and reconnecting a vast network of backwater and side channel habitats on South Meadows has been well-planned and implemented. My program proposes to fund about $43,000 of the restoration work at South Meadow in 2008 and a similar amount for 2009. We will also continue to fund activities on Sorenson and the upland oak woodlands of Mt. Pisgah.

We encourage OWEB to fund FBP's grant request to complete the hydrologic modifications and restoration of native vegetation on South Meadow. This funding will contribute significantly to completion of a valuable floodplain restoration effort.

Sincerely,

Michael Pope, PhD
BPA Wildlife Mitigation Coordinator
Oregon Department of Fish and Wildlife
3406 Cherry Ave. NE
Salem, OR 97303
503-947-6086
Email: Michael.D.Pope@state.or.us

Middle Fork Willamette

WATERSHED
COUNCIL

October 19, 2007

Oregon Watershed Enhancement Board
775 Summer Street NE, Suite 360
Salem, OR 97301

On behalf of the Middle Fork Willamette Watershed Council, I'd like to express formal support for Friends of Buford Park's Phase III South Meadow Floodplain Restoration Project.

We are committed to participating in the success of this floodplain restoration project and consider FBP a partner in restoring watershed conditions at the confluence of the Coast and Middle Fork Willamette Rivers.

This project serves to address an important ecological need at the confluence and provides necessary habitat for species of concern utilizing the area. Because the project includes property within the Middle Fork Willamette Watershed, it would help us accomplish our goal of connecting the river to its floodplain.

As a partner in this project, we plan to contribute in-kind contribution. The Middle Fork Willamette Watershed Council hopes that OWEB will provide funding for this invaluable habitat restoration project.

Sincerely,

Eve Montanaro, Coordinator

Oregon
Theodore R. Kulongoski, Governor

Department of Fish and Wildlife
SPRINGFIELD FIELD OFFICE
3150 Main Street
Springfield, OR 97478
Voice (541) 726-3515
FAX (541) 726-2505

http://www.dfw.state.or.us/swwd.html

October 18, 2007

Re: Letter of Support for Phase III, South Meadow at Howard Buford Recreation Area

Dear Ms. Hudson and Board Members,

The Springfield field office of the Oregon Department of Fish and Wildlife (ODFW) is committed to collaborating with the Friends of Buford Park & Mt. Pisgah to implement Phase III of floodplain enhancement activities within the South Meadow at the Howard Buford Recreation Area.

Implementation of the third and final phase of this project will build upon earlier habitat work in this area and will provide local as well as regional benefits to advance the conservation of at risk species, including upper Willamette spring Chinook salmon, Oregon chub, western pond turtles, red-legged frogs, as well as the critical habitats upon which they depend. In addition, the project will benefit a myriad of other native fish and wildlife species, including rainbow and cutthroat trout, and neotropical migratory birds.

ODFW's mission is to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. This project directly complements ODFW's mission by the creation and enhancement of important fish and wildlife habitats. The Springfield field office has contributed to this project during the design phase, as well as participated in preliminary monitoring. Staff looks forward to continuing to work with our partners to monitor the results of this project.

Springfield ODFW staff will continue to work with project partners to monitor the fish community using the newly created habitat. In addition, we will consult with partners and ODFW Research staff to assess the feasibility of introducing Oregon chub at the site at a later date.

Please do not hesitate to contact me should you require additional information.

Sincerely,

Kelly Reis

Kelly Reis
Assistant District Fish Biologist
South Willamette Watershed District, Springfield Field Office

COAST FORK
WILLAMETTE
Watershed Council

28 S. Sixth St., Suite A Cottage Grove, OR 97424
541-767-9717 coastfork@willamette.net

April 18, 2007

Dear Grant Program Administrator,

The Coast Fork Willamette Watershed Council is committed to collaborating with the Friends of Buford Park & Mt. Pisgah to implement phase III of floodplain enhancement activities within the South Meadow at the Howard Buford Recreation Area.

Implementation of the third and final phase of this project is of the highest priority as it will provide local as well as regional benefits to advance the conservation of at risk species including Spring Chinook salmon, Oregon Chub, Western Pond Turtles, Red Legged Frogs and the critical habitats that they depend upon.

The floodplain enhancement efforts at Buford Park represent significant restoration leadership in our watershed both in scale and thoroughness with which the project is being implemented. Not only is it a resource to our watershed council for the example is sets and the learning opportunity it provides, this is one of the few places in the Southern Willamette Valley that will enjoy the long-term protection required for conservation of species. We strongly support funding for the completion of this important project.

Phase III of the South Meadow project matches the mission of the Coast Fork Willamette Watershed Council and we will continue to work in collaboration with this project in the form of staff time and volunteer contributions on site. In addition, a watershed council tour of the project is scheduled for this summer, and this project will serve as an example for landowners interested in floodplain restoration whom we will be planning local projects as part of a funded OWEB Technical Assistance grant to be implemented 2007-2008. The total value of this Coast Fork Council collaboration is $2000.

Please do not hesitate to contact me should you require additional information.

Sincerely,

Pamela Z Reber

Pamela Reber
Coordinator

Friends of Buford Park & Mt. Pisgah

POST OFFICE BOX 5266 • EUGENE, OREGON 97405 • 541-344-8350
E-MAIL: office@bufordpark.org WEBSITE: www.bufordpark.org

April 18, 2008

Wendy Hudson
OWEB
775 Summer St. NE, Suite 360
Salem, Oregon 97301

RE: South Meadow Phase III Resubmission

Dear Wendy,

Enclosed is the resubmission of our South Meadow Phase III proposal that was recommended for but did not receive funding in October 2007. This project will lower the inlet to a ¾ mile side channel complex on the Willamette's Coast Fork, as well restore native plant communities on 38.5 acres of the 200-acre South Meadow site at Buford Park.

I've attached our cover letter from the October 2007 proposal, in case new reviewers are involved.

BUDGET & OTHER CHANGES:

1) Total cash and in-kind project budget increased 2.5% due to inflation, primarily for personnel, contracted services, fuel etc.

2) To mitigate inflation, we reduced equipment and fiscal administration (from 10% to 8% of total).

3) We have designed and obtained approval from Lane County to proceed with the South Meadow Floodplain Interpretive Trail (see color map). While we will seek separate funding to build the trail, this proposal requests $2000 to match $2000 we've already secured for interpretive signage.

A BROADER PERSPECTIVE

As you know, the comprehensive ecological restoration approach used in the South Meadow project serves as a model and reference for floodplain restoration projects throughout the Upper Willamette. Phase III completes hydrologic modifications and ensures significant flood flows through OWEB-funded excavation and planting areas from Phases I and II. These flows will provide ecological and water quality benefits and increase opportunities to apply lessons to future projects.

LOOKING AHEAD

Phase III completes planned excavations to the side channels on the South Meadow. However, an additional 30 acres remain available for conversion from exotic pasture and blackberry to a diversity of native forests, meadows and shrub lands.

After Phase III, FBP intends to complete native plantings and transition from a restoration to a maintenance mode in the South Meadow so we can redirect the organization's efforts other important restoration projects in the Mt. Pisgah area. These include, for example:

1) completing and implementing a park-wide habitat management plan to conserve rare oak savanna and prairie habitats,
2) expanding partnerships with watershed councils and other restoration entities to provide technical support, native seed and plants from our native plant nursery,
3) acquisition and restoration of the 1200-acre Wildish parcel next to Buford Park, adding six miles of river front to public ownership on the Willamette's Middle Fork.

If our partnership with The Nature Conservancy to acquire the 1200-acre Wildish parcel succeeds, we want to be prepared to turn our attention to this extraordinary restoration opportunity. FBP & OWEB will benefit significantly from lessons learned in Phase III.

Please do not hesitate to contact me with any questions. Thank you for considering this proposal to enhance floodplain habitat along the Coast Fork Willamette.

Sincerely,

Chris Orsinger
Executive Director

Friends of Buford Park & Mt. Pisgah

POST OFFICE BOX 5266 • EUGENE, OREGON 97405 • 541-344-8350

E-MAIL: office@bufordpark.org WEBSITE: www.bufordpark.org

October 19, 2007

Wendy Hudson
OWEB
775 Summer St. NE, Suite 360
Salem, Oregon 97301

Dear Wendy,

Enclosed is our revised project proposal to lower the inlet to a ¾ mile side channel of the Willamette's Coast Fork, and to restore native plant communities on 38.5 acres of the South Meadow site within Buford Park. In general, we reduced the scope of excavation but *significantly* increased the acreage of native revegetation to accelerate restoration on this large floodplain site.

CHANGES & COMMENTS:

1) We deleted the alcove measure, which had been designed to allow fish to exit two existing pools. In September, we met onsite with permitting staff from COE, DSL, and NOAA Fisheries. We reviewed fish monitoring data and project design NOAA staff indicated that restoring flows by lowering the inlet could be permitted without creating additional opportunity for fish escape at this site.

   Consequently, Measure #1 would lower the inlet and two side channel segments to increase frequency of side channel flows *without filling the existing pools with river rock.* Measure 1 would disturb (4.5 acres) that would be planted with native vegetation.

2) Measure #2 (10 acres) will use excavated soils to convert exotic pasture grasses to native prairie, which could be suitable nesting habitat for the site's large population of western pond turtle.

3) Measure #3 (8 acres) would continue weed control and enhance native plant communities along the side channel.

4) Measure #4 (16 acres) would convert the exotic grasses under existing reforestation areas to native understory grasses and wildflowers, significantly improving habitat function while reducing maintenance (weed control and mowing) costs on this acreage.

5) After Phase III excavation is complete, we plan construct a short trail spur from the gravel access road to a viewpoint of the Phase 2 backwater where we will install interpretive signage describing the restoration project.

This request for $252,090 from OWEB (total project cost $487,090) is larger than our April 2007 proposal because we *have more than tripled the acreage of native planting* (from 12 to 38.5 acres). In addition, this proposal funds three years of project work instead of one year, and includes project tasks associated with successful establishment of the vegetation.

What restoration work remains at the South Meadow after Phase III?
If funded, Phase III would complete planned hydrologic modifications of the side channels on the site; no additional excavation is planned. After Phase III, a total of 75 acres of this 200-acre site will have been planted with natives. However, there are still significant opportunities to enhance habitat following Phase III in 2010 or later:

1) An additional 30 floodplain acres is available for conversion from exotic pasture and blackberry to a diversity of native forests, meadows and shrub lands.
2) It would also be beneficial to establish native herbaceous understory on the remaining 20-acre reforestation area in the "east lobe`" (similar to Measure #4 in this grant).
3) Another 32 acres of mature riparian forest could be treated to control blackberry and other invasives under the canopy (similar to Measure #3).
4) A planned floodplain interpretive trail could educate park uses about watershed functions.

What future projects can you anticipate at the 2300-acre Buford Park area.
Funding and completing a park-wide habitat management plan is a top priority. For example, about 1000 acres of rare oak savanna, oak woodland, and upland prairies would benefit from thoughtful enhancements. Lane County Parks Division has approved a work plan to develop the plan, and FBP is seeking funding. The planning process would be a tool to prioritize and scope future habitat projects for the diverse habitat on the park, and could be expanded to address the adjacent 1200-acre Wildish lands (if acquired), and could address other public lands (if desired) in the Coast Fork / Middle Fork Confluence area, which is an Oregon Conservation Strategy target area.

Meanwhile, we continue efforts to propagate over 100 species in our native plant nursery for restoration projects both on and beyond the park. We may seek support to expand production, so we can supply genetically local plant materials for projects by our colleagues at watershed councils, The Nature Conservancy, McKenzie River Trust, etc.

We also continue to implement prescribed burns annually on prairie and oak savanna habitats, and have mounted a multi-year project to eradicate False Brome and Maltese Star Thistle on the park.

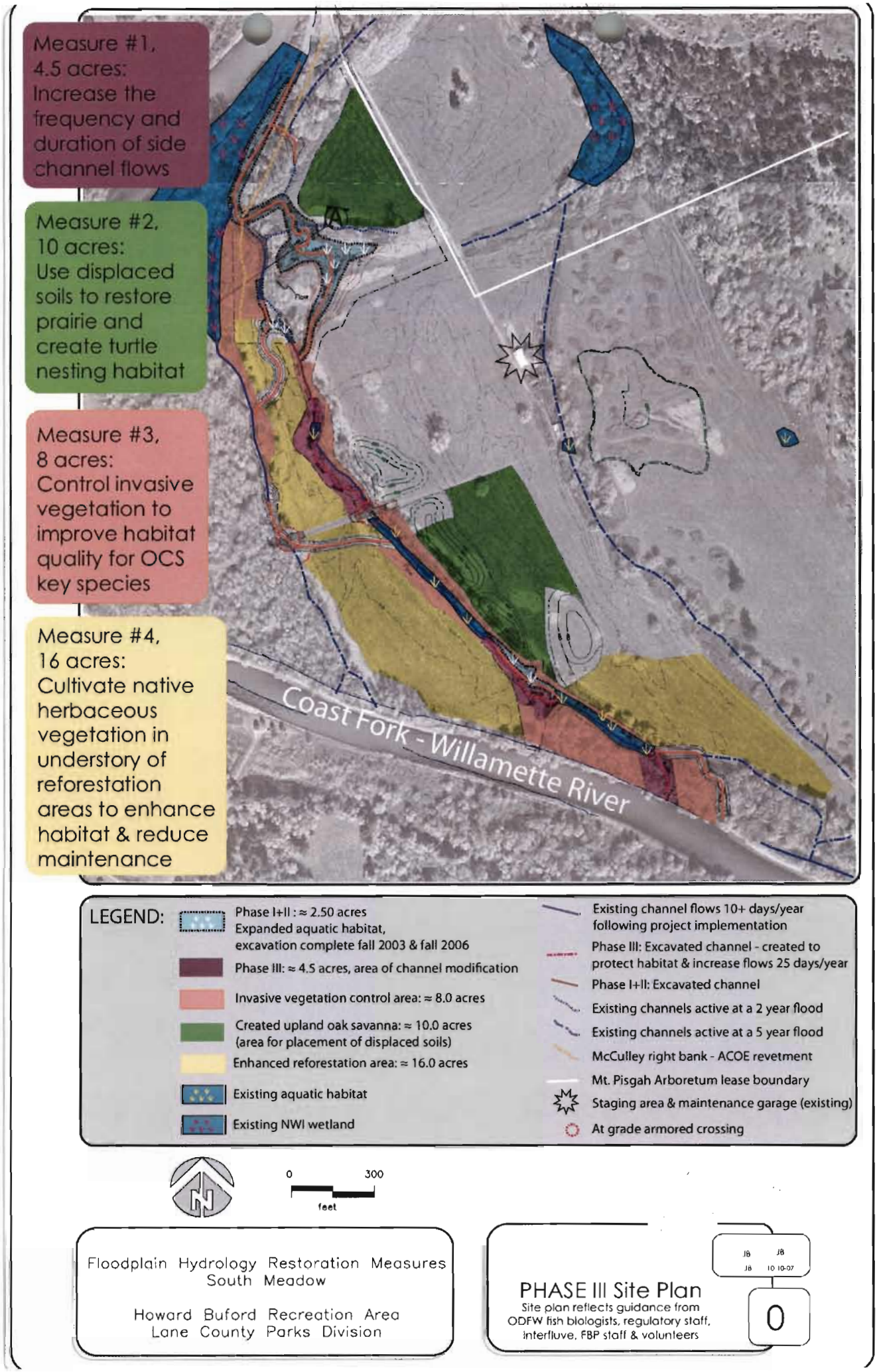
What projects are likely if the public can acquire the 1200-acre Wildish lands next to Buford Park?
Adding the 1200-acre parcel would offer extraordinary opportunities to restore floodplain function, backwater and riparian habitat on over 800 acres at the confluence of the Coast & Middle Forks of the Willamette River. The acquisition would link the 2300-acre Buford park to 1,000 acres of public land at the confluence and on the north bank of the Middle Fork, creating a 4500-acre natural area with over 10 miles of river frontage ***(see conceptual park map).***

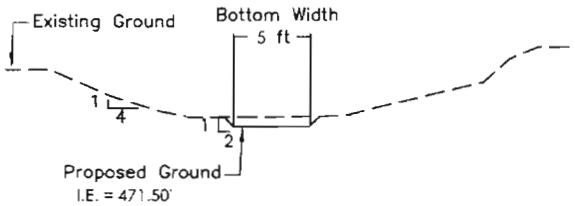
We hope to complete our work on the South Meadow so we can be available to develop for floodplain restoration plans and mobilize resources for the Wildish lands. FBP continues to work the landowner in partnership with The Nature Conservancy and other public agencies to negotiate an option to acquire this parcel.

Thank you for considering our proposal to enhance habitat along the Coast Fork Willamette.

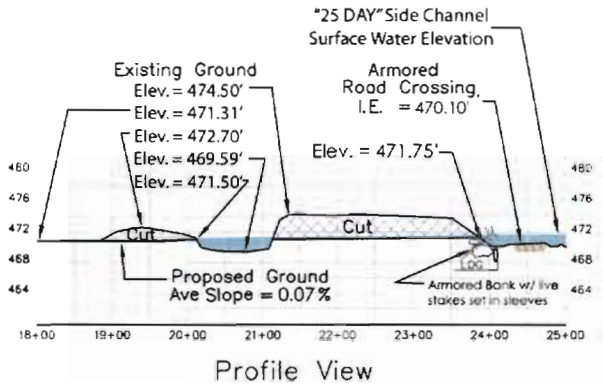
Sincerely,

Chris Orsinger
Executive Director


Measure #1, 4.5 acres: Increase the frequency and duration of side channel flows
Measure #2, 10 acres: Use displaced soils to restore prairie and create turtle nesting habitat
Measure #3, 8 acres: Control invasive vegetation to improve habitat quality for OCS key species
Measure #4, 16 acres: Cultivate native herbaceous vegetation in understory of reforestation areas to enhance habitat & reduce maintenance
Coast Fork - Willamette River
LEGEND:
Phase I+II : ≈ 2.50 acres Expanded aquatic habitat, excavation complete fall 2003 & fall 2006
Phase III: ≈ 4.5 acres, area of channel modification
Invasive vegetation control area: ≈ 8.0 acres
Created upland oak savanna: ≈ 10.0 acres (area for placement of displaced soils)
Enhanced reforestation area: ≈ 16.0 acres
Existing aquatic habitat
Existing NWI wetland
Existing channel flows 10+ days/year following project implementation
Phase III: Excavated channel - created to protect habitat & increase flows 25 days/year
Phase I+II: Excavated channel
Existing channels active at a 2 year flood
Existing channels active at a 5 year flood
McCulley right bank - ACOE revetment
Mt. Pisgah Arboretum lease boundary
Staging area & maintenance garage (existing)
At grade armored crossing
0
300
feet
Floodplain Hydrology Restoration Measures
South Meadow
Howard Buford Recreation Area
Lane County Parks Division
PHASE III Site Plan
Site plan reflects guidance from ODFW fish biologists, regulatory staff, interfluve, FBP staff & volunteers
JB
JB
JB
10 10-07
0

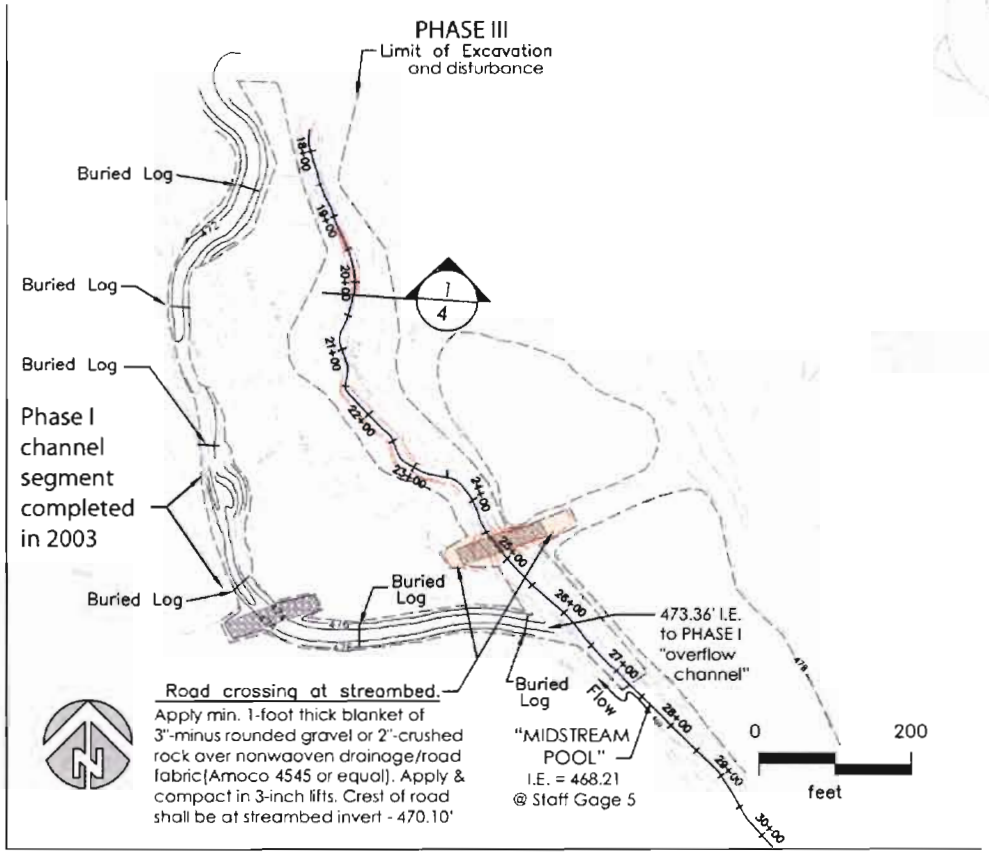


1/4 Section View at Station Point 20+10
Channel Cut
1 inch = 10 ft



Profile View

Cut Volume in Phase I = 3,000 cu.yds.
Cut Volume in Phase II = 150 cu.yds.
Cut Area in Phase II = 0.025 acres
Cut Volume in Phase III = 750 cu.yds.
Cut Area in Phase III = 0.30 acres

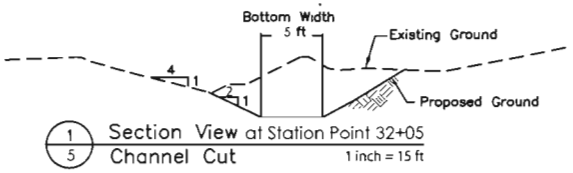


JB 10-18-07

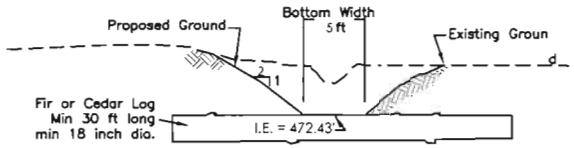
PHASE III:
Side Channel Grading Plan
Lower Segment
Measure #1

4

Floodplain Hydrology Restoration Measures
South Meadow
Howard Buford Recreation Area
Lane County Parks Division
REVISED MAY 2007

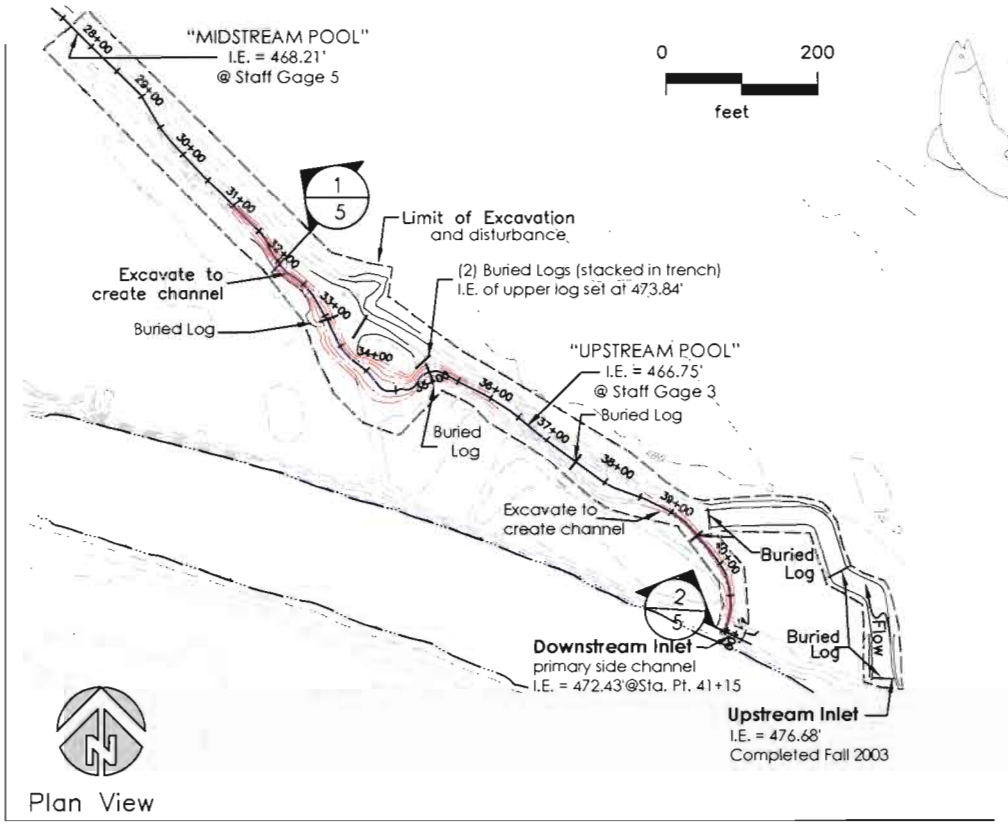


1/5 Section View at Station Point 32+05
Channel Cut
1 inch = 15 ft

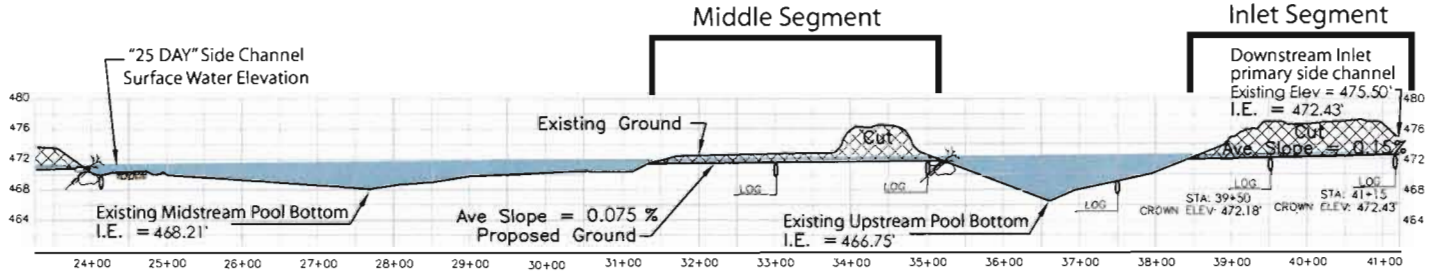


2/5 Section View at Station Point 41+15
Downstream Inlet to Primary Side Channel
1 inch = 15 ft

Cut Volume completed Fall 2003 = 3,000 cu.yds.
Cut Volume in Phase III = 1,765 cu.yds.
Cut Area in Phase III = 0.45 ac



Plan View



Profile View

DESIGNED BY	JB
DRAWN BY	JB
CHECKED BY	JB
DATE APPD	10-19-07

5

PHASE III:
Side Channel Grading Plan
Inlet & Middle Segment
Measure #1

Floodplain Hydrology Restoration Measures
South Meadow
Howard Buford Recreation Area
Lane County Parks Division
REVISED MAY 2007

South Meadow Floodplain Enhancement Project

A project of Friends of Buford Park & Mt. Pisgah

Receding floodwaters on November 20, 1996 revealed multiple side channels on the South Meadow. The side channel in the center of the floodplain was the mainstem in the 1850s.

Phase I (2003) removed a number of channel obstructions, including farm road fill here that had completely blocked flows. We planted over 18,000 native trees, shrubs, grass plugs, and wildflowers on over 40 acres.

Phase I (2003) also excavated and planted this channel segment to connect two side channels on the site, increase complexity and lengthen the channel.

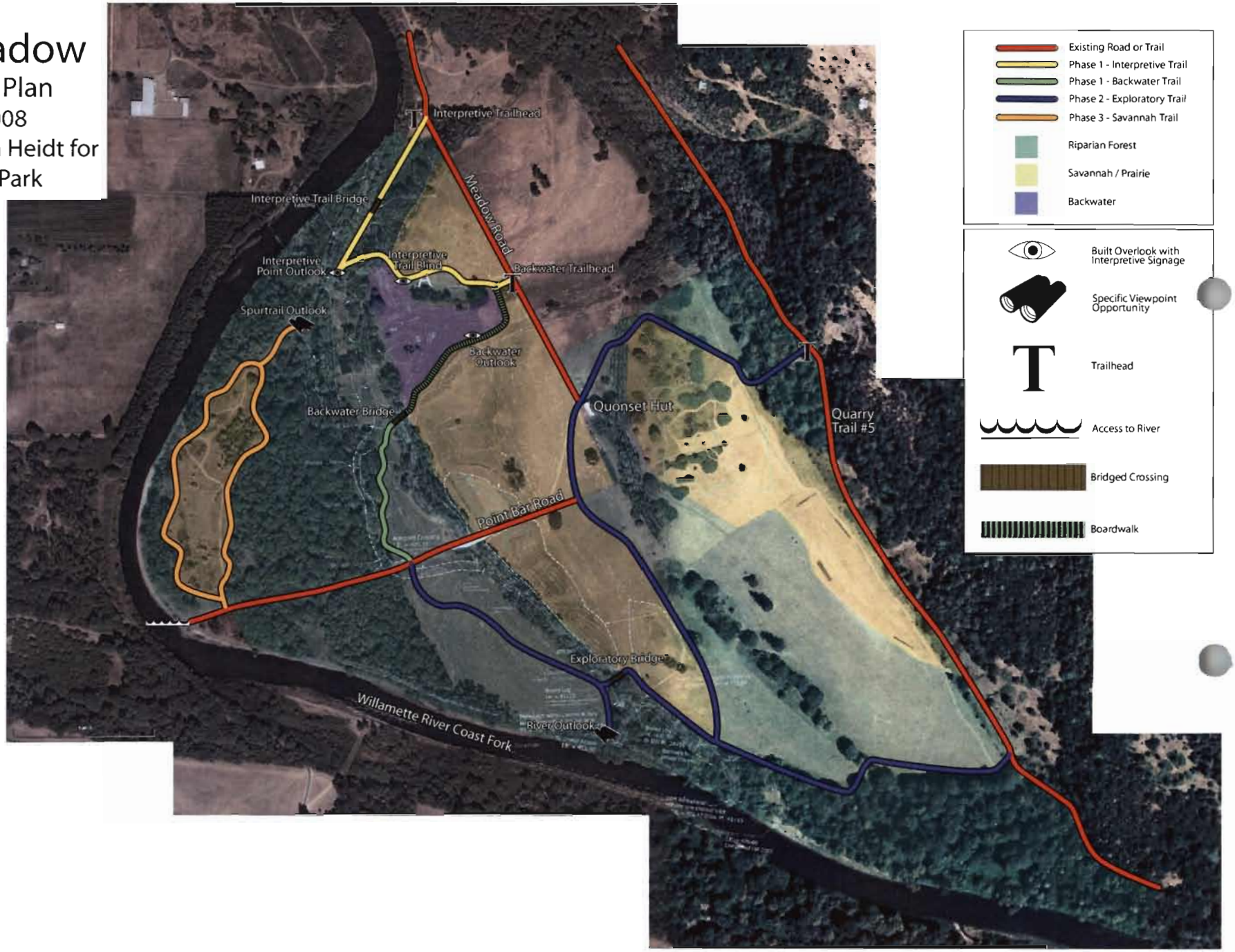
A Winter steelhead seeks refuge or spawning habitat in a stream on Buford Park, upstream from the South Meadow side channel complex.

In Phase II (2006), we removed road fill in the side channel that blocked fish passage and flows like a dam. We lowered the road to the channel bed, facilitating fish passage during high flows and access for recreation and maintenance.

Phase II (2006) excavated a 1400' long backwater channel that is connected year-round to the Coast Fork mainstem. Native fish, turtles and red-legged frogs began to use the aquatic habitat immediately, which now sports a dense, diverse growth of native grasses, wildflowers and shrubs.

South Meadow

Floodplain Trail Plan
Draft Rev. 4/17/2008
Designed by Ryan Heidt for
Friends of Buford Park



Oregon Watershed Enhancement Board
Region 3 (Willamette Basin) Review Team
Evaluation for April 23, 2007 Applications

APPLICATION NO.: 208-3006 **PROJECT TYPE:** Restoration
PROJECT NAME: South Meadow Floodplain Enhancement Project Phase 3 (2008)
APPLICANT: Friends of Buford Park & Mt Pisgah
BASIN: Willamette **COUNTY:** Lane
OWEB FUNDS REQUESTED: $158,846.00 **TOTAL COST:** $326,051.00

APPLICATION DESCRIPTION:
South Meadow is an approximately 200-acre floodplain site in Lane County's Buford Recreation Area at the confluence of Willamette River and Coast Fork Willamette River. Modification of this floodplain habitat has been extensive. Friends of Buford Park and Mt. Pisgah propose to implement the third and final phase of hydrologic modifications in the area: 1) by excavating a quarter-acre alcove, a half-acre inlet and a one-acre side channel; and 2) revegetating 12 acres with native grasses, shrubs and trees. These modifications are expected to improve winter refugia and rearing habitat for juvenile salmonids, water quality, floodwater storage and wildlife habitat. OWEB funds will be used primarily for contracted services, supplies and materials, and effectiveness monitoring.

REGIONAL TEAM REVIEW:
The review team recognizes the importance of the park and its strategic location at the confluence of the Willamette and Coast Fork Willamette rivers. They also appreciate the science-based approach the applicant takes to all its restoration projects.

However, concern was expressed about a tendency to over-engineer projects that may not "fit" the landscape. For this particular application, reviewers did not have a sense that the applicant had explored less expensive, less engineered alternatives that might have the same desired effect. They were especially concerned about the proposal to create a new alcove altogether rather than taking advantage of historic channel present on the site. The reviewers also expressed concern about the lack of information and documentation on the issue of entrapment.

The team recommended that the applicant fix the current inlet project so that it is more generally active rather than seasonal. They encourage the applicant to address entrapment issues at this site by lowering the inlet and filling potential entrapment areas with river rock.

They briefly discussed future prospects and wondered how much was left to be done at Buford Park. The team wants to have a better understanding benefits of cumulative OWEB investments to the park. Further, they encourage the applicant to begin looking beyond the borders of the park to other high-value sites in the watershed. They would like to see more involvement from public entities other than just OWEB and ODFW.

RECOMMENDATION: Do Not Fund

Oregon Watershed Enhancement Board
Region 3 (Willamette Basin) Review Team
Evaluation for October 22, 2007 Applications

APPLICATION NO.: 208-3042 **PROJECT TYPE:** Restoration
PROJECT NAME: South Meadow Floodplain Enhancement - Phase 3 (2008-10)
APPLICANT: Friends of Buford Park & Mt Pisgah
BASIN: WILLAMETTE **COUNTY:** Lane
OWEB FUNDS REQUESTED: $252,090.00 **TOTAL COST:** $487,090.00

APPLICATION DESCRIPTION:
With this resubmission, the project, located in Lane County's Howard Buford Recreation Area along the Coast Fork of the Willamette River, seeks to restore nearly 40 acres of floodplain function. This will be accomplished by increasing the frequency of flows to a ¾-mile-long side channel, thereby allowing more frequent mainstem-side channel interaction. In addition, the applicant proposes to re-vegetate 4.5 riparian acres, restore prairie habitat on 10 acres, plant a native herbaceous understory on 16 acres in floodplain reforestation areas, and control invasives along eight acres of the side channel. OWEB funds will principally be used for contracted services, supplies and materials, and some post-project effectiveness monitoring to measure for, among other things, the presence, elevation, and duration of side channel flows; fish and bird presence/absence; and plant survival.

REGIONAL TEAM REVIEW:
Reviewers were generally pleased with the thoroughness with which the applicant addressed previous review team concerns. The applicant's explanatory letter was much appreciated. Reviewers appreciated the applicant's good-faith effort to consult with ODFW and NOAA Fisheries for the resubmission.

Reviewers were particularly pleased that the applicant has altered the design from an engineered channel to lowering the inlet. Although this proposal is more expensive than the previous submission, reviewers felt the current budget to be reasonable given the changes to the project design.

The application provided a good description of why effectiveness monitoring is needed on the site and how the information will be used. The costs seem appropriate, and partnerships and match are strong.

While reviewers value the work the applicant has done at the park, most continue to urge a cessation of large-scale projects at this site. As before, the team encourages the applicant to begin expanding its mission beyond the South Meadow to other surrounding high-value sites.

RECOMMENDATION: Fund

PRIORITY: 16 of 18 Capital

18-02-19-00-00100

ATTACHMENT B

LAND USE INFORMATION FORM

This information is needed to determine if the proposed project complies with statewide planning goals and is compatible with local comprehensive plans (ORS 197.180). The form must be submitted before OWEB releases project funds. OWEB will release project funds only if the project either is not regulated by, or is compatible with, the local comprehensive plan and zoning ordinance. If a project is regulated by the local comprehensive plan and zoning ordinance, OWEB will void grant agreements for projects the county determines to be incompatible with the local comprehensive plan and zoning ordinance. If the county requires additional local approvals for a project regulated by the local comprehensive plan and zoning ordinance, OWEB will not release project funds until these conditions are satisfied.

1. TO BE COMPLETED BY THE APPLICANT/GRANTEE

Applicant/Grantee Name: Friends of Buford Park & Mt. Pisgah

Project Name: South Meadow Floodplain Enhancement Phase III

2. TO BE COMPLETED BY CITY/COUNTY OR TRIBAL PLANNING OFFICIAL

Complete this section only after section 1, above, has been completed. Check the box below that applies:

☐ This project is not regulated by the local comprehensive plan and zoning ordinance.

☒ This project has been reviewed and is compatible with the local comprehensive plan and zoning ordinance.

☐ This project has been reviewed and is not compatible with the local comprehensive plan and zoning ordinance.

☐ Compatibility of this project with the local planning ordinance cannot be determined until the following local approvals are obtained:

_____ Conditional Use Permit
_____ Plan Amendment
_____ Other
_____ Development Permit
_____ Zone Change

→ Per PA 03-5800 & PA 03-5811 (approved)

An application has _____ has not _____ been made for the local approvals checked above.

Kier Miller
* Signature of Local Official

9/16
Date

Print Name: Keir Miller
Phone: (541) 682-4631

Title: Associate Planner
Email: keir.miller@co.lane.or.us

Must be an authorized signature from your local City/County or Tribal Planning Department, regardless of which box is checked above.

209-3023 S. Meadow Floodplain Enhancement, Phase 3

FOBP/Mt. Pisgah ($273,472/ 38 acres/ <1 stream mile)

RESUBMISSION (#3)

Fund, but fell below the line

GOAL

Restore floodplain function

PROPOSAL

- ¾-mile-long side channel
- Re-vegetate 4.5 riparian acres
- Restore 10 acres of prairie habitat
- Plant 16 acres of native understory
- Control invasives on 8 acres

Oregon
Theodore R Kulongoski, Governor

Oregon Watershed Enhancement Board
775 Summer St NE, Suite 360
Salem, OR 97301-1290
(503) 986-0178
FAX (503) 986-0199
www.oregon.gov/OWEB

OWEB

July 14, 2010

Mr. Michael Pope, Executive Director
Greenbelt Land Trust
P.O. Box 1721
Corvallis, OR 97339

RE: Horning and Waggle Conservation Acquisitions

Dear Michael:

Thank you for your time and effort to present the proposed acquisition of the Horning and Waggle properties on the Willamette to the Willamette Special Investment Partnership (SIP) Restoration Review Team (RRT). I am writing to inform you of the outcome of the RRT deliberations and outline the next steps in the SIP process.

The RRT has unanimously recognized the significance and importance of the confluence area for conservation acquisition and future restoration of riverine processes. The project will be recommended to the Director for funding by the Willamette SIP at the $1,800,000.00 level requested.

As you proceed, please submit due diligence materials to OWEB for review. We look forward to completing this transaction with you.

Sincerely,

Kenneth F. Bierly
Deputy Director

c. Pam Wiley
Miriam Hulst

Attachment F

Restoration Review Team
Willamette Strategic Investment Partnership Criteria
Two ratings: o or +
Total possible = 14

Project: **Harkens Bend**

Reviewer: Paula Burgess

Date: 7-20-10

Objectives

1. Protect and Restore Limiting Aquatic Habitats: The top priority of the HTT is to protect those reaches of the river that currently provide important habitat for listed fish species from further decline.
2. Identify at-risk habitats: The HTT has identified numerous important habitat areas in the main stem Willamette River, which are commonly referred to as anchor habitats that support at least one anadromous fish life history stage with functioning processes and structures. It will complete an analysis of the anchor habitats that are at risk of being lost and initially focus on protecting them.
3. Encourage Restoration within Anchor Habitats: The HTT will encourage restoration to occur within these anchor habitats, but when choosing between restoring a degraded site versus protecting an at-risk site, the HTT will recommend protection first.
4. Provide Long-term Protection for Anchor Habitats: Once at-risk sites within anchor habitats have been protected, the HTT will seek long-term and secure management for the remainder of the anchor habitat through mechanisms such as acquisition of land or conservation easements.
5. Expand Anchor Habitats: Once long-term protection of anchor habitats has been secured, the HTT will work to restore habitat located up- and downstream of anchor habitats and incorporate restoration efforts of partners that are underway.

Principles for Selecting Protection and Restoration Projects:

⇒ Rare Habitat Types: The species in decline in the Willamette Basin are generally those that were dependent upon habitat types that have been reduced to make room for human use of the floodplain. Protect and restore habitat types that were once common along the river while providing the diversity of habitats necessary to support these species at all life stages.

⇒ Protect and Expand Cold Water Habitats: Protect and enhance cold-water habitats at the mouths of Willamette tributaries and those created by hyporheic flows for the benefit of anadromous and resident native fishes.

⇒ Location of Habitats: Projects located along the mainstem Willamette or in the lower reaches of the Middle Fork Willamette, McKenzie, and Santiam rivers are generally considered higher priority than those located in other subbasins and tributaries due to the larger effect that the Willamette Project has had on aquatic and riparian habitats in these river reaches.

⇒ Magnitude: An objective of the HTT is to promote projects of substantial scope and scale to ultimately make significant headway toward the goal above.

⇒ Resilience: The HTT supports projects that are likely to succeed in both the short and long term, understanding that adaptive management is essential in a dynamic river system.

⇒ Avoiding Extinction: Protect, restore, and enhance habitats for UWR Chinook salmon and UWR steelhead to keep them from going extinct. HTT projects that also protect, restore, and enhance habitats for other ESA-listed fish, wildlife, and plant species is encouraged, provided the primary focus for this Program is on the UWR Chinook salmon and UWR steelhead affected by the Willamette Project. Finally, while not a listed species because so little information is available, the HTT also encourages projects that address lamprey habitat.

⇒ Use Scientific Plans and Assessments: Many science-based assessments and plans that have been developed for the Willamette Basin identify high priority actions to protect and restore habitat. We encourage the use of these assessments in conjunction with these criteria.

⇒ Rely on Natural River Processes: Restoration is expensive and the amount of money we have to spend is limited. The HTT encourages projects that make use of the river's natural processes to connect and restore the floodplain, including taking advantage of improvements in flow regimes under the biological opinion to move sediment and restore habitats.

⇒ Expand Buffers: Expand the existing buffer of forests and other native vegetation along the river to dissipate the energy of floods, filter upland runoff, and enhance habitats for fish and wildlife. On private lands, this objective includes working with landowners to establish conservation easements and developing or implementing approaches to encourage landowner participation and/or mitigate financial loss.

⇒ Community Support and Capacity: Seventy percent of Oregon's population lives in the Willamette Basin. Projects to protect and restore fish and wildlife habitat in the basin will have high visibility and will influence the future of habitat enhancement programs for many years. The HTT encourages projects with broad community support, realistic plans for monitoring and maintenance, and will consider projects to build capacity where it is needed to achieve these objectives.

Threshold Criteria —Protecting Habitats

MET The project protects or restores high quality habitat for UWR Chinook salmon, UWR steelhead, bull trout and/or Oregon chub

MET Potential to improve river dynamics and floodplain connectivity

Preference Criteria

+ Within an anchor habitat
+ Protects rare habitat types
o Protects of enhances cold water habitats
+ Benefit to non-listed native species
+ Substantial scope and scale
+ Likely to have enduring benefits
o Habitat at imminent risk of destruction
+ Species at imminent risk of extinction (i.e. listed or of concern)
+ In an area frequently inundated (e.g. 2-5 year floodplain)
+ Broad community support or encourages landowner participation
+ Listed as a high priority in a scientific plan or assessments
+ Relies on or enhances natural river processes
+ Restores/protects habitat complexity and diversity
+ Location assists in revetment effects reduction (consistent with RPA 7.4)

Rating: 12/14

Oregon Watershed Enhancement Board

Conflict of Interest Policy for Application Review

Effective Date: May 17, 2010

Approved By: Tom Byler, Executive Director

Policy Goals

The goal of OWEB's conflict of interest policy is to avoid actual and perceived conflicts of interest related to all of OWEB's grant programs. The objective is to maintain the fullest involvement possible by knowledgeable state, federal, tribal and local staff in OWEB's grant review process while ensuring the final project rankings are based on sound scientific information and reviewers' best professional judgment. OWEB staff realize the need for an effective and flexible conflict of interest policy while ensuring that applicants and the public maintain trust that the review process is fair and unbiased. OWEB policy is that grant reviewers will not rank or vote on project(s) for which they have a financial conflict of interest (1-3 below); however reviewers are encouraged to participate fully in all project discussions.

Conflicts of Interest

1. The reviewer is related to the applicant, or the work will be done on a relative's property, or a relative will benefit financially from the award of the application (i.e., a relative will be paid to work on the project).
2. The reviewer or a member of the reviewer's family will benefit financially from the award of the application.
3. The reviewer is a staff or board member of the organization applying for the grant or of an organization that will financially benefit from the grant.

Not Considered a Conflict of Interest

The following actions are not considered as an actual conflict or perceived conflict of interest:

4. The reviewer or his or her agency is donating time or services to the project.
5. The reviewer advised the applicant on project development or provided feedback on the grant application prior to submittal.
6. The reviewer wrote the application.
7. The reviewer sits on a technical review team that reviewed the project prior to the application being submitted.
8. The reviewer participated in the design of the project.
9. The reviewer is a volunteer (non board member) of the organization applying for the grant.
10. The reviewer's agency or organization is helping to fund the project described in the application.

For questions or concerns, please contact Lauri Aunan, Grant Program Manager, at 503-986-0047 or lauri.g.aunan@state.or.us.

Detailed Scope of Work
Willamette River Restoration Implementation - Phase I

The following tasks are to be included in the Phase 1 scope.

Phase 1 Overview

- Task 1: Willamette River LiDAR Project Development
- Task 2: Base Map Production
- Task 3: Floodplain Inundation Extents Mapping
- Task 4: Evaluate LiDAR Analysis Accuracy
- Task 5: Laptop Purchase for University of Oregon

Details of each task are as follows:

Task 1: Willamette River LiDAR Project Development

RDG will acquire the Willamette River LiDAR data set from the Oregon Department of Geology and Mineral Industries (DOGAMI). RDG will prepare an ArcGIS project directory that will serve as the foundation for remote sensing. RDG expects to prepare several analyses using the LiDAR dataset that will be used to evaluate restoration opportunities. The proposed process is as follows.

- Acquire complete existing LiDAR dataset for the Willamette Valley as prepared for the Oregon Department of Geology and Mineral Industries (DOGAMI), including bare earth models and first returns points (highest hits).
- Develop ArcGIS project directory to include LiDAR surface, revetments layer, anchor habitat layer, vegetation layer, landownership layer, and recent NAIP (2009) air photos.
- Develop an anchor habitat shapefile by digitizing OWEB's current graphic files.

Task 1 Deliverable: The ArcGIS project directory including all LiDAR data, pertinent existing ArcGIS layers, and recent air photos. GIS data will be delivered in a projection consistent with the existing LiDAR data and that is agreeable with the anticipated user groups. Additional information to be included in the data directory will include but is not limited to, hydrology data, river gage rating tables, and flood elevation information.

Task 1 Budget: $4,400

Task 2: Base Map Production

The ArcGIS project will be used to produce base maps at three scales including the Willamette Basin, the Eugene to Albany reach, and sub-reach level. The Willamette Basin overview map will be developed from the 10 m digital elevation model (DEM) and will include highways, cities, rivers, and the location of the reach to be analyzed in Phase 1.

Two Eugene to Albany reach overview maps will include a hillshade of the current 10 m DEM, major highways, cities, most current Willamette River channel polygon, other major rivers in the basin, revetments, anchor habitats, and gage locations along the Willamette River. One reach map will highlight vegetation/land use, and the other will highlight landownership.

A set of sub-reach level maps will be prepared for the Eugene to Albany Reach. The 75 km reach will be delineated into 8 panels measuring approximately 10 km each. The sub-reach maps will highlight the Bare Earth LiDAR surface at a scale sufficient to examine topographical features and evaluate potential off-channel habitat/floodplain connectivity restoration opportunities. These maps will include revetments, anchor habitats, and landownership. These maps will also be used as base maps for the analyses conducted Tasks 3 through 5.

Task 2 Deliverables: RDG anticipates a number of deliverables will be developed from the Task 2 effort.

- Willamette River Basin overview map showing the location of the Eugene to Albany reach as outlined in Phase 1.
- Two reach overview maps highlighting landownership and vegetation/land use in the project reach.
- A set of 8 river segment wall maps highlighting the Bare Earth LiDAR surface and including ownership boundaries and revetment locations.
- A set of 11x17 maps.
- Electronic copies of the hard copy deliverables will be provided on DVD.

Task 2 Budget: $9,700

Task 3: Floodplain Inundation Extent Mapping

The intent of this task is to determine the inundation extent associated with return interval floods. RDG is proposing to complete a “bath tub” methodology whereby RDG will evaluate the inundation area associated with the 2-year flood elevations in the Eugene to Albany reach. This return interval flood event will be based on the existing

regulated river conditions. If RDG executes this process more quickly than budgeted, RDG will add additional flood events per the technical team's recommendations.

RDG will approximate the water surface elevations for the 2-year event based on interpolation of water surface elevations for the defined flood events recorded at the USGS within the Eugene to Albany reach. RDG will also use the channel cross-section data collected by the USGS to narrow our predicted flood elevations through the reach. RDG has included 3 days of fieldwork for two employees in the event RDG needs to collect additional data. These efforts are intended to focus the elevation ranges associated with the prescribed flood events.

Task 3 Deliverables: RDG anticipates the following deliverables will be prepared for Task 3.

- Existing condition flood inundation maps for the project reach. RDG will map the 2-year event inundation for each of the 10 km river segments. RDG will also map land areas with elevations lower than the 2-year flood elevation based on the LiDAR data set.
- A set of 11x17 maps and companion report summarizing analysis methods, results, and discussion.
- Electronic copies of the hard copy deliverables will be provided on DVD.

Task 3 Budget: $13,150

Task 4: Evaluate LiDAR Analysis Accuracy

RDG will compare results from the LiDAR analysis discussed above to existing bathymetric data collected from the Bower's Rock State Park. This exercise will allow us to determine the accuracy of the flood elevations and floodplain inundation extents made from the LiDAR data as outlined in Task 3. RDG will compare the LiDAR results to HEC-RAS 1D hydraulic modeling results RDG has completed for the Bower's Rock project.

Task 4 Deliverables:

- A report summarizing analysis methods, results, and discussion.

Task 4 Budget: $5,740

Task 5: Laptop Purchase for University of Oregon

RDG will purchase a laptop for Ms. Chris Enright, PhD candidate at the University of Oregon. Ms. Enright will work with RDG to complete the Phase 1 scope of work. RDG will order a laptop meeting the specifications provided by Professor David Hulse, PhD. The laptop will be ordered when the contract is finalized. The laptop will be delivered to

Ms. Enright and will remain the property of the University of Oregon at the completion of the project. The laptop cost will be a pass through cost for RDG.

RDG will enter into an agreement with Ms. Enright for the project. The agreement will stipulate the expected work tasks that Ms. Enright will complete. RDG will provide a correspondence to the Willamette River Project at the completion of the project summarizing Ms. Enright's project performance.

Task 5 Deliverables:

- Laptop to be used by Ms. Chris Enright for data analysis.

Task 5 Budget: $3,949

The above tasks are flexible; some task components may change as the project evolves although such changes would be reviewed with the Willamette River Project and other technical team members prior to deviating from the proposed scope. A summary of the proposed project budget is included in Table 1. A more detailed budget is attached to this proposal.

Budget Summary

Table 1. The proposed project tasks and cost estimates.

Task	Amount
Task 1 – Willamette River LiDAR Project Development	$4,400
Task 2 – Base Map Production	$9,700
Task 3 – Floodplain Inundation Extents Mapping	$13,150
Task 4 – Evaluate LiDAR Analysis Accuracy	$5,740
Task 5 – Laptop Purchase for University of Oregon	$3,949
Total	$36,939

Willamette River
Habitat Protection and Restoration Program
2010-2015

A Proposal of the Habitat Technical Team

Submitted by

Oregon Watershed Enhancement Board

July 21, 2010

Willamette River
Habitat Protection and Restoration Program
2010-2015
A Proposal of the Habitat Technical Team
July 21, 2010

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ATTACHMENTS

Willamette River
Habitat Protection and Restoration Program
2010-2015

A Proposal of the Habitat Technical Team

I. Abstract

The 2008 Willamette Project Biological Opinions (NMFS 2008, USFWS 2008) include Reasonable and Prudent Alternatives (RPAs) for the Action Agencies to carry out habitat restoration actions and establish a comprehensive habitat protection and restoration program to address effects of the federal Willamette River Basin Flood Control Project (Willamette Project). The Willamette Project includes 13 multi-purpose dams and reservoirs as part of the Federal Columbia River Power System, as well as 42 miles of bank protection projects. The Biological Opinions created the Willamette Action Team for Ecosystem Restoration (WATER) as a coordination body (RPA1.1 through 1.4 and 2.1). The WATER group consists of "technical experts from applicable state agencies and the Tribes," along with the federal Action Agencies.

The specific RPA addressed by this proposal is RPA 7.1.2, which requires the Action Agencies to "develop and carry out a comprehensive habitat restoration program." That program is the subject of this proposal, the Willamette Habitat Protection and Restoration Program (hereinafter referred to as the "Program"). This Program is designed to combine ongoing state-led habitat protection and restoration efforts in accordance with the directions of the Biological Opinion.

Responsibility for the Program resides largely with the Bonneville Power Administration (BPA) funded through the Fish and Wildlife Program of the Northwest Power and Conservation Council (NPCC). Thus, the habitat program should also comply with the NPCC program and use objectives and strategies of the Willamette Subbasin Plan as guidance in addressing priorities for aquatic ecosystem restoration. At the same time, it is the goal of Program proponents to complement, coordinate, and promote other promising habitat restoration programs in the basin.

The WATER Habitat Technical Team (HTT) and Oregon Watershed Enhancement Board Strategic Investment Partnership (OWEB SIP) have jointly developed the Program for Independent Scientific Review Panel (ISRP) review and NPCC/BPA review and funding. The Program covers a project-funding period of five years; total funding for five years is estimated at $10 million.

The fish species most adversely affected by the Willamette Project are Upper Willamette spring Chinook, Upper Willamette steelhead, Oregon chub, and bull trout. Many wildlife species will also benefit from this proposal, including lamprey, sturgeon, as well as amphibians, reptiles, birds, and aquatic mammals.

The Program is a comprehensive, programmatic approach to prioritizing and funding efforts to restore native fish and wildlife habitat in the Willamette River and its floodplain below the major federal hydro projects. We have developed this approach based on strong regional programs and basin-wide efforts that have been underway for the last three to twenty years. Rather than create a parallel process, we propose to use these existing structures to develop and guide

implementation of projects to address limiting factors identified in the Willamette Basin Biological Opinions, the Willamette Subbasin Plan, and the draft Upper Willamette Conservation and Recovery Plan for Salmon and Steelhead. Priority will be placed on areas of high ecological value (herein termed "anchor habitats") in the mainstem Willamette River and the lower reaches of the Willamette's major tributaries. An initial focus in these areas will complement other restoration and recovery efforts underway in upstream portions of the Basin.

Measuring the results of habitat restoration in a large river system is not easy. Our monitoring program will focus on whether the anchor habitats that we protect and restore are large enough and spatially arrayed in such a way that they improve conditions for important aquatic and riparian-dependent species in the Willamette Basin, including anadromous and resident Endangered Species Act (ESA)-listed fish.

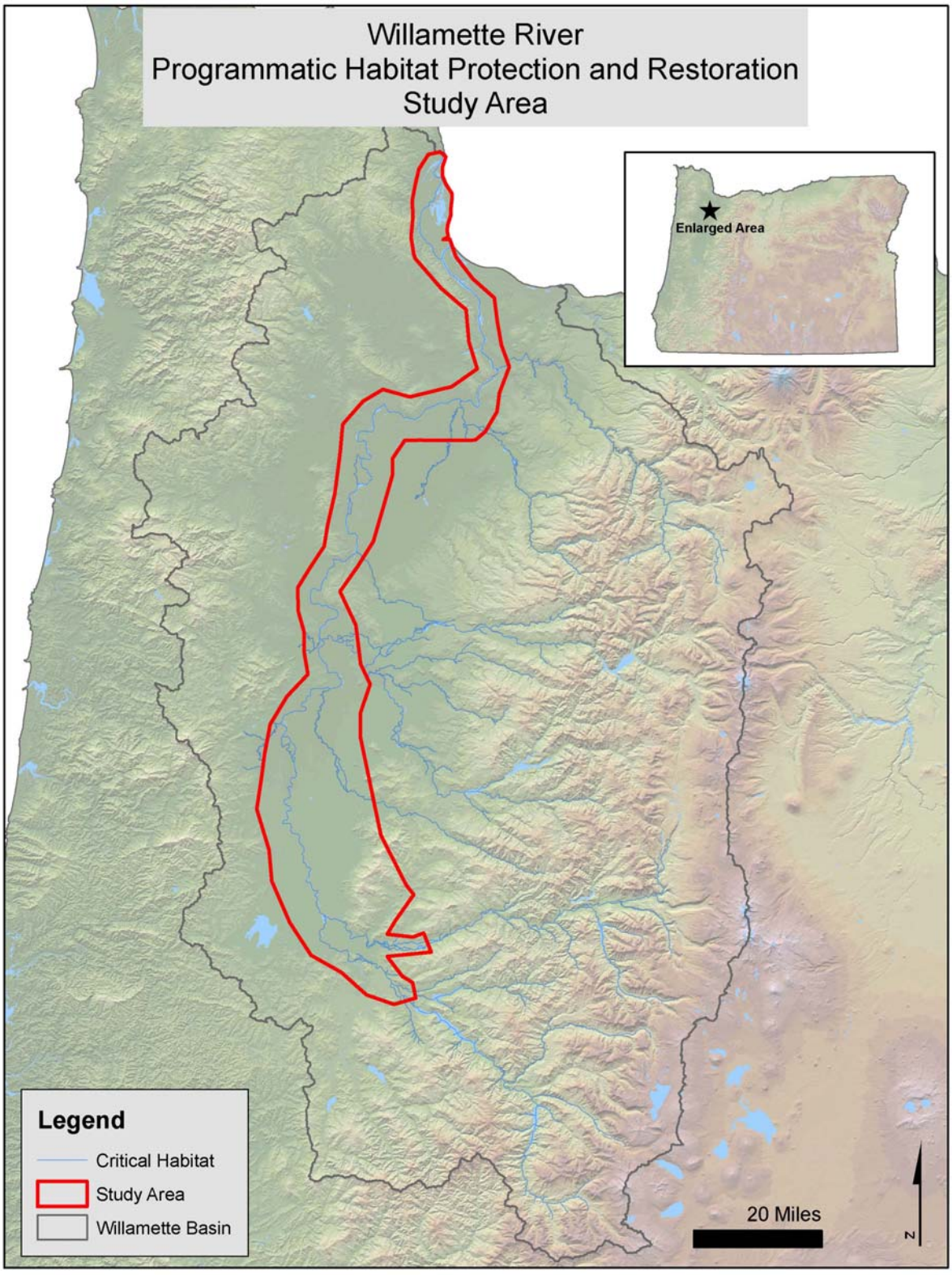
II. Location

The Willamette River Basin is the most densely populated river basin in Oregon, providing a home for three-fourths of the state's nearly four million people. The Willamette River generally flows north, between the Cascade Mountain Range and the Coast Mountain Range. The basin itself was shaped by waters from the Missoula Flood, which – over the course of more than a hundred overflow events – deposited many meters of lacustrine material on the Willamette Valley floor.

The Willamette River is fed by numerous rivers and streams flowing from the two mountain ranges that form its headwaters. Streams that flow from the snowfields of the Cascade Mountains support numerous aquatic species including ESA-listed bull trout, spring Chinook, and winter steelhead. Streams from the Coast Range are characterized by rain-generated flows rather than snow pack, and support ESA- listed winter steelhead and other native fishes. In addition, the complex river network that developed in the Willamette Valley from Eugene to Salem also supported an endemic species – Oregon chub – that inhabited side channels and backwaters along the river corridor.

The area of the Willamette River subject to the Program is the mainstem Willamette and floodplain in its entirety; the North Santiam, South Santiam, McKenzie, and Middle Fork rivers below federal dams; and the areas affected by USACE-maintained revetments. The Program includes the floodplain of the Willamette River to the mouth at the Columbia River, as well as the Multnomah Channel. Figure 1 shows the Willamette Basin and the mainstem Willamette.

Figure 1: Willamette River Proposal Study Area



III. Problem Statement

Human settlement of the Willamette Basin brought with it many structural changes to the Willamette River. During the settlement period of the Willamette Valley, the river was the major north south transportation route. The river system has been simplified, narrowed, and straightened (Sedell and Froggatt 1984, Benner and Sedell 1997). Between 1880 and 1950, federally funded "clearing and snagging" projects removed more than 65,000 snags from the river. Fern Ridge Dam was built in 1941, the first in a series of 13 large dams to control flooding of the river. To protect specific properties from erosion, the Corps constructed 42 miles of revetments, eliminating more than 90 miles of river channel.

These structural changes were designed to protect towns, farms, industries, and residential development in the floodplain. However, the taming and channeling of this mighty river had unintended consequences. In conjunction with floodplain clearing for agricultural purposes, hardening of the river banks, and gravel mining in the river corridor, these structural changes have reduced the capacity of the river to sustain the complex habitats necessary to support juvenile salmon and steelhead. In addition to habitat complexity, the "managed" river is operated in a manner inconsistent with the evolution of the native aquatic species. The federal dams control both high and low flows, reducing sediment transport and the historical connection to the floodplain that foraging juvenile salmonids and resident fish species, such as Oregon chub, depend upon for growth and rearing. Finally, add to these structural and flow changes the effects of 150 years of fertilizers, pesticides, sewage, and urban run-off, and there is little wonder the native fish and wildlife species are in decline.

The cumulative effect of taming the Willamette River and its tributaries is reflected in recent listings of aquatic species under the ESA. Taking action to halt the decline and provide habitat conditions that function similarly to those historically lost is the primary goal of this Program.

a. The Challenge of Restoration in a Large River/Flood Plain System

The Willamette River is the 13th largest river in the contiguous United States in terms of stream flow. The Willamette Basin creates more runoff per unit of land area than any river in the United States. This large river system historically flooded on an annual basis covering much of the valley floor. The Willamette Project was constructed to reduce the frequency, duration and extent of flooding. By the mid twentieth century, many of the revetments along the Willamette River had been constructed, although erosion continued to plague landowners.

Conservation efforts in the 1940's through the1970's to address water quality in the Willamette River focused on direct discharges (point sources of pollution) and did not address the simplification of the river system. Establishment of the Willamette River Task Force in 1997 started a conversation about the Willamette River and the efforts necessary to address the decline in aquatic resources, especially anadromous fish. The Oregon State Legislature passed the Oregon Plan for Salmon and Watersheds along with a $30 million biennial budget, and a ballot measure approved by the voters in 1998 provided long-term funding for restoration and protection of salmon and wildlife habitat from Oregon lottery proceeds.

The Oregon Plan for Salmon and Watersheds was based on the concept that people care most about the watershed they inhabit; it provided an incentive and support system for diverse teams of individuals to work together to improve the condition of their watershed. When the Oregon Plan was adopted in 1997, there were few watershed councils in the Willamette Valley. Today there are 24 watershed councils encompassing nearly all of the watersheds in the Basin.

Watershed councils in the Willamette – as in most of Oregon – have focused their attention on tributary watersheds. The high flows of the mainstem and large, lower tributaries require more complex projects with higher engineering costs, as well as an elevated risk associated with changing a channel course in a highly-altered river system.

All of the anadromous and many resident fish species in the Willamette Basin rely on the mainstem for their survival. The changes in the Willamette River Basin have been chronicled by a research effort that explored alternative futures for the most populated basin in Oregon (Hulse *et al* 2002). This detailed analysis of the river has determined that significant habitat enhancement within the floodplain can be conducted without significantly affecting the developed portion of the basin.

b. The Need for Coordination

OWEB developed a Willamette program called the Strategic Investment Partnership (SIP) to provide funding for projects that increased channel complexity and floodplain connectivity. This effort is a longer-term initiative to restore habitat to provide better support for anadromous and resident native fish populations.

In the Willamette, OWEB entered into an agreement with the Meyer Memorial Trust (MMT), an Oregon-based private foundation, to address Willamette restoration and protection issues – particularly the lack of habitat restoration along the mainstem. The OWEB SIP works closely with local groups, watershed councils, and non-governmental organizations in the basin that have a history and expertise in working with landowners on conservation. This diversity of partners offers opportunities for implementation at a broader scale than can occur on public lands alone. MMT has the flexibility to fund aspects of a project that OWEB is precluded from funding. To date, the OWEB SIP has worked with NGOs – particularly land trusts – to increase their capacity to reach out to landowners along the mainstem and lower tributaries. MMT has provided multi-year support for these community-based efforts, and for research and planning processes intended to provide detailed information on mainstem restoration opportunities.

The OWEB SIP now has more than a dozen restoration projects in various phases of design and completion along the mainstem Willamette. Some of these projects will be described further under Section VII, Relationship to Other Projects.

To meet the requirements of the Willamette Project Biological Opinion, a coordinated and integrated effort is essential in this time of declining budgets to achieve the goals of all parties and reduce duplication of efforts by both restoration providers and agency staff.

c. The Need to Implement Biological Opinion Requirements

The Action Agencies and the WATER HTT were given the charge "to develop and carry out a comprehensive habitat restoration program, in collaboration with the Services, which will include funding for carrying out habitat restoration projects during the term of this opinion." The tasks identified in the Biological Opinion include:

- Develop project selection criteria aimed specifically at addressing factors limiting the recovery of ESA-listed species;
- Develop project selection criteria informed by Willamette Subbasin Plan (WRI 2004), Willamette River Planning Atlas (Hulse *et al* 2002), and other Willamette guidance;
- Forward all proposals for NMFS review and determination;
- Fund priority projects; and
- Complete at least two of the highest priority projects each year from 2011 through the term of the Biological Opinion.

This Program was developed to address these specific Biological Opinion requirements, and to coordinate and integrate funding to achieve a higher level of accomplishments.

IV. Species Addressed and Threats to Recovery

While the Program will benefit many native fish and wildlife species that inhabit the Willamette mainstem, the four described here are a primary focus of this program. Upper Willamette River Chinook salmon (*Oncorhychus tshawytscha*) and Upper Willamette River steelhead (*Oncorhynchus mykiss*) have been listed as threatened by National Marine Fisheries Service (NMFS 1997). Bull trout (*Salvelinus confluentus*) and Oregon chub (*Oregonichthys crameri*) have been listed as threatened by the U.S. Fish and Wildlife Service (USFWS 1999; USFWS 2010b).

a. Chinook Salmon (*Oncorhychus tshawytscha*)

Status

The Upper Willamette River Chinook salmon evolutionary significant unit (ESU) includes seven independent populations (Figure 2) as identified by the Willamette/Lower Columbia Technical Review Team (2003). The Draft Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead (ODFW 2010) is a detailed evaluation of the status and necessary actions to recover Chinook in the Upper Willamette to sustainable levels. As shown in Table 1, below, the Technical Review Team of scientists from federal, state, and tribal agencies identified five of the seven populations at high risk of extinction, and two at moderate to low risk of extinction. The populations that inhabit tributaries with high dams (Middle Fork, North Santiam and South Santiam) all have a high risk of extinction. Smaller tributaries (e.g. Molalla, Calapooia) also have populations with a high risk of extinction. The Clackamas River population has the lowest risk of extinction, while the McKenzie population is at moderate risk of extinction.

Figure 2: Current Distribution of Upper Willamette River Spring Chinook

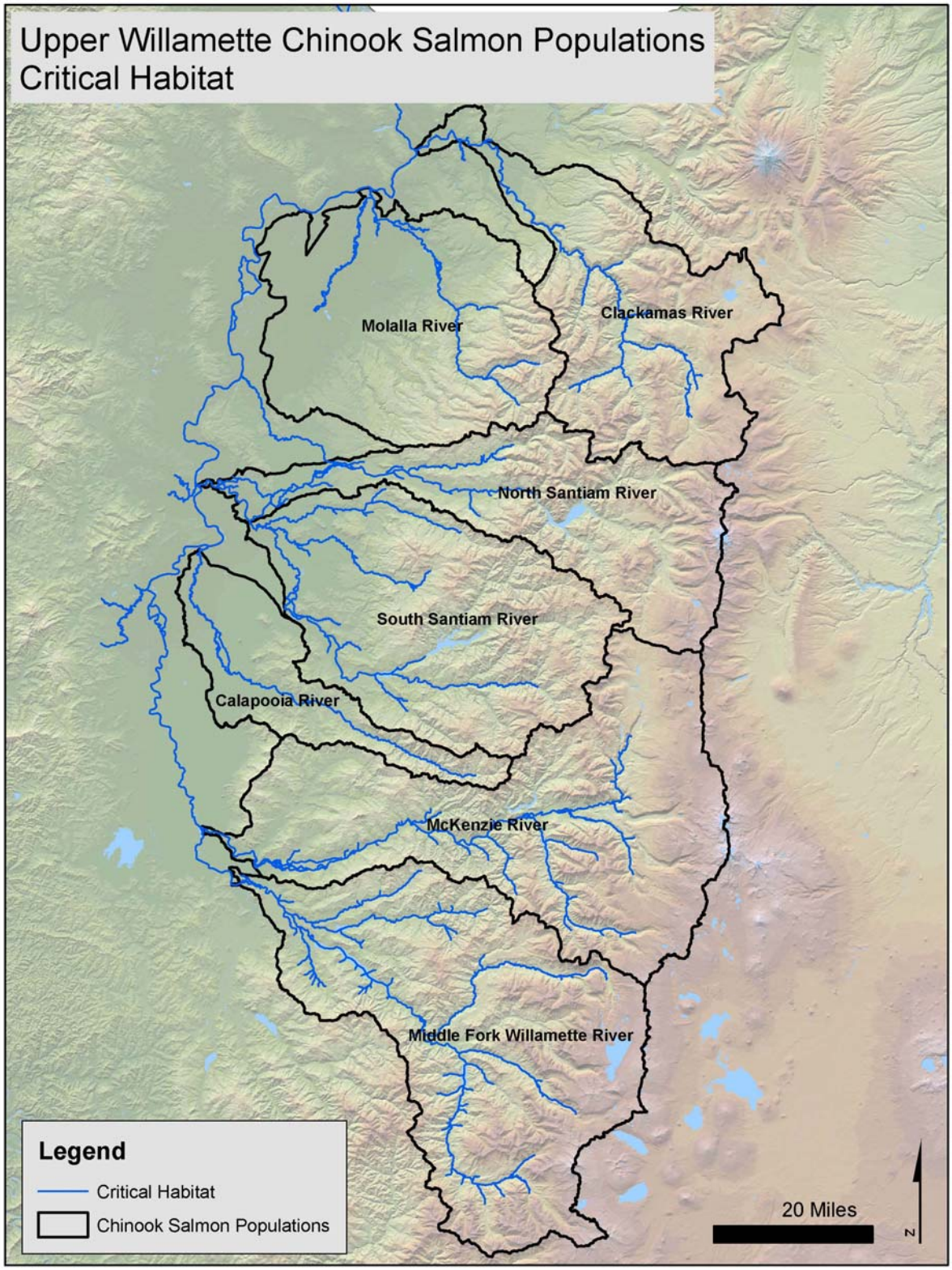


Table 1: Current Status of Upper Willamette Spring Chinook Populations

Upper Willamette River Spring Chinook Salmon Population Status	
Population	**Extinction Risk**
Clackamas	Low
Molalla	Very High
North Santiam	Very High
South Santiam	Very High
Calapooia	Very High
McKenzie	Moderate
Middle Fork Willamette	Very High

Limiting Factors and Threats

The Willamette Basin Biological Opinion (NMFS 2008) states "Habitat in the Willamette River mainstem and lower reaches of all the tributaries to the Willamette River is moderately to severely degraded." Further, the draft Recovery Plan identifies numerous threats and limiting factors for each spring Chinook population, many of which are common to all populations. As described in RPA 7.1.2, this proposal is designed to address the habitat limiting factors in the mainstem and lower reaches of the tributaries, focusing on those limiting factors caused by the Willamette Project (e.g., flood control/hydroelectric construction). Limiting factors include lack of gravel recruitment, impaired sediment recruitment, altered temperatures, reduced peak flows/channel complexity and habitat diversity, and altered flows caused by the flood control/hydro-system that affect habitat in the tributaries below the dams and in the mainstem Willamette River. The limiting factor of impaired physical habitat refers to the straightening and hardening of riverbanks as well as the loss of riparian vegetation (conifer forests and other native plants in the floodplain).

Addressing Limiting Factors

Specific actions identified in the draft Recovery Plan to address limiting factors in the mainstem and lower reaches of the tributaries include the following:

- Restore substrate recruitment using a combination of peak flows and substrate supplementation.
- Identify sites in the mainstem Willamette where habitat restoration is desirable and coupled to peak flows, design restoration projects, implement work, and monitor.
- Protect the highest quality rearing and migration habitats through conservation measures, acquisition, and/or regulation.
- Using the framework in the "Willamette Planning Atlas," protect and restore aquatic habitat function at the mouths of tributaries; increase non-structural capacity of flood water, restore natural riparian communities and their function; restore natural riparian

communities and their function; increase channel complexity; and increase native floodplain forest.

Projects under the proposed program will focus on the above restoration actions. The Program is intended to address limiting factors that affect numerous life stages of spring Chinook salmon in the lower tributary reaches and in the mainstem Willamette River, with a emphasis on juvenile rearing habitat. Other technical teams within the WATER framework are responsible for addressing limiting factors associated with the flood control/hydro-system, such as impaired access to spawning habitat, mortality at dams, and elevated water temperatures. The efforts to correct limiting factors associated with flow from the dams must be complemented by restoration actions in the lower rivers and mainstem Willamette in order for recovery to be successful.

b. Steelhead (*Oncorhynchus mykiss*)

Status

The Upper Willamette River Steelhead distinct population segment (DPS) includes four independent populations, and one area that supports scattered pockets of steelhead that are not strongly enough linked to be considered an independent population (Technical Review Team 2003). A map of these populations and the Westside Cascade species presence is shown in Figure 3. The Draft Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead (ODFW 2010) provides a detailed evaluation of the status and necessary actions to recover steelhead in the Upper Willamette to sustainable levels. All four independent populations are at a moderate risk of extinction (Table 2). The Willamette Biological Opinion identifies habitat degradation of the lower reaches of each tributary and the mainstem is a limiting factor to the four independent populations.

Figure 3: Current Distribution of Upper Willamette Steelhead

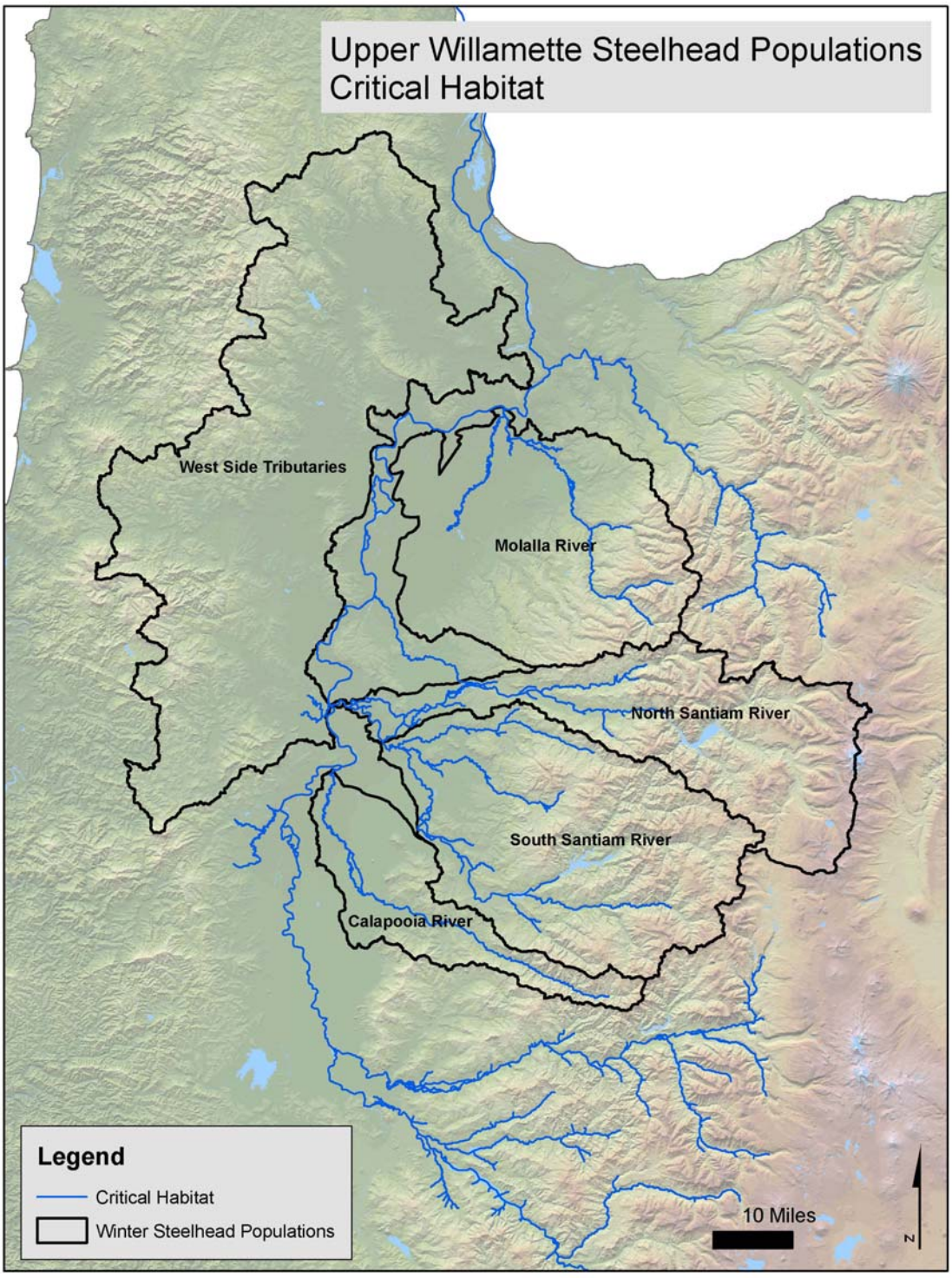


Table 2: Current Status of Upper Willamette Steelhead Populations

Upper Willamette River
Steelhead Population Status

Polupation	Extinction Risk
Molalla	Moderate
North Santiam	Moderate
South Santiam	Low
Calapooia	Moderate
West Side Tributaries	N/A

Addressing Limiting Factors

The Program is designed to address habitat limiting factors for the mainstem Willamette and its tributaries below the 13 federal hydro projects. The analysis conducted for the draft recovery plan identifies impaired physical habitat, which refers to the straightening and hardening of riverbanks, and the loss of riparian vegetation.

The draft recovery plan for steelhead identifies habitat for juvenile rearing as an important limiting factor for both species. Projects developed under the Program will be evaluated against the recovery goals and standards developed under the plan.

The actions to address limiting factors in the mainstem for steelhead are basically the same as those for Chinook. They include:

- Restore substrate recruitment using a combination of peak flows and substrate supplementation.
- Identify sites in the mainstem Willamette where habitat restoration is desirable and coupled to peak flows, design restoration projects, implement work, and monitor.
- Protect the highest quality rearing and migration habitats through conservation measures, acquisition, and/or regulation.
- Using the framework in the "Willamette Planning Atlas," protect and restore aquatic habitat function at the mouths of tributaries; increase non-structural capacity of flood water, restore natural riparian communities and their function; restore natural riparian communities and their function; increase channel complexity; and increase native floodplain forest.

c. Oregon Chub (*Oregonichthys crameri*)

Of the native non-anadromous fish in the basin, USFWS has determined that Oregon chub and bull trout have been seriously affected by the Willamette Project. Oregon chub are listed as threatened (USFWS 2010b) based on a strategy of securing "isolated" populations with sufficient size and genetic diversity to meet recovery criteria. Meeting remaining USFWS recovery objectives will require continued restoration of river dynamics and floodplain function. Oregon chub was the first fish species to be listed in the Willamette River Basin under the ESA (USFWS

1993). The species evolved to inhabit the dynamic network of slack water habitats in the floodplain. The Willamette Project altered the flood plain, simplified channel complexity, and reduced floodplain connectivity. These actions have adversely affected the chub population, which now persists in fragmented, small, and isolated populations. Only one population – Green Island – has access to the Willamette River during regular flood events. The recovery plan for Oregon chub recommends re-establishing a number of independent populations in isolated sites to address the loss and fragmentation of floodplain habitats and the threats posed by non-native fish species.

Known populations of Oregon Chub exist in the Santiam, Middle Fork Willamette, Mid-Willamette (West side), portions of the McKenzie, and the Coast Fork Willamette. The most recent status review (Bangs *et al* 2010) has concluded: "The downlisting of Oregon chub marks a milestone in our efforts to recover the species and presents new opportunities and challenges." The Service published a downlisting proposal in May of 2009. Following the public comment period, the final rule was completed in the spring of 2010 (USFWS 2010b). The USFWS completed a Programmatic Safe Harbor Agreement in 2009. In April of that year, the final proposed designation of critical habitat for Oregon chub was published in the Federal Register. Final designations were adopted in March of 2010 (USFWS 2010a).

The Oregon Chub Recovery Plan focuses on stabilizing independent populations in isolation (USFWS 1998). The Program includes actions designed to increase flood plain connection and increase side channel and other slack water habitat. The USFWS Biological Opinion for the Willamette Project concludes: "It is expected that long-term floodplain restoration actions, along with alternative flow management, may create opportunities for the expansion of Oregon chub into additional habitats that more closely mimic those under which the species evolved" (USFWS 2008).

d. Bull Trout (*Salvelinus confluentus*)

Bull trout was listed as threatened on November 1, 1999 (USFWS 1999). The listing rule consolidated five distinct population segments (DPS) of bull trout into one listed taxon. The Willamette River Core Area contains two of the populations, one is in the Middle Fork Willamette, and the other is the McKenzie. The Middle Fork population is small, and is supplemented by translocation from the McKenzie population. The McKenzie population "was likely a single fluvial population prior to the construction of flood control and hydropower dams in the 1960s" (USFWS 2008). There are currently isolated adfluvial populations above Cougar and Trail Bridge Dams on the upper McKenzie, and a fluvial population below the dams.

Critical Habitat for Willamette Bull Trout was designated by the USFWS for the Coastal DPS – which includes the Willamette River – in November of 2009. The USFWS is currently revaluating the critical habitat designations (USFWS 2009). The current critical habitat designation includes the mainstem Willamette above its confluence with the McKenzie River.

The Willamette National Forest has been working on bull trout recovery since the early 1990's. Projects in the upper McKenzie River and upper Middle Fork Willamette River have included passage projects to restore access to historic habitats, large wood restoration projects, off channel habitat restoration, reservoir complexity projects and road decommissioning. Several million

dollars have been invested to restore habitat and to reintroduce bull trout to historic habitats. The Forest has implemented these projects in coordination with the Upper Willamette Bull Trout Working Group and many other partners.

The Program will address conservation needs of bull trout, include restoring connectivity of the lower tributaries with their floodplain, and promoting viable populations of anadromous fish as a food source. Bull trout rely on structurally complex stream habitats with cool water. The restoration of complex channels in the lower McKenzie and Middle Fork Willamette will also support the recovery of bull trout.

V. The Willamette Habitat Protection and Restoration Program

a. Building on existing efforts

The primary purpose of the Program is to work with partners to fund and implement high priority habitat restoration projects in the Willamette Basin that satisfy the requirements of RPA 7.1.3. As described above, in a large river system with many agencies and NGOs involved in conservation, agreement on high priority projects is not a simple task. Layer upon layer of planning, designing, funding, and implementing is already underway in multiple watersheds at multiple scales. Most of the time, new efforts intend to fill gaps identified in the menagerie of previous and ongoing efforts. Then we "hope" that together these efforts will achieve the desired result – that of improving habitat for fish and wildlife in the Willamette Basin. To date there has been no attempt to measure the overall results of habitat protection and restoration in the basin. Do our collective efforts build a positive trajectory, or are we losing habitat on numerous fronts faster than we can restore it on others?

The approach of this Program has been to survey protection and restoration efforts in the basin, select from the best of these, build a process to coordinate them, and measure results overall – both degradation and restoration.

b. The coordination challenge

While the sum of our conservation efforts in the Willamette has – to date – been insufficient to halt the decline of native species, these efforts are both numerous and substantial. Dozens of local, federal, state, and tribal agencies are involved in restoring fish and wildlife habitat in the Willamette, as well as numerous non-profit associations, watershed councils, soil and water conservation districts, businesses, and private citizens.

Coordinating restoration in this large basin is a significant challenge. How do we increase the chance that one agency knows what another is doing, that restoration funds are being allocated to the highest priorities, and that Willamette projects are achieving the desired results? One way to coordinate restoration is to connect the major funding streams coming into the basin.

NMFS and USFWS 2008 Biological Opinions for the Willamette Project provided a framework for coordinating efforts through WATER. The Program will integrate the program efforts of WATER HTT with the ongoing program administered by OWEB and MMT.

In addition, the Program will coordinate restoration projects in the mainstem Willamette River and in lower reaches of its major tributaries; this focus will complement the largely upper Willamette tributary efforts being implemented under the NMFS 2008 RPA by the Action Agencies.

c. Major Program partners

Federal

NMFS

NMFS completed consultation with the USACE, BPA, and the Bureau of Reclamation on July 11, 2008, on the impact of the Willamette River Basin Project on species listed for protection under the ESA. NMFS found that the proposed action alone was not sufficient to avoid jeopardy or adverse modification of critical habitat for Upper Willamette River Chinook and Upper Willamette River steelhead. NMFS provided additional measures to mitigate for the projects' effects, including conducting habitat mitigation.

The focus of this Program is habitat mitigation under the NMFS biological opinion, guided by the Willamette Subbasin Plan and the draft salmon and steelhead recovery plan. The requirements of the biological opinion include the completion of at least two projects by 2010, with additional projects to be completed each year from 2011 to 2023. These projects will be identified and prioritized by the HTT established to administer the off-site habitat mitigation program. NMFS maintains the authority to determine if the intent and requirements of the Biological Opinion are being met.

NMFS funding from the Open Rivers Program and Community-based Restoration Program may also be used to assist in implementing projects on the Willamette mainstem and its lower tributaries.

BPA

BPA is a federal agency within the U.S. Department of Energy that markets power generated from the USACE Willamette Project dams. As a federal agency, BPA has obligations under the ESA to aid in the conservation of listed species and to ensure that any actions authorized, funded, or carried out by BPA are not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of their designated critical habitats. Further, the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act) requires that BPA protect, mitigate, and enhance fish and wildlife and their habitat affected by the development and operation of federal hydroelectric projects on the Columbia River and its tributaries from which BPA markets power (the Federal Columbia River Power System, or FCRPS), in a manner consistent with the purposes of the Northwest Power Act, the Fish and Wildlife Program adopted by the NPCC under subsection 4(h) of the Northwest Power Act, and other environmental laws (collectively referred to as "Northwest Power Act obligations"). The Program proposed here is intended to use BPA funding to implement RPA 7.1.2 in the Willamette Project Biological Opinion.

USACE

In addition to the responsibility to operate, maintain, and make improvements the Willamette Project dams, the USACE has numerous existing authorities to study and undertake habitat restoration actions throughout the Willamette Basin. These authorities and programs are described in detail in section 3.5.2 of the 2007 Biological Assessment and are summarized in Table 3 below.

Table 3: Summary of USACE Authorities and Programs to facilitate implementation of habitat restoration projects in the Willamette Basin (modified from the 2008 NMFS Biological Opinion).

Program	Water Body	Description
Continuing Authorities Program (CAP); (USACE Sections 206 & 1135 Programs)	Oregon	Continuing Authorities Program funds small restoration projects that address a variety of water resource and land related problems. A description of the CAP program is provided in section 3.5.2.3 of the Supplemental BA (USACE 2007)
General Investigation Program (GI); USACE)	Oregon	Authority to conduct complex, large-scale, multiple purpose water resource projects. Applicable existing GI studies are described in Section 3.5.2.2 of the Supplemental BA and include: the Willamette River Floodplain Restoration Study; Eugene-Springfield Metro Area Watershed Feasibility Study, Lower Willamette Ecosystem Restoration Feasibility Study
Planning Assistance to States (PAS); USACE)		Authority to work with non-Federal sponsor to study and evaluate water and related land resource problems. Current study of North Santiam Gravel under this authority
Upper Willamette Watershed Ecosystem Restoration Authority (USACE Sec 3138 program)	Willamette watershed upstream of Albany	New authority from WRDA 2007 to conduct ecosystem restoration studies for the upper Willamette basin to protect, monitor, and restore fish and wildlife habitat.
Ecosystem Restoration and Fish Passage Improvement Authority (USACE Sec 4073)	Oregon	New authority in WRDA 2007 to conduct studies for ecosystem restoration and fish passage improvement on rivers throughout Oregon. Emphasis on fish passage and restoration to benefit species that are ESA listed. In conjunction with study, pilot project to demonstrate effectiveness of actions is authorized.
Sustainable Rivers Partnership with The Nature Conservancy	Willamette Basin	Cooperative agreement between USACE and the Nature Conservancy to assess and implement dam operational changes to better mimic natural river flows in the Willamette basin

The USACE is currently developing implementation guidance for the new authorities from Water Resources Development Act 2007 (Section 4073 and 3138) listed above, which could provide opportunities in the near future (pending appropriations) to partner on habitat restoration projects.

Further, RPA 7.4 requires the USACE to assess restoration opportunities at USACE revetments. The USACE could use some of the above authorities, with necessary non-federal sponsors, to identify and implement restoration projects at revetments.

EPA

The EPA and (described below) the State Department of Environmental Quality have been major partners in the Program. EPA has taken a coordinating role in identifying the extent and type of

research related to water quality in the basin. In 2009, the agency hosted a workshop to highlight major research efforts underway. Many members of both the RRT and HTT attended this workshop.

EPA has also designed and is implementing a four-year study of subsurface flows on Green Island to better understand groundwater movement. They have constructed 50 shallow wells on the island to measure flow in a variety of areas, including young and old riparian systems and agricultural areas that are still protected by levees. Water quality parameters, water levels, and temperature data will be used to construct a water flow model for the island.

More recently, OWEB has "borrowed" a hydrologist from the EPA Research Lab in Corvallis to oversee Willamette SIP activities.

USFWS

The USFWS has responsibility under the ESA for native fish, wildlife and plant species, and has issued a companion Biological Opinion on the operation of the Willamette Project. They have cooperated with the OWEB SIP and partnered with a number of the OWEB SIP restoration projects. The USFWS funds cooperative restoration projects through a number of competitive grant programs. The North American Wetlands Conservation Act provides funding that may also be used for projects compatible with the restoration objectives of the Program.

NRCS

The NRCS has a number of cost share programs that could assist private landowners achieve conservation outcomes consistent with the Biological Opinion. The Emergency Floodplain Restoration Authority and the Wetlands Reserve Program are two programs that effectively complement the objectives of the proposed Program.

State and Private

ODFW

The Oregon Department of Fish and Wildlife plays a key role as technical advisor for habitat restoration and protection initiatives in Oregon. For the Willamette SIP, ODFW will focus their efforts on advising both local project developers and the OWEB SIP RRT on the effectiveness of projects in addressing aquatic habitat needs of listed species.

OWEB

The Oregon Watershed Enhancement Board is a public foundation that uses constitutionally dedicated lottery funds to protect and restore fish and wildlife habitat throughout the state. OWEB has been the prime funder for salmon recovery efforts throughout Oregon. The Program will coordinate and combine funding opportunities to achieve common purposes. The effort is part of a long term commitment the OWEB policy board has made to achieve increased levels of restoration in the Willamette Basin. In addition, as mentioned above, OWEB has recently hired (through an Intergovernmental Agreement) an EPA hydrologist from the Corvallis Research Lab to work on the Willamette SIP.

MMT

The Meyer Memorial Trust is one of the largest private philanthropic foundations in the Pacific Northwest. Based in Oregon, the foundation provides grants for social and environmental improvement throughout the Oregon and southwest Washington area. MMT has committed to a Willamette Initiative with goals shared by OWEB to increase the pace and capacity for restoration in the Willamette basin.

DEQ

DEQ participates on both the RRT and HTT, and EPA was an original partner in the Willamette Atlas project and continues to participate on groundwater flow research at Green Island. The agency has been instrumental in compiling research on water quantity in the Willamette Basin, resulting in the document published in December of 2009 titled *Willamette Basin Rivers & Streams Assessment*. With the extent or information available, water quality monitoring, and ongoing research projects in the basin, participation of DEQ is invaluable.

Willamette Special Investment Partnership

As mentioned previously, OWEB established the Willamette SIP to address channel complexity and flood plain connection between the Willamette River and its flood plain. The Willamette SIP provides dedicated funding ($6 million for the 2009-2011 biennium with a commitment to add in future biennia) for specific purposes associated with the improvement of Willamette River habitats below the dams. Shortly thereafter, MMT independently developed a Willamette Initiative, committing $1.5 million per year over a seven year period "to achieve meaningful, measurable improvements in the health of the Willamette River and selected tributaries by 2015, and to create a national model for effective philanthropic engagement in the restoration of large, complex ecological systems." In 2008, OWEB and MMT joined forces through a memorandum of agreement (Attachment E) to jointly fund project development, implementation, and monitoring of projects consistent with the Willamette SIP goals. For more information, refer to: http://www.mmt.org/initiatives/river/. The Willamette SIP now engages a wide range of local, state, federal, and tribal agencies, (Attachment F) universities, non-profit organizations, and private citizens who are working together to restore native species habitat in the Willamette River Basin.

To ensure that projects for this large and dynamic river system were strategically prioritized and designed, in 2008 the Willamette SIP partners established a Restoration Review Team (RRT). This team is comprised of university, federal and state agency experts. The RRT includes fish and wildlife biologists from the USFWS, ODFW, and Oregon State University. It also includes hydrologists and technical experts from state and federal agencies, as well as experts on basin restoration programs. As a part of the Willamette Program, the RRT would expand to include members from National Marine Fisheries Service, Bonneville Power Administration, the Grand Ronde Tribe, and the Corps of Engineers (expanded RRT listed in Attachment A). The RRT members will be required to comply with the "conflict of interest" policy developed by OWEB.

The purpose of the RRT is to ensure that projects target limiting factors, are well placed, well designed, and likely to meet the objectives of the SIP. Primary objectives of the SIP are to increase channel complexity, connectivity between the flood plain and the river, and increase forest cover.

Typically the RRT reviews a project at three stages: 1) design concept roughly one-third complete, 2) design concept complete, and 3) project implementation complete. If a project has multiple phases, review will occur at each phase. Refer to Attachment G for a diagram of the existing Willamette SIP Project Review process.

The philosophy of the RRT toward restoration is to make it possible for the natural processes of river dynamics to move material and create or reopen channels (Willamette Subbasin Plan priority 5.2.2.5). At the same time, this approach makes monitoring of river changes extremely important, including adapting an approach to achieve the desired result (see V.f., Measuring success).

d. Proposed Program funding partnership

The goal of the Program proposal is to identify and implement high-priority habitat protection and restoration projects in order to fulfill the requirements established in RPA 7.1.2 and 7.1.3 in the Willamette Project BiOp. Rather than create a duplicate process, we are proposing to utilize the existing evaluation structure set up by OWEB for the Willamette SIP. In brief, that process relies on OWEB to maintain an open solicitation process, sort applications, and facilitate scientific reviews for SIP funding recommendations. Under a joint process, the OWEB RRT would review habitat proposals for both SIP and the Willamette Project BiOp to ensure that they meet the established selection criteria for the two programs and are technically and scientifically sound. Proposals that are favorably reviewed by the RRT will be sorted to determine which are most appropriate for BPA funding under the NWPCC and which are most appropriate for OWEB SIP funding. The solicitation process and the implementation of proposals for both of the programs will be administered by OWEB.

Proposed project selection process:

1. The make-up of the Willamette RRT will be expanded to include National Marine Fisheries Service, Bonneville Power Administration, the Corps of Engineers, and the Grand Ronde Tribe to ensure that both SIP and BiOp criteria are incorporated into the review.

2. The Willamette RRT will maintain an open solicitation for proposals for protection and restoration projects for the Willamette using criteria developed by the HTT. The project selection criteria are shown in Attachment C.

3. When the RRT receives project proposals, they notify the HTT and set up a meeting for proposal review. Members of the HTT who are not members of the RRT are welcome to attend and provide input during the scientific review process. During the review process, the RRT will ensure that the proposals will meet the established selection criteria and are technically and scientifically sound. The RRT may also recommend project modifications to best meet the criteria. RRT project reviews will be posted on the OWEB website under the Willamette SIP heading, and will be included in the annual report prepared for the Northwest Power and Conservation Council and OWEB.

4. Following the RRT meeting, the OWEB staff will provide feedback to project sponsors if

they were not present for the RRT discussion and on any recommended proposal modifications. This feedback loop will also enable sponsors to address any questions that were raised during the review process or provide additional information.

5. Proposals that are favorably reviewed by the RRT will then be reviewed for funding suitability. This review will be conducted by OWEB, MMT, BPA, NPCC, COE, NMFS, and USFWS, who will determine which projects are more appropriate for SIP funding and which are more appropriate for Willamette BiOp funding. The federal team members will also discuss proposal feasibility under the BiOp to ensure compatibility with federal authorities and the intent of the BiOp.

6. At this point, projects go to the HTT for final prioritization and recommendation. HTT will provide an update on the final project recommendation list to the WATER Steering Team.

7. Final decisions for BiOp funding will be made by the appropriate federal agencies. Once BiOp and SIP funding decisions have been made, OWEB will award grants to begin implementation. OWEB staff in conjunction with the Willamette RRT will oversee the development and implementation of projects. OWEB staff will report project progress to the HTT and to BPA on a quarterly basis and will provide an annual report of BPA-funded projects to meet BPA requirements. In addition, OWEB will provide an annual monitoring report on all funded projects.

A diagram of the proposed process is shown in Attachment H. Aspects of the Program are already being implemented; for example, in order to improve coordination between the HTT and RRT, the Willamette SIP has already added NMFS, Tribal, and BPA members to the RRT.

e. Setting realistic restoration goals: anchor habitats as stepping stones

What kind of habitat restoration and protection is possible in the floodplain of a large river system with 13 dams, 42 miles of revetments, nearly three million people, and a population expected to double in less than 50 years? The HTT struggled with this question, and engaged agency, university, and NGO scientists in an attempt to develop a credible approach. We settled on a strategy to first protect and restore a series of relatively intact habitats in a stepping stone fashion along the mainstem river corridor. Aldo Leopold described this approach as a basic conservation principle about protecting the best remaining habitat, first, and then building outward.

Identifying "the best" in the Willamette Basin was not difficult because of work already completed. The Nature Conservancy (TNC) had recently completed a project to "synthesize" many conservation planning efforts in the Willamette Valley, with the objective of creating a unified set of basin-wide fish and wildlife priorities. Working with many partner organizations in the Willamette, they combined their own Ecoregional Assessment; USFWS and NMFS Critical Habitat Designations and Recovery Plans; ODFW's Statewide Conservation Strategy; Pacific Northwest Ecosystem Research Consortium's Willamette River Basins Alternative Futures (described in more detail in V.f below); and the NPCC Willamette Subbasin Plan. Over two years, they identified some 300 priority upland and aquatic sites across the basin, including a

dozen sites focused on the Willamette River, major tributary confluences, and opportunities to re-connect the historic the river's floodplain. On the mainstem Willamette, these sites were selected within the 100-year floodplain to emphasizing areas of significant public ownership or high restoration potential, intact native habitat, cool water, and some care was given to the distribution of sites (i.e. distance between anchor habitats). Boundaries were also refined to exclude areas with major infrastructure.

The HTT has adopted the TNC "synthesis" sites along the mainstem and has defined them as "anchor habitats." The HTT will work with TNC to convene partners that were involved in site identification to consider revisions to the conservation priorities every two years. Accordingly, the defined anchor habitats may be modified over time to reflect the most strategic opportunities in the Willamette Basin. Five maps of the Willamette mainstem anchor habitats are presented in Attachment D. (More detailed maps of the anchor habitats are available upon request.)

The Project Selection Criteria used by the HTT and the RRT are the same; they were developed by the HTT to be followed both teams. The Project Selection Criteria are listed in Attachment C; they give preference to the anchor habitats mapped in Attachment D.

f. Measuring and reporting results

Monitoring the results of habitat protection and restoration at the project scale in a large river system will tell us little about species survival unless we evaluate and understand the context for those efforts. In a heavily populated basin such as the Willamette, land use and anticipated growth of the human population are an important part of that context. The objective of the Willamette Program is to establish a network of anchor habitats along the mainstem and in the lower reaches of its major tributaries. Thus, the key question that must be addressed by the monitoring program is straightforward: Have sufficient anchor habitats been established to ensure that beneficial ecological processes are supported and function to improve overall conditions for important aquatic and riparian species? Sufficient anchor habitat means that the areas protected and restored are large enough and spatially arrayed such that they create a network that will improve conditions at a scale that incorporates much of the aquatic and riparian landscape of larger rivers within the Willamette Basin.

To address the key monitoring question, it is necessary to construct a set of subordinate questions that are appropriate for different scales. For example, at the project scale of a habitat easement or acquisition, it is most appropriate to document the location, area, ownership or duration of the agreement. At this scale, however, it would not be appropriate, or possible, to monitor whatever incremental impact the project might have on the survival of migrating populations of juvenile Chinook salmon. Table 4 provides an overview of how the monitoring questions are structured at different spatial scales and identifies the general questions, metrics, and methods envisioned for monitoring changes to the main stem of the Willamette River. To make reading of the table easier, the spatial scale of questions are shaded from light green at the site scale, to darker green at the river scale. Monitoring tasks directly associated with the Program and supported by the HTT are also described in the table.

In addition to identifying appropriate spatial scales for monitoring, it is important to assign monitoring tasks appropriately and to support integration and synthesis of monitoring results.

Monitoring activities directly associated with projects prioritized, selected, and funded through the Program will be part of a broader monitoring effort underway in the Willamette Basin. The composition of the HTT membership and the structure of the WATER Steering Team will facilitate necessary coordination and integration with other groups. Connections to ODFW spring Chinook salmon Life History Project (Schroeder et al.2007) and Hatchery Monitoring Program are established. Members of the HTT contribute to the WATER Research, Monitoring and Evaluation Oversight Team will implement a monitoring strategy (USACE 2010) called for in the Willamette Project Biological Opinion. Population viability and restoration effectiveness monitoring under development for the ODFW/National Marine Fisheries Service ESA Recovery Plan for Salmon and Steelhead in the Upper Willamette ESU will provide additional context (ODFW 2010).

Table 4: Overview of monitoring questions, scale, and methods as applied to the Willamette Habitat Restoration and Protection Program. Questions are associated with key program objectives and ecosystem processes.

Question	Scale	Metric(s)	Method(s)*	Frequency of Measurement
Objective 1: Protect functioning river corridor habitat Process: Establish and protect a network of anchor habitats where landscape scale processes may function.				
Have the projects implemented over the last 5 years added to the area of protected habitat?	River	Area of protected habitat	GIS mapping of protected areas	Once every 5 years
Objective 2: Restore channel morphology and complex aquatic/riparian habitats Processes: Channel formation and maintenance, channel migration, flood plain connectivity.				
Did the restoration project add channel length to the Willamette?	Site	Stream flow in restored channel at low flow.	Stage measurement at restored site.	Weekly stage readings during low flow periods
	Reach	Length of channel	Photo measurements in "slices" through affected reach.	Every five years
Objective 3: Protect, restore, and enhance habitat for native fish species Processes: Aquatic species migration and colonization (population dynamics).				
Is the restoration project area used by native fish species?	Site	Fish species abundance.	Spot check. (electroshock, nets)	Bi-weekly during smolt migration period
	Reach	Fish species distribution	BACI Reach Sampling (electroshock, nets) ODFW Spring Chinook Project Protocols	Bi-weekly during smolt migration period

Is there a change in relative abundance of warm water native species?	Site	Fish species relative distribution in "slices"	Sampling (electroshock, nets, traps) ODFW Oregon Chub Protocols	Seasonally throughout year
Did the restoration project or increase appropriate habitat for native cold water species?	Site	Temperature profile of restored site.	Direct water temperature recording. DEQ/VEMCO protocols.	Continuous: Summer - Fall
Did the restoration project improve and/or increase habitat for native fish?	Site	Turbidity of restored site against comparable baseline value	Grab Sample Nephelometric Turbidity Meter	Migration Rearing ODFW needs to which specific months of the year
Did the restoration project provide or increase appropriate habitat for native warm water species?	Site	Temperature profile of restored site.	Direct water temperature recording. DEQ/VEMCO protocols.	Continuous: Spring – Summer - Fall
Has the restoration **program** improved connectivity of main stem refuge habitats?	Reach and River	Spatial distribution of cold water refuge habitats	Measurement using the "slices"	Every 5 years
Objective 4: Increase floodplain forest cover Processes: Seedling establishment, vegetative succession, impacts of invasive species.				
Is there an increase in floodplain forest cover?	Site	Forest restoration planting survival	Sampling survival	Annually
	Reach	Area of forest in "slices"	Aerial Photographic Survey	Every 5 years

Objective 5: Facilitate flow/landscape interactions – anchor habitats where channel forming and flood flow processes operate

Processes: River hydrology, sediment transport, nutrient input and cycling.

Have the projects (either protection or restoration) allowed frequent flooding?	Reach	Area of 2, 5 and 10 year flood within restoration and protection sites.	GIS analysis and river elevation modeling.	Every 5 years

*Footnote: Monitoring data will be submitted in a format that is acceptable and useable for agency databases Quality Assurance Protocol Plan is well-defined and implemented by qualified staff

Objective 6: Contribute to a net increase in aquatic and riparian habitat Processes: Same as Objective 1, but evaluated over time at the landscape-scale.				
Have the projects (either protection or restoration) outpaced the development of habitats by other forces?	Reach	Area of functioning habitat in "slices"	Aerial photo analysis and GIS mapping.	Every 5 years
	River	Area of functioning habitat in "slices"	Aerial photo analysis and GIS mapping.	Every 5 years

The monitoring approach described in Table 4 was developed in conversation with the drafters of the BiOp Monitoring Plan to ensure that overlap does not occur, and the two efforts appear to be compatible and complimentary. In addition, one member of the RRT also participates on the BiOp Monitoring Team. At this point we have developed two monitoring approaches that do not replicate what the BiOp RM&E Team has been discussing.

The overall approach for documenting current habitat conditions and monitoring changes associated with implementation of anchor aquatic/riparian habitats in Willamette Basin is derived from the by the Willamette Planning Atlas (Hulse *et al* 2002). This Atlas is one result of an unprecedented, science-based evaluation of the Willamette River that began some 20 years ago to better understand the interaction of human land use with aquatic and terrestrial species and their habitats. The evaluation was funded by the Environmental Protection Agency (EPA) and was undertaken by scientists from EPA, Oregon State University, and the University of Oregon. The group joined forces as the Pacific Northwest Ecosystem Research Consortium (Consortium).

The focus of the study was on river dynamics within a developed flood plain environment. The Atlas portrays plausible future scenarios for development in the Willamette Basin, and models the effects of policy choices on future floodplain conditions. The Atlas postulated areas of restoration potential in a uniform manner along the river (Figure 4).

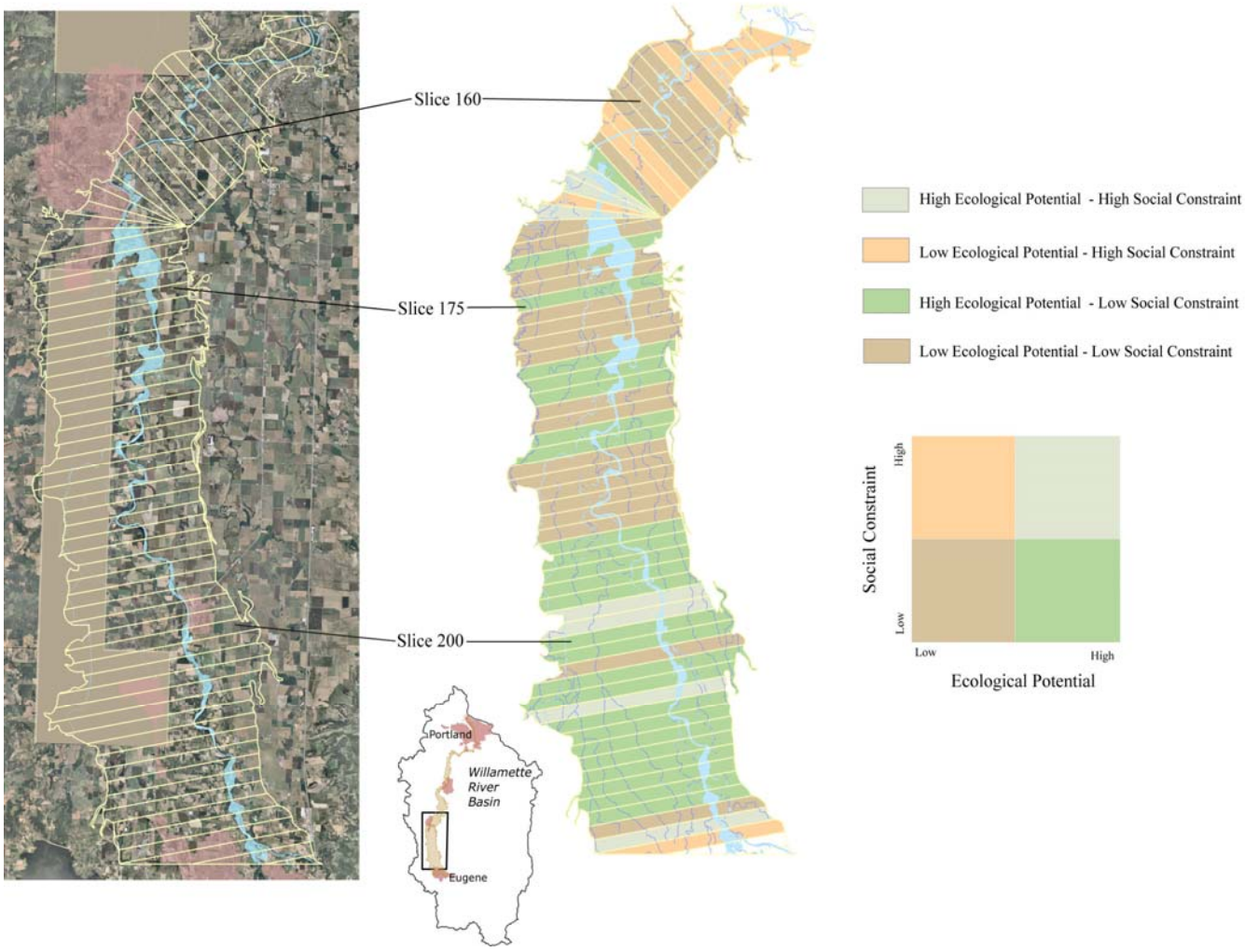


Figure 4: Restoration Priorities for the Willamette River

Beyond the comprehensive evaluation of conditions and projection of alternative futures, the Consortium has developed a monitoring approach to track changes in the river system over time. The river "slices" are a tool that can be used to evaluate at a project level, reach level or river system level changes in floodplain forest, channel complexity, flood storage and aquatic diversity (Figure 5).

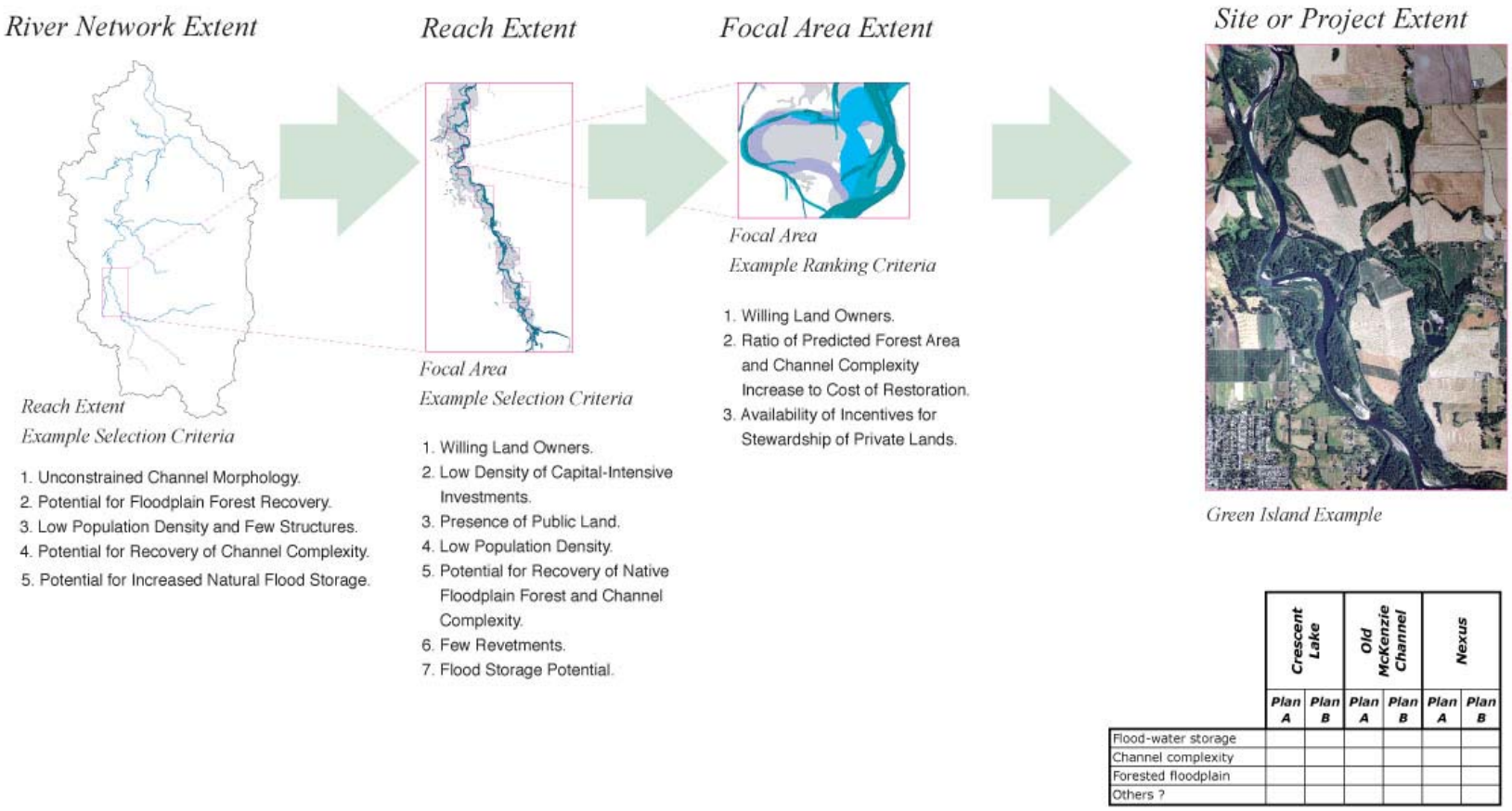


Figure 5: Monitoring scales from the Willamette Planning Atlas

The slices have recently been refined to more discretely measure changes. The slices are now 100 meters in width, a refinement of the 1-kilometer width originally developed (Figure 6).

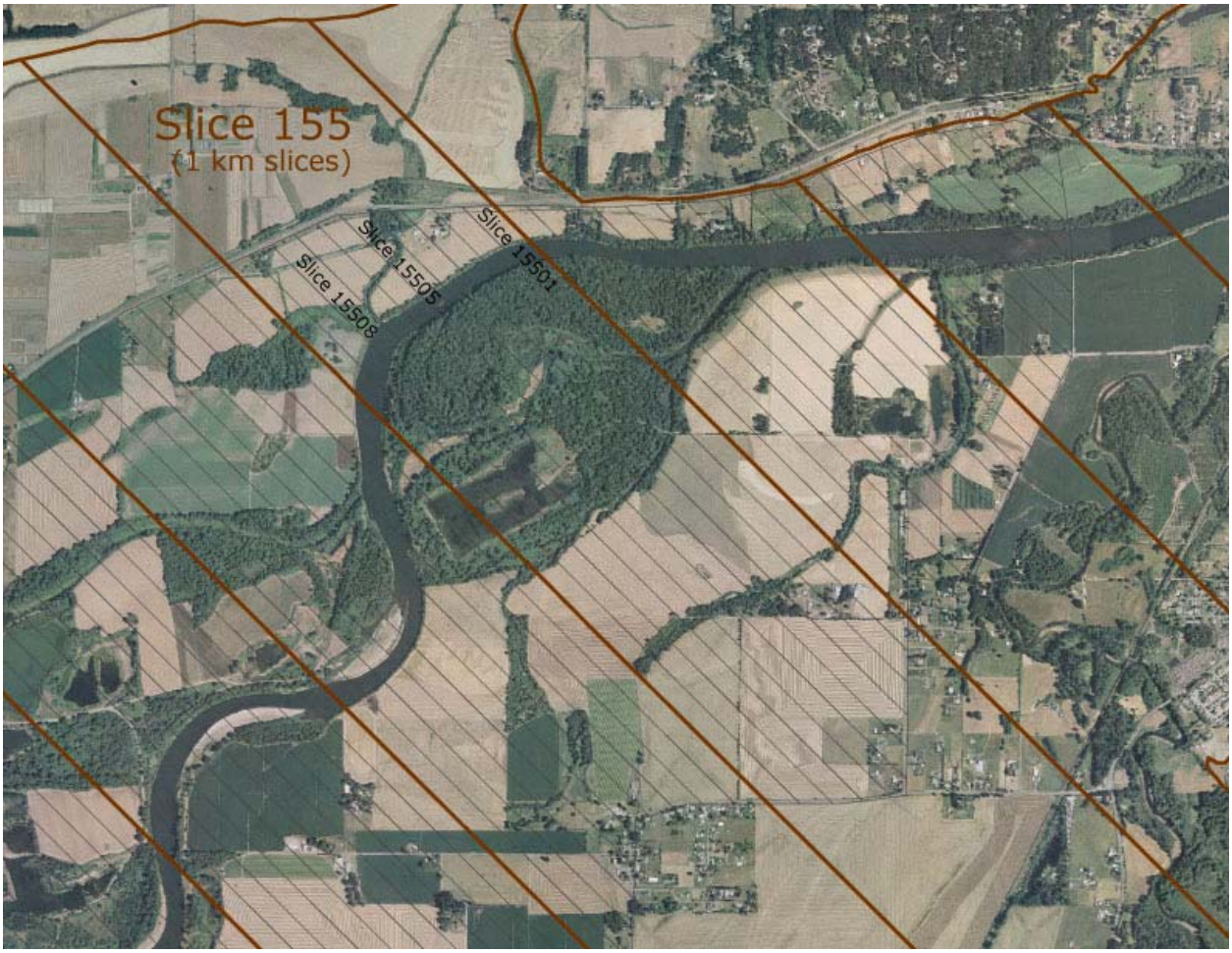


Figure 6: Fine grained "slices" of the Willamette River

The HTT has been working closely with the scientists participating in the Consortium. The primary authors of the Willamette River Atlas participate on the RRT. The RRT reviews and recommends funding for restoration projects under the Willamette SIP. The Program is an attempt to bridge the gap between research and policy; it is the first significant step at implementing some of the findings of the Consortium.

OWEB and MMT have funded the development of 100 meter elevation transects or "slices" of the Willamette Valley which will provide data on channel complexity, floodplain forest composition, fish species habitat diversity, and flood storage data as of 2009. This information provides a critical context for measuring effects of the program. Other efforts to prepare background information, such as modeling flood inundation from 2, 5, and 10 year flow events using LiDAR digital elevation model data and flood-stage data, will add to the context information usable for monitoring reach and river scale changes.

Evaluation of channel, habitat, and vegetation changes using the "slices" approach will be conducted at the reach scale. Status and trend monitoring evaluation at the river scale will be accomplished using the same "slices" to characterize physical conditions. That information will be supplemented with more intensive protocols for biotic community structure, water quality, and species specific habitat based on geospatially referenced tessellated sampling (GRTS) protocols (Stevens and Olsen 2004, Crawford and Rumsey 2009). GRTS based sampling has been successfully implemented to evaluate Oregon Coast Coho ESU populations and their habitats (State of Oregon 2007) and recommended for use throughout the Columbia Basin by the Pacific Northwest Aquatic Monitoring Partnership (PNAMP) monitoring guidance (Hillman and O'Neal 2009).

We understand that the approach we have developed and funded to systematically assess changes in land use and habitat across a large riparian system has not been used before. On the other hand, our search for an effective approach currently in use has turned up nothing. Further, we are informed by recent research Kibler *et al.*[1] (2010) that the more typical before/after/control approach may not be well suited for evaluating large-scale restoration actions. In the view of our team of scientists, the approach proposed will give us the best view of overall trends in river health.

At the same time, the two monitoring approaches we have developed have not been fully cross-walked, nor have the scales been "rolled up to judge program effectiveness." More specifically, we have not attempted to equate our broad-scale land use monitoring ("slices") with specific biological objectives at the Site, Reach, or River scales as presented in Table 4. To our knowledge, this sort of crosswalk has never been attempted, and could prove useful. At this point the State and the University are discussing how to develop this crosswalk, and we will share these results with the ISRP when they are developed.

Project Implementation Monitoring

Information regarding the establishment of each habitat project will be reported to the HTT, funding agencies, OWEB SIP, and the WATER Steering Committee. Project location, including maps showing spatial extent and relationship to existing channels and floodplains, will be documented. Additional reporting will conform to protocols established by the OWEB that are consistent with the requirements of the Department of Commerce Pacific Coast Salmon Recovery Fund (PCSRF).

For each project funded under the Program, data will be gathered to answer the questions at the site scale and time frame identified in Table 4. For channel reconnection projects, stage, temperature and fish use will be measured for at least five years following construction. Reforestation projects will be required to monitor survival of both dominant species and as understory species.

[1] K. M. Kibler, D. D. Tullos and G. M. Kondolf. 2010. Learning from Dam Removal Monitoring: Challenges To Selecting Experimental Design And Establishing Significance Of Outcomes. River Research and Applications.

Reach Scale Monitoring

At the end of each year, a "Willamette River Reach Report" will be prepared for reaches where projects have been implemented. The Reach Report will include measures of change in 100 meter "slices" in channel length, floodplain forest, protected lands, and flood storage. These reports will provide an interim evaluation of the progress and magnitude of effect of the Program.

River Monitoring

Every five years, the information on the 100 meter "slices" will be updated to document changes to the river system. This monitoring will provide a context for evaluation of the Program and provide the opportunity to refocus efforts where change is in the direction towards or away from recovery.

Annual Report

Information from all of monitoring components described above will be gathered into an annual report to the Northwest Power and Conservation Council, the ISRP, and OWEB on Program progress. As the Program unfolds, monitoring elements are likely to shift in order to cover aspects not previously considered essential. These shifts will also be described in the annual report. The annual report will be available for public review on the OWEB web site, and will be presented and discussed with the ISRP.

VI. Relationship to Regional Programs

The Willamette River Habitat Restoration and Protection Program is structured to address the problems identified in Section III and to coordinate the allocation of resources across federal and state agencies to achieve the shared purposes of restoring mainstem species habitat. The Program and forthcoming projects will be designed and implemented with full awareness of other significant work underway in the Willamette Valley, including the other elements of the NMFS and USFWS Willamette Biological Opinions, the Willamette Subbasin Plan, the recovery plan for Chinook and steelhead, the Bull Trout Recovery Plan, the State Conservation Strategy, and many other federal and state priorities.

a. Willamette River Project Biological Opinion – NMFS

This Program has been developed to implement the reasonable and prudent action (RPA) that is identified as "7.1 Willamette River Basin Mitigation and Habitat Restoration." Specifically, the Program will work in concert with the Action Agencies and the WATER HTT through the project selection criteria developed by the WATER Steering Committee. (See Attachment B for a full description of the WATER HTT and its relationship to the Steering Committee.) The proposal includes implementation of RPA 7.1.2. It is specific to the projects and processes identified in the Biological Opinion. The Program will also fund projects consistent with the OWEB/MMT Willamette SIP using non-federal funds.

b. Willamette River Basin Project Biological Opinion – USFWS

The USFWS issued a Willamette Project Biological Opinion on July 11, 2008. This Program addresses the species considered in that biological opinion under RPA 7.1.2. The USFWS is a member of the OWEB/MMT SIP partnership and has assisted in the project selection for non-federal funded projects. The Program has been developed to consider, to the extent possible, both fish species of concern to the USFWS (bull trout and Oregon chub).

c. Willamette Subbasin Plan

The Willamette Subbasin Plan, developed and adopted into the NPCC's Fish and Wildlife Program, identifies Upper Willamette spring Chinook, Upper Willamette steelhead, bull trout, and Oregon chub as aquatic focal species. These same species serve as the focus for the Willamette Program. The Willamette Subbasin Plan basinwide priorities include restoring lowland riparian areas (5.2.2.4), restoring low-cost, high-return areas of the floodplain (5.2.2.5), letting the river cool itself (5.2.2.6) and ensuring that all the priority themes are taken up in an organized way at the local level (5.2.2.7). The Willamette Program supports and implements these Willamette Subbasin Plan priorities.

Restoration of physical habitats in the mainstem Willamette River and its tributaries is a key aquatic strategy identified in the Willamette Subbasin Plan. The plan also identifies connecting favorable habitats as a key aquatic strategy (Table 5.3 of the Willamette Subbasin Plan). The initial focus of the Program will be to restore aquatic habitats in the mainstem Willamette.

d. Draft Willamette Chinook and Steelhead Recovery Plan

The Draft Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead (ODFW 2010) is a detailed evaluation of the status and necessary actions to recover Chinook and steelhead in the Upper Willamette to sustainable levels. The draft plan identifies habitat for juvenile rearing as an important limiting factor for both species. Projects developed under this Program will be evaluated against the recovery goals and standards developed when the plan is completed.

e. Willamette River Floodplain Restoration Study

The USACE and the Mid-Willamette Valley Council of Governments are cost-sharing a feasibility study to evaluate opportunities to modify existing floodplain features along the Middle Fork and Coast Fork of the Willamette River to restore natural floodplain ecosystem function and conditions. Restoration measures include removal/modification of revetments and levees to reconnect floodplain and off channel areas, removal of structures or fill from floodplain, removal of non-native vegetation, revegetation of riparian/floodplain zones with native species, restoration and reconnection of off-channel features, such as side-channels and oxbows, placement of wood or engineered log jams in the floodplain or in-channel, and gravel mine pit restoration. These restoration alternatives will improve habitat conditions for ESA-listed aquatic species and other species of fish and wildlife.

f. Habitat Conservation Plans and Safe Harbor Agreements

Currently the only Habitat Conservation Plans for listed species that are a focus of this Program address Oregon chub. The USFWS developed a Safe Harbor Agreement for private landowners to reintroduce Oregon chub to ponds in the Willamette Valley. This Program does not anticipate any effect on those agreements.

VII. Relationship to Other Projects

BPA/NPCC Funding

Lower Columbia River Estuary Program (LCREP) The Willamette Program is a relatively new approach, modeled after LCREP (Project Number 2003-011-00). Like LCREP, the Willamette Program seeks to coordinate and encourage habitat protection and restoration. Like LCREP, the Willamette Program is a multi-year, multi-agency strategy to identify, fund, and implement the highest priority restoration projects in the target area.

Willamette Basin Wildlife Mitigation (WBWM) The Willamette Program builds upon some of the work performed though the long-term wildlife mitigation program in the Willamette (Table 5). Through the WBWM (Project Number 1992-068-00), ODFW has facilitated the acquisition of several properties that have significant fish benefits in addition to their benefits for wildlife. Examples include Green Island (1100 acres, acquired in 2005 with cost share from OWEB), located at the confluence of the McKenzie River and the Willamette mainstem, and Big Island (179 acres, acquired in 2001), located on the McKenzie River. Green Island is located in an anchor habitat that was and formed at the historic mouth of the McKenzie River. Management objectives for Green Island include the restoration of natural river processes, including the potential restoration of a former McKenzie River channel.

Table 5: BPA/NPCC funded project in the Willamette Basin

Project Number	Project Title	Subbasin	Sponsor	FY07 Council	FY08 Council	FY09 Council	Council Rec. FY 07-09 Total
1992-068-00	Willamette Basin Mitigation	Willamette	ODFW	$760,657	$694,143	$706,310	$2,161,110

Since the acquisition of the properties described above, ODFW has provided additional funding to the McKenzie River Trust (MRT) to enhance and restore the riparian and aquatic habitats on these properties in order to increase their benefits for fish. In 2007, MRT removed a flood control levee on Green Island and the Willamette began to reclaim some of its historic floodplain. This year, a 12-acre section of the island was washed out by a high flow event,

opening a new channel toward the center of the island. Monitoring will take place to determine fish use of the new channel and the changing floodplain structure. Also in 2010, MRT expanded restoration efforts on both Green Island and Big Island and is negotiating to acquire land parcels adjacent to these properties. Restoration on Green Island in 2010 has focused on additional partial levee removal that will reconnect floodplain habitat on the island. Green Island has the only known Oregon chub population that occurs in a mainstem backwater habitat. In the future, WBWM will continue to provide restoration opportunities on properties that are permanently protected for fish and wildlife to promote the longevity of the restoration activities.

The WBWM has also provided funding for the Willamette Floodplain Restoration Study (Study). The Study was implemented to determine if new flow measures could restore lost – or enhance degraded – floodplain functions. Among these functions are water quality and quantity, island and habitat formation, nutrient cycling and structural or hydro-geomorphic features that benefit aquatic and terrestrial species along the Coast and Middle Forks of the Willamette River. The cost share provided by the project helped leverage $4 million in funding from the USACE. Results of the Study will be used in the Biological Opinion's technical analysis that includes linking terrestrial and aquatic modeling to develop a range of future restoration scenarios. The Study also examines potential restoration such as modifying flows from Dexter Dam, removing dikes or riprap, restoring backchannel areas, reconnecting floodplains, and restoring riparian forests and wet meadows. Collaborating with TNC and their Willamette Flow Management Program also led to development and mapping of the anchor habitats that form the basis for the Willamette Program. Funding for some of the TNC work also came from OWEB and MMT.

The attempts at funding coordination to date have resulted in the development of several outstanding projects; it is clear to all participants, however, that more systematic coordination as a part of this Program will result in greater efficiencies and higher levels of accomplishment.

Willamette SIP-Funded Projects

The Willamette SIP funded by OWEB and MMT have initiated a number of projects. The following table (Table 6) lists the projects that have been funded under the cooperative effort to date. A brief description of each project and its relationship to the Program follows the table. Full applications for the first four projects are included in Appendix I.

More recently, the RRT has reviewed several projects that promise to meet the intent and criteria of the Willamette BiOp and SIP: acquisition of land and perpetual conservation easements at Harkens Bend, and conservation easements at Horseshoe Lake. Full applications for these projects have also been included in Appendix I. These projects appear to provide a major biological benefit to the target species. They also represent a major turning point in the willingness of landowners along the Willamette to undertake floodplain reconnection. Both the Harkens Bend and Horseshoe Lake projects appear to signal the beginning of significant interest in protecting surrounding reaches.

Table 6: Willamette Special Investment Partnership funding by OWEB

Project ID	Project Objective	Grantee	Project Name	Project Amount
6899	Restore upstream habitat connection and improve habitat complexity at the confluence of Stephens Creek and the Willamette River.	City of Portland BES	Lower Willamette River Off-Channel Habitat Restoration at the Confluence of Stephens Creek	$199,060
6900	Restore floodplain vegetation and back channel habitat on the Middle Fork of the Willamette River.	Friends of Buford Park & Mt Pisgah	South Meadow Floodplain Enhancement Phase III	$204,823
6927	Restore flow to a back channel of the Willamette River at Mission Park.	Willamette Riverkeeper	Willamette Mission Programmatic Reconnection Project	$953,370
7548	Restore upstream habitat connection and improve habitat complexity at the confluence of Tryon Creek and the Willamette River.	City of Portland BES	Tryon Creek Confluence Habitat Enhancement Project	$100,000
8035	Restore floodplain vegetation and tributary channel habitat to the Little Willamette River.	Greenbelt Land Trust	Little Willamette Property Restoration, Phase 1	$25,050

Stephens Creek The City of Portland has been aggressive at planning and implementing fish restoration projects in the urban area. These projects are important in order to provide a respite for fish migrating through the poor quality fish habitat in the urban corridor. The purpose of the project at the confluence of Stephens Creek and the Willamette was to improve the quality fish habitat and provide better shading along the stream. This project was funded and completed prior to establishing the RRT and identifying anchor habitats. Future efforts through the Metro Area will focus on maintaining the relatively clean and cold-water inputs from Forest Park, the

Clackamas River, and other sources, and then expanding fish habitat through restoration and acquisition where these tributaries meet the mainstem.

Buford Park Buford Park is located between the confluence of the Coast and Middle Forks of the Willamette. The SIP has funded several projects to expand and improve floodplain habitat and connectivity in this area, including the South Meadow habitat enhancement project. The project included restoration of back channel habitat and restoration of floodplain vegetation. This work has been supported by the RRT. Additional acquisition of relatively high quality habitat is currently under negotiation in the area.

Willamette Mission Willamette Mission is an old slough along the river that has filled in with sediment over time. The area is now managed by the Oregon Department of Parks and Recreation, and the state has been working with Willamette Riverkeeper to replace a culvert with a bridge so the culvert does not impede flow, and to remove vegetation that has grown over the sediment to allow the river to scour out the old stream channel. Considerable engineering has been completed for this project, including LiDAR analyses to identify the best opportunities for expanding fish habitat. Unfortunately, this project has been stalled in USACE permitting over the last year owing to the concerns of an adjacent landowner who supported construction of a nearby revetment many years ago. The Willamette Mission project is within an anchor habitat, and is an example of the type and location of restoration projects supported by the RRT.

Tryon Creek The temperature flowing from Tryon Creek Park – a forested zone between Lake Oswego and Portland – is more than two degrees cooler than the mainstem Willamette at the confluence of the two water bodies. This project expands cool water off-channel habitat for salmon and steelhead making their way through the two-mile long urban corridor. The restoration project will improve fish passage into Tryon Creek, remove channel-hardening structures, and revegetate the floodplain. The project also includes improving confluence habitat through the placement of large wood in the Tryon Creek channel and at the confluence with the Willamette. This project was approved by the RRT prior to the identification of anchor habitats.

Little Willamette The Little Willamette is an old river channel of the mainstem that is no longer connected to the river. This project differs from the four described above, in that it is designed to build capacity for future restoration. If successful, it will result in partnerships with landowners along the Little Willamette and projects to reconnect portions the old channel to the current channel. Work in this area has already begun. For example, BPA provided funding for a conservation easement (Project Number 1992-068-00), which will be paired with OWEB funding for floodplain reforestation. However, the potential for larger scale projects with significant biological benefit appears substantial.

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List of Acronyms

Action Agencies The federal agencies responsible for the actions covered under an Endangered Species Act consultation. For the Willamette Biological Opinion, the Action Agencies are USACE, BPA, and BOR.

BACI Before, after, control impact design. A specific study design to examine the effects of a management project compared to conditions before the action, with a comparable control site and after the impact (management action).

Biological Opinion Biological Opinion or BiOp is the opinion of the USFWS or NMFS on the impacts of a proposed action on an endangered species. The opinion is based on the best available science.

BOR The Bureau of Reclamation is a water resource management agency of the Department of Interior.

BPA Bonneville Power Agency, a power marketing agency in the Department of Interior with responsibilities under the Northwest Power Act to mitigate for fish and wildlife effects of the federal power system.

DEQ The Oregon Department of Environmental Quality, a state agency with delegated Clean Water Act responsibilities among others.

DPS Distinct population segment is a genetically distinct subpopulation of a species subject to protection under the federal Endangered Species Act.

EPA The Environmental Protection Agency, an independent cabinet level agency of the federal government responsible for water and air quality and hazardous materials control.

ESA Endangered Species Act adopted in 1973 by congress to protect the nation's native species. The act requires the USFWS and NMFS to take actions to list species, develop recovery plans and to consult on federal actions that might affect listed species.

ESU Evolutionary significant unit is comparable to a distinct population segment in that it is a genetically distinct subpopulation of a species subject to the protections of the federal Endangered Species Act.

FCRPS The federal Columbia River power system composed of both federal (USACE and BOR) and federally licensed dams that produce power that is marketed by BPA.

GIS Geographic information system is any system that captures, stores, analyzes, manages, and presents data that are linked to location.

GRTS Generalized Random Tessellation Stratified *(spatially-balanced probability sampling)* is a sampling method that balances random samples with spatial representation of samples to achieve an improved representation of data over both time and space.

HTT Habitat technical team is a group of public agency representatives with participating non-governmental and Tribal representatives involved in habitat restoration in the Willamette basin. The HTT was created by the Willamette Project BiOp.

ISRP Independent Science Review Panel is a group of scientists empanelled by the NPCC to provide science recommendations on proposed projects to be awarded by NPCC and funded by BPA.

LiDAR **Li**ght **D**etection **A**nd **R**anging is an optical remote sensing technology that measures properties of scattered light to find range and/or other information of a distant target. The prevalent method to determine distance to an object or surface is to use laser pulses.

MMT Meyer Memorial Trust, is a regional philanthropic foundation that invests in people, ideas and efforts that deliver significant social benefit to Oregon and southwest Washington. The Trust has invested in a Willamette Initiative over a seven year period.

NGO Non-governmental organizations are any organization that is privately founded, operated and managed.

NMFS National Marine Fisheries Service is a federal agency in the Department of Commerce. NMFS has responsibilities for anadromous fish and oceanic species under the Endangered Species Act and has a number of other management authorities for coordination and protection of ocean and coastal resources.

NPCC Northwest Power and Conservation Council is a body created by the Northwest Power Act who has responsibility for power demand forecasting and management and fish and wildlife mitigation for the federal power system.

NRCS Natural Resources Conservation Service is a Department of Agriculture agency responsible for administering most of the Farm Bill programs.

ODFW Oregon Department of Fish and Wildlife is a state agency responsible for the management of state fish and wildlife resources for the good of all citizens of the state.

Oregon Plan The Oregon Plan for Salmon and Watersheds was created by Governor Kitzhaber in 1996 and adopted by the Oregon Legislature in 1997. The Plan is based on citizen involvement in restoration on private lands, agency enforcement of state laws, science oversight and dedicated funding for private land restoration actions.

OWEB The Oregon Watershed Enhancement Board is a state agency created in 1999 to administer dedicated funds for fish and wildlife habitat restoration and protection as identified in the Oregon Plan.

OWEB SIP A Special Investment Partnership made by the OWEB Board to dedicate funds over a protracted period for specific ecological outcomes.

PCSRF Pacific Coastal Salmon Recovery Fund is an annual congressional appropriation to assist state salmon recovery actions.

PNAMP Pacific Northwest Aquatic Monitoring Partnership is a forum for coordinating state, federal, and tribal aquatic habitat and salmonid monitoring programs.

RPA Reasonable and prudent actions are specific actions developed to minimize the take of listed species in the opinion of the Service responsible for evaluating species effects under the ESA.

RRT Restoration review team established by OWEB to provide science based review of project applications under the Willamette SIP.

TNC The Nature Conservancy a private non-profit land trust organization.

TRT Technical Recovery Team of scientists appointed by NMFS to provide technical evaluations of ESA listed species population structure and other relevant information necessary for recovery planning.

USACE U. S. Army Corps of Engineers, an Army agency that has significant civil works authorities and responsibilities. The USACE constructed and operates hydroelectric dams and navigation structures in the nation's waterways.

USFWS The U. S. Fish and Wildlife Service is a Department of Interior agency responsible for fish and wildlife resources and coordination of federal actions that might affect the Nation's fish and wildlife resources.

WATER The Willamette Action Team for Ecosystem Restoration was created as a coordinating and management group under the Willamette Project BiOp.

Willamette Project The Willamette River Basin Flood Control Project includes the operation and maintenance of the 13 dams and 42 miles of bank protection works in the Willamette River. This project is the subject of consultation under the ESA which resulted in a BiOp from the USFWS and NMFS in june of 2008.

ATTACHMENTS

A Willamette RRT Membership
B HTT Guidelines, Procedures, and Membership
C HTT and RRT Project Selection Criteria
D Willamette Mainstem Anchor Habitats
E OWEB/Meyer Memorial Trust SIP Agreement
F OWEB State Agency Memoranda of Agreement
G Existing Willamette SIP Project Review Process
H Willamette Habitat Restoration and Protection Program Process
I Willamette SIP Project Applications (5)

Note: For purposes of ISRP review, we have not replicated the five project applications in Appendix I because they are attached to the response letter.

ATTACHMENT A

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March 28, 2010

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ATTACHMENT B

Willamette Action Team for Ecosystem Restoration (WATER)
Habitat Technical Team (HTT)
Guidelines, Organization, and Procedures

May 20, 2010

Background

The purpose of the Willamette Action Team for Ecosystem Restoration (WATER) is to provide a forum for coordination and recommendations among the sovereign governments (federal/state/tribal) working to implement strategies for Endangered Species Act (ESA) compliance associated with the Willamette Project, which consists of 13 federal dams operated and maintained by the U.S. Army Corps of Engineers, Portland District (USACE) in the Willamette River Basin (Willamette Project), 42 miles of revetments, and the hatchery mitigation program. Establishment of WATER is a core feature of the adaptive management strategy in the Reasonable and Prudent Alternative (RPA) developed during consultation on the Willamette Project (NOAA Fisheries 2008)[2]. The Habitat Technical Team (HTT) is one of several technical teams established by WATER to assist the Action Agencies in implementation of the Willamette Biological Opinion (BiOp). In addition to the HTT, WATER created technical teams to address Fish Passage, Flows, Hatcheries, and Research, Monitoring, and Evaluation.

The Action Agencies (Bonneville Power Administration, U.S. Army Corps of Engineers, and Bureau of Reclamation), in collaboration with the Services [National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS)], will develop and carry out a comprehensive habitat restoration program to address limiting habitat factors for ESA-listed fish populations during the term of Willamette Project BiOp. The focal species for this program will be ESA-listed Upper Willamette River (UWR) Chinook salmon, UWR steelhead, bull trout and Oregon chub that are affected by the Willamette Project; however other species that may benefit from the restoration projects include lamprey, Lower Columbia River (LCR) Chinook, LCR steelhead, and LCR coho salmon. This program will also likely benefit other resident fish and wildlife species, as well as ecological functions such as water quality. This program is required by NMFS' Reasonable and Prudent Alternative (RPA) 7.1.2 in NMFS' BiOp (NMFS, 2008).

Goal

The Habitat Technical Team (HTT) is established under the leadership of Bonneville Power Administration to assist in the implementation of RPA measure 7.1.2 and 7.1.3 of the NMFS BiOp. The goal of the HTT is to provide strategic guidance and coordination in the Willamette Basin for the purpose of protecting, restoring and enhancing habitat for ESA-listed species affected by the thirteen federal hydro projects. In general, it is the intention of the HTT to assist the Action Agencies in the prioritization of high-priority, habitat restoration projects for funding

[2] Please see Willamette Action Team For Ecosystem Restoration (WATER) GUIDELINES, ORGANIZATION, AND PROCEDURES, dated December 2008, for more detailed information on the WATER structure and its goals and guidelines.

in order to successfully implement RPA 7.1.3, which calls for the implementation of approximately two projects each year starting in 2010.

Participation

The HTT is comprised of representatives of federal agencies, state agencies, including municipality and county entities, and tribes active in the Willamette Basin. At this time, participation includes: Bonneville Power Administration, U.S. Army Corps of Engineers, National Oceanic and Atmospheric Administration – Fisheries, U.S. Fish and Wildlife Service, U.S. Forest Service, U.S. Environmental Protection Agency, Northwest Power and Conservation Council, Confederated Tribes of the Grand Ronde, Oregon Department of Fish and Wildlife, Oregon Department of Environmental Quality, Oregon Department of State Lands, Oregon Parks and Recreation Department, Oregon Watershed Enhancement Board, and City of Portland - Bureau of Environmental Services. Many non-governmental organizations (NGOs) are active within the Willamette Basin and have amassed crucial knowledge of the basin and its functions. These NGOs and the public are invited to attend general meetings in order to provide their technical expertise and to offer their views for consideration. Meeting dates and times are posted on the following website:

http://www.nwp.usace.army.mil/pm/programs/biop/home.asp

Administration

The Habitat Technical Team is currently chaired by the Bonneville Power Administration. The HTT has agreed to meet monthly until the process to identify and recommend habitat restoration projects is finalized. Meetings will generally fall on the first Thursday of each month. At some point in the future, it is contemplated that the HTT may switch to one full-day meetings every quarter. Meetings will be held within the Willamette Basin in locations appropriate to the topics being addressed. Conference lines will be established for each meeting to allow for easy participation. They may include a variety of topics that are of interest to the HTT and may include field tours for the purpose of understanding habitat needs. Documents that are developed by the HTT will be posted online at the website included above for public review.

Each entity will designate a primary and alternate representative who will participate in consensus-building for the development of priorities and recommendations made by the HTT, such as the recommendation to fund specific habitat restoration projects (see Appendix A). As mentioned above, the public is invited to attend general meetings, but only federal agencies, state agencies, and tribes are able to participate in meetings during which consensus is being sought. If consensus cannot be obtained within the HTT, then the issue under debate will be elevated to the WATER Steering Team.

The HTT will continue implementing its goal and procedures until the authority of the team has been revoked or the group chooses to disband.

Primary and Alternate Representatives from State, Tribal, and Federal Agencies

Bonneville Power Administration (BPA) - Current HTT Chair
Primary Representative: Dorothy Welch
dwwelch@bpa.gov
Alternate Representative: Jason Karnezis
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City of Portland - Bureau of Environmental Services
Primary Representative: Trevor Diemer
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Alternate Representative:

Confederated Tribes of the Grand Ronde (CTGR)
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Alternate Representative: Lawrence Schwabe
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Alternate Representative: Brandy Humphreys
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National Oceanic and Atmospheric Administration (NOAA) Fisheries
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Alternate Representative: Stephanie Burchfield
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Oregon Department of Environmental Quality (DEQ)
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Alternate Representative: James Bloom
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Alternate Representative:

Oregon Parks and Recreation Department (OPRD)
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Oregon Watershed Enhancement Board (OWEB)
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Alternate Representative: Melissa Leoni
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U.S. Army Corps of Engineers (USACOE)
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Alternate Representative: Richard Piakowski
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U.S. Environmental Protection Agency
Primary Representative:
Alternate Representative:

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Alternate Representative:

U.S. Forest Service (USFS)
Primary Representative: Johan Hogervorst
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Alternate Representative: Nikki Swanson
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ATTACHMENT C

Willamette Action Team for Ecosystem Restoration (WATER)
Habitat Technical Team (HTT)
Willamette River Project Selection Criteria

Goals

The Action Agencies (Bonneville Power Administration, U.S. Army Corps of Engineers, and Bureau of Reclamation), in collaboration with the Services [National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS)], will develop and carry out a comprehensive habitat restoration program to address limiting habitat factors for ESA-listed fish populations during the term of Willamette Project Biological Opinions (BiOp). The focal species for this program will be ESA-listed Upper Willamette River (UWR) Chinook salmon, UWR steelhead, bull trout and Oregon chub that are affected by the Willamette Project; however other species that may benefit from the restoration projects include lamprey, Lower Columbia River (LCR) Chinook, LCR steelhead, and LCR coho salmon. This program will also likely benefit other resident fish and wildlife species, as well as ecological functions such as water quality. This program is required by NMFS' Reasonable and Prudent Alternative (RPA) 7.1.2 in the NMFS BiOp (NMFS, 2008).

The Habitat Technical Team (HTT) is established under the leadership of Bonneville Power Administration to implement RPA measure 7.1.2 of the NMFS BiOp. It will serve as an advisory technical team within the Willamette Action Team for Ecosystem Restoration (WATER), the oversight team established to advise the Action Agencies in implementation of the BiOps.

The goal of the Habitat Technical Team (HTT) is to work with the Action Agencies to identify projects and provide strategic guidance and coordination for protecting, restoring and enhancing habitat for the ESA-listed species covered under the BiOp. In this document, the HTT identifies project selection criteria aimed specifically at addressing factors limiting the recovery of Willamette basin ESA-listed fish populations, focusing on, but not limited to, those factors caused at least partially by the Willamette Project. This document and the project selection criteria may be amended as needed by the HTT, with approval by the Action Agencies and NMFS, based on new information and experience with implementing this program.

Objectives

The project selection criteria will address the following primary objectives:

1. Protect and Restore Limiting Aquatic Habitats: The top priority of the HTT is to protect those reaches of the river that currently provide important habitat for listed fish species from further decline.
2. Identify at-risk habitats: The HTT has identified numerous important habitat areas in the main stem Willamette River, which are commonly referred to as anchor habitats that support at least one anadromous fish life history stage with functioning processes and structures. It

will complete an analysis of the anchor habitats that are at risk of being lost and initially focus on protecting them.

3. Encourage Restoration within Anchor Habitats: The HTT will encourage restoration to occur within these anchor habitats, but when choosing between restoring a degraded site versus protecting an at-risk site, the HTT will recommend protection first.
4. Provide Long-term Protection for Anchor Habitats: Once at-risk sites within anchor habitats have been protected, the HTT will seek long-term and secure management for the remainder of the anchor habitat through mechanisms such as acquisition of land or conservation easements.
5. Expand Anchor Habitats: Once long-term protection of anchor habitats has been secured, the HTT will work to restore habitat located up- and downstream of anchor habitats and incorporate restoration efforts of partners that are underway.

Principles for Selecting Protection and Restoration Projects:

- Degree and Timing of Risk: If two projects are being considered simultaneously and they are of approximately equal habitat value, focus on the habitat at imminent risk of destruction.
- Quality of Habitat: If two projects are at risk and one is of higher habitat value than the other, focus first on the best habitat and habitat that is frequently inundated. Consider the potential to gain or lose floodplain connectivity in making this decision, such as the possibility down the road of opening remnants of former river channels, side channels, and oxbows. Also consider the possibility of removing revetments and reshaping banks to allow more land within the floodplain to be inundated more frequently by high flows in areas and ways that do not result in unmitigated economic hardship.
- Rare Habitat Types: The species in decline in the Willamette Basin are generally those that were dependent upon habitat types that have been reduced to make room for human use of the floodplain. Protect and restore habitat types that were once common along the river while providing the diversity of habitats necessary to support these species at all life stages.
- Protect and Expand Cold Water Habitats: Protect and enhance cold-water habitats at the mouths of Willamette tributaries and those created by hyporheic flows for the benefit of anadromous and resident native fishes.
- Location of Habitats: Projects located along the mainstem Willamette or in the lower reaches of the Middle Fork Willamette, McKenzie, and Santiam rivers are generally considered higher priority than those located in other subbasins and tributaries due to the larger effect that the Willamette Project has had on aquatic and riparian habitats in these river reaches.
- Magnitude: An objective of the HTT is to promote projects of substantial scope and scale to ultimately make significant headway toward the goal above.
- Resilience: The HTT supports projects that are likely to succeed in both the short and long term, understanding that adaptive management is essential in a dynamic river system.
- Avoiding Extinction: Protect, restore, and enhance habitats for UWR Chinook salmon and UWR steelhead to keep them from going extinct. HTT projects that also protect, restore, and enhance habitats for other ESA-listed fish, wildlife, and plant species is encouraged, provided the primary focus for this Program is on the UWR Chinook salmon and UWR steelhead affected by the Willamette Project. Finally, while not a listed species because so little information is available, the HTT also encourages projects that address lamprey habitat.

- Use Scientific Plans and Assessments: Many science-based assessments and plans that have been developed for the Willamette Basin identify high priority actions to protect and restore habitat. We encourage the use of these assessments in conjunction with these criteria.
- Rely on Natural River Processes: Restoration is expensive and the amount of money we have to spend is limited. The HTT encourages projects that make use of the river's natural processes to connect and restore the floodplain, including taking advantage of improvements in flow regimes under the biological opinion to move sediment and restore habitats.
- Expand Buffers: Expand the existing buffer of forests and other native vegetation along the river to dissipate the energy of floods, filter upland runoff, and enhance habitats for fish and wildlife. On private lands, this objective includes working with landowners to establish conservation easements and developing or implementing approaches to encourage landowner participation and/or mitigate financial loss.
- Community Support and Capacity: Seventy percent of Oregon's population lives in the Willamette Basin. Projects to protect and restore fish and wildlife habitat in the basin will have high visibility and will influence the future of habitat enhancement programs for many years. The HTT encourages projects with broad community support, realistic plans for monitoring and maintenance, and will consider projects to build capacity where it is needed to achieve these objectives.

Threshold Criteria —Protecting Habitats

- The project protects or restores high quality habitat for UWR Chinook salmon, UWR steelhead, bull trout and/or Oregon chub
- Potential to improve river dynamics and floodplain connectivity

Preference Criteria –Within Anchor Habitats

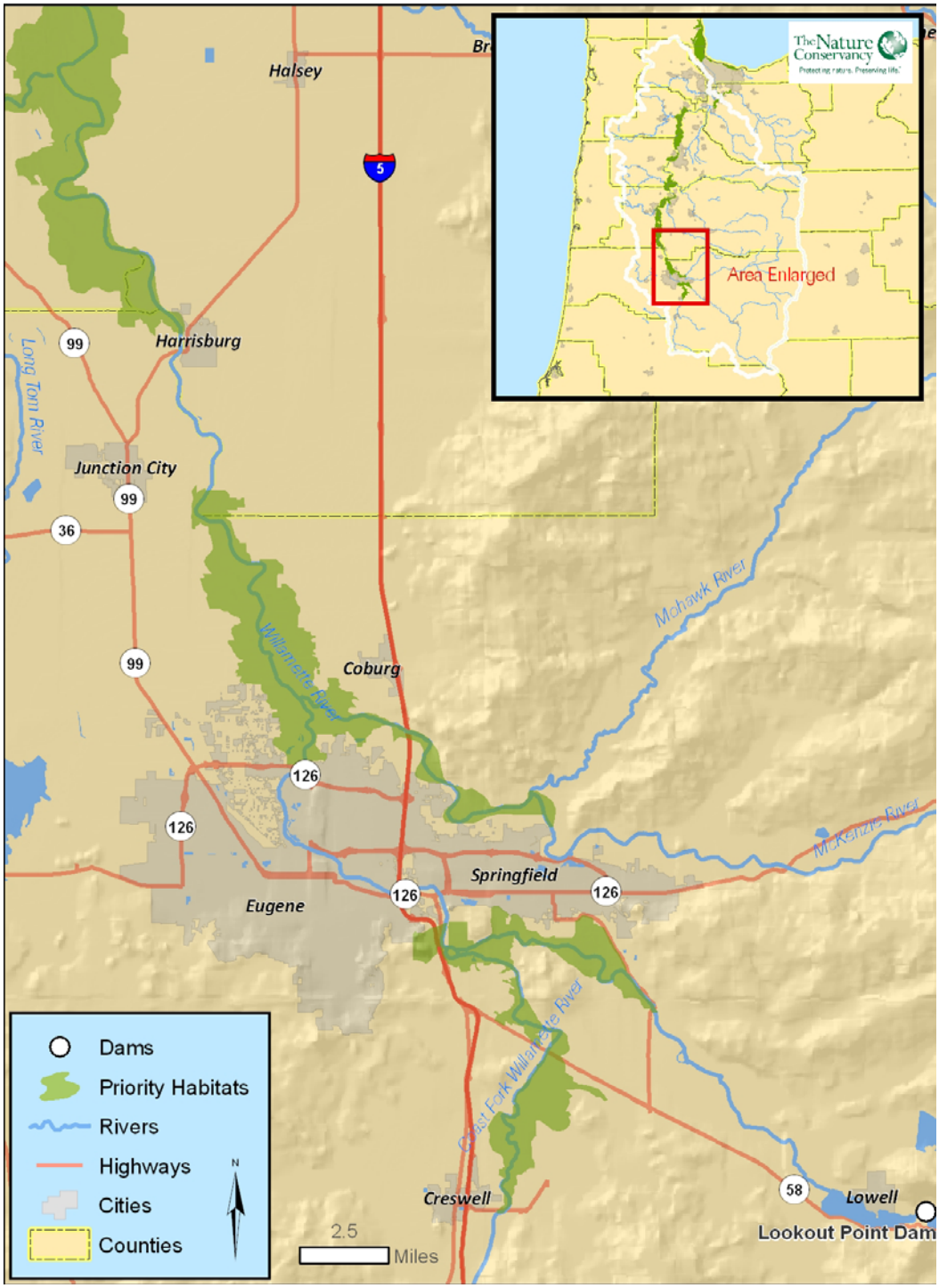
- Within an anchor habitat
- Protects rare habitat types
- Protects of enhances cold water habitats
- Benefit to non-listed native species
- Substantial scope and scale
- Likely to have enduring benefits
- Habitat at imminent risk of destruction
- Species at imminent risk of extinction
- In an area frequently inundated (e.g. 2-5 year floodplain)
- Broad community support or encourages landowner participation
- Listed as a high priority in a scientific plan or assessments
- Relies on or enhances natural river processes
- Restores/protects habitat complexity and diversity
- Project location assists in revetment effects reduction (consistent with RPA 7.4)

Application of Criteria

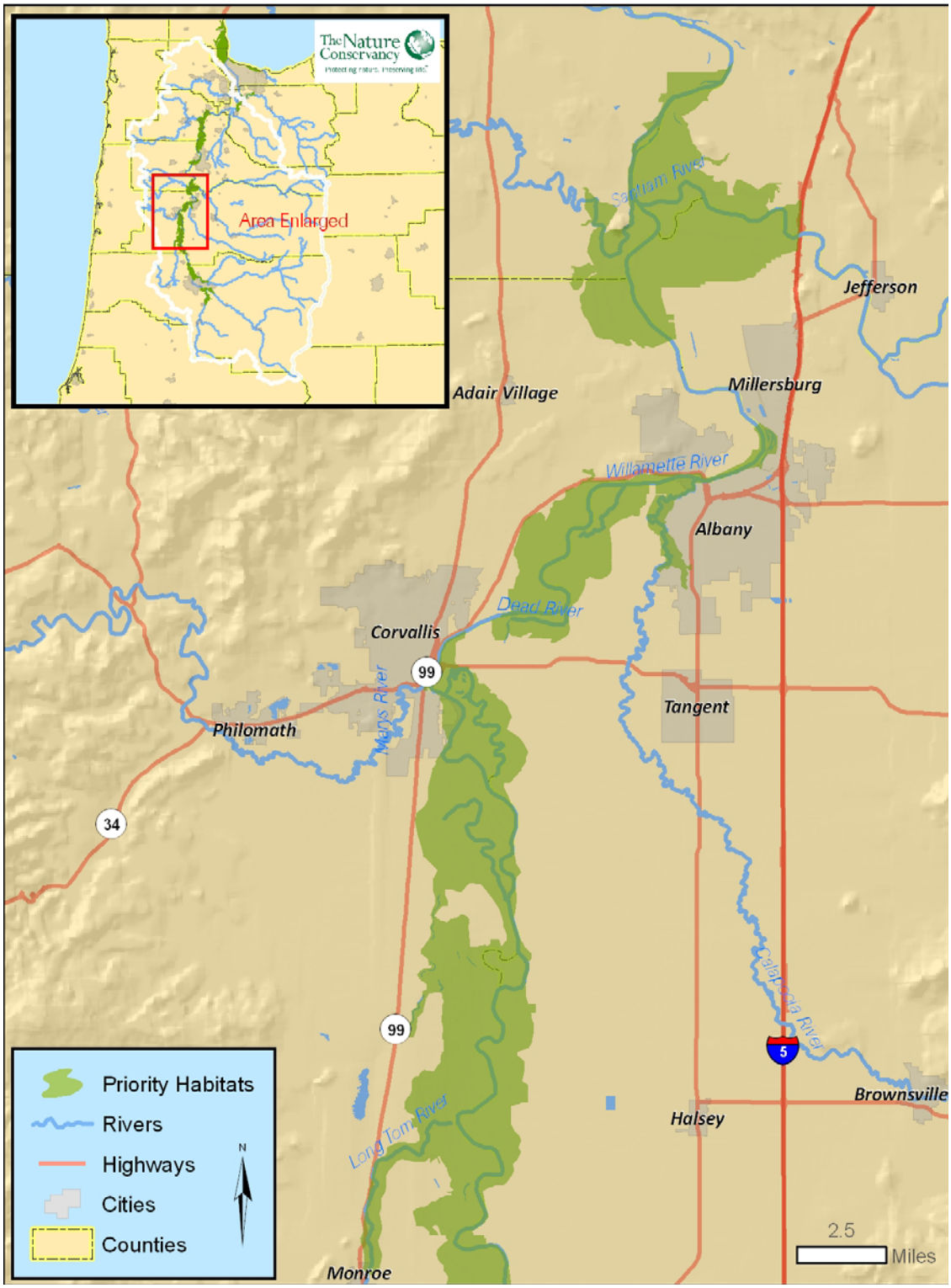
The Willamette Restoration Review Team (RRT) will use the above criteria to evaluate project proposals. Each proposal will be submitted to the RRT on forms developed by OWEB. The RRT will review the project against the threshold and appropriate preference criteria. The project must meet the threshold criteria to be recommended for funding. The preference criteria will be used to select between competing projects for recommendation. The RRT will use a structured review and discussion process to make sure the evaluation is consistent between projects. OWEB will maintain all records of the discussions and evaluations. A written record of recommendations of the RRT will be prepared for the action agencies and applicants.

The review of applications will be shared with the Action Agencies and the WATER team. The HTT will make decisions on projects for the coming year by January of that fiscal year (e.g. decisions for 2012 will be made by January of 2012). The full process is illustrated in Attachment H.

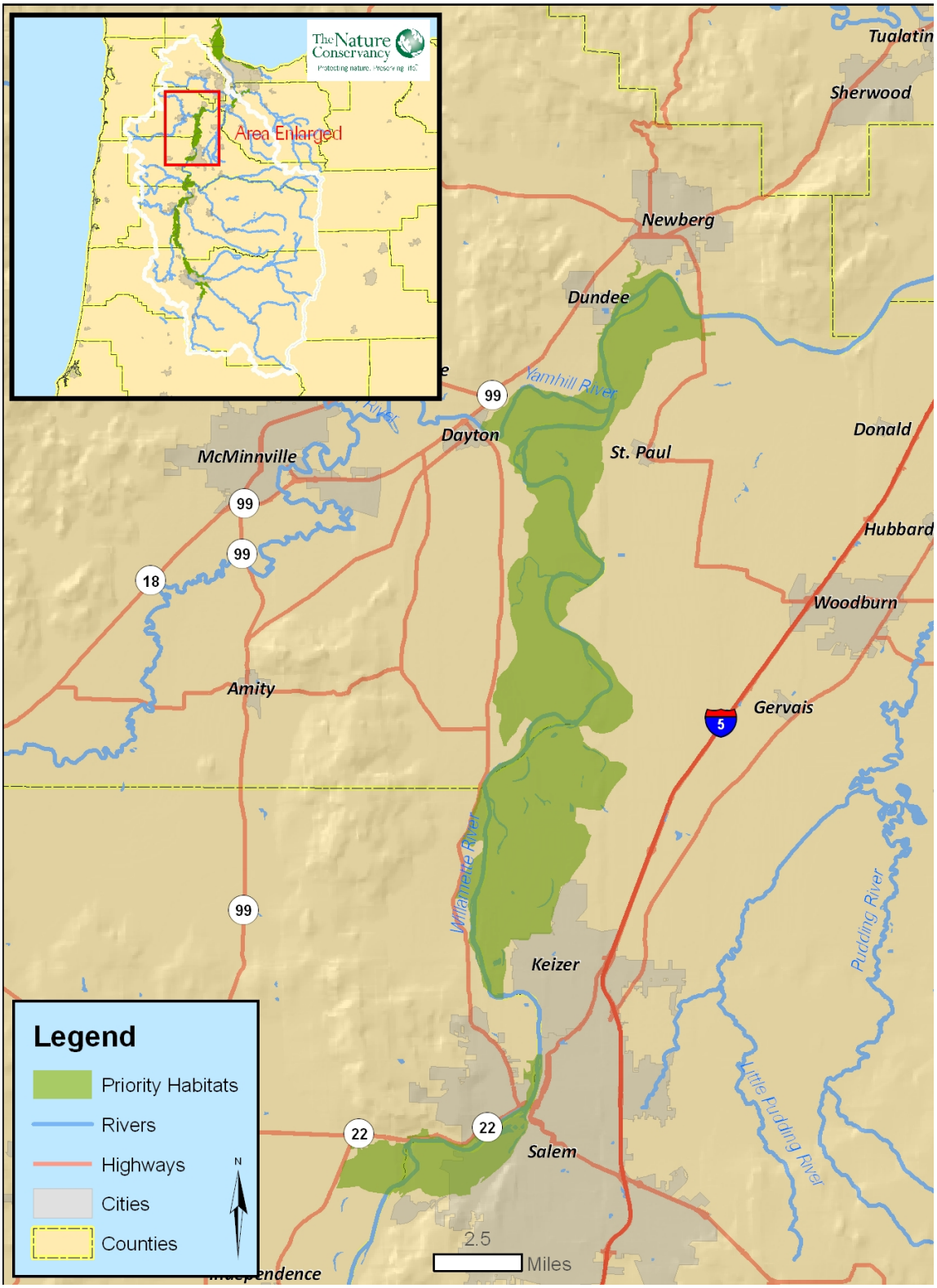
Middle Fork – Coast Fork Confluence to Long Tom Confluence: Willamette River Anchor Habitats



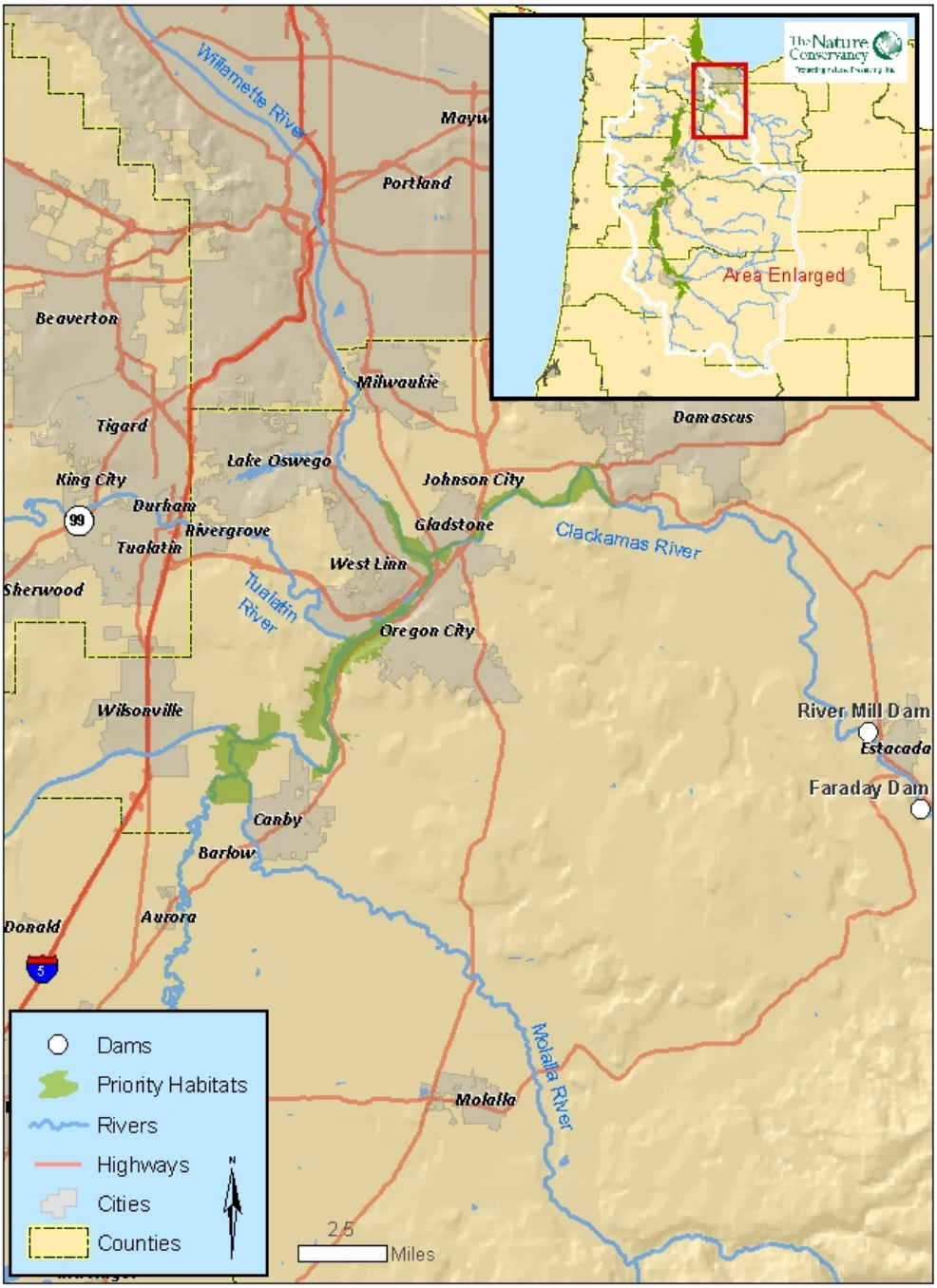
Long Tom Confluence to Santiam Confluence: Willamette River Anchor Habitats



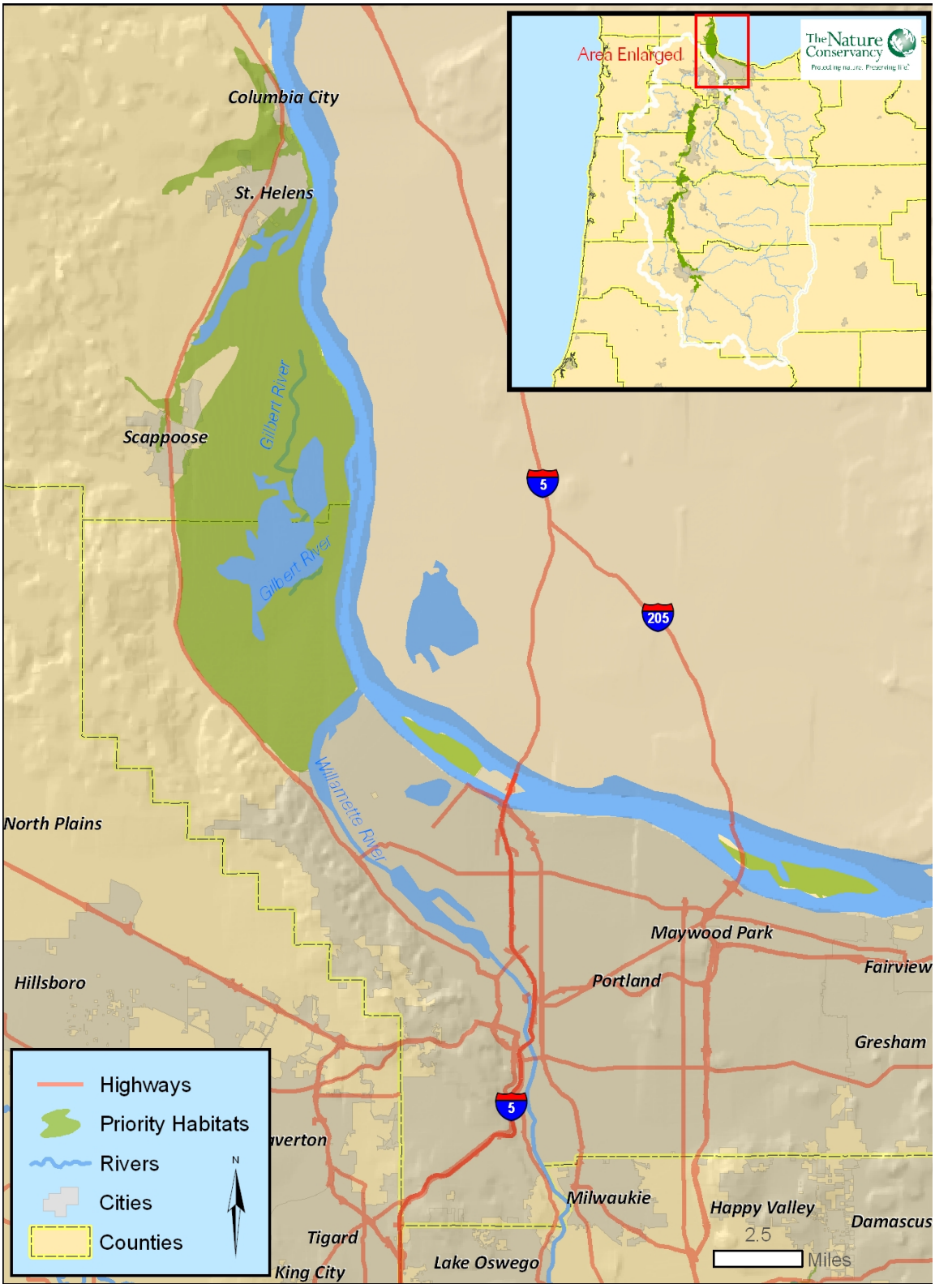
Minto Island to Yamhill Confluence: Willamette River Anchor Habitats



Pudding - Molalla - Willamette Confluence to Clackamas Confluence: Willamette River Anchor Habitats



Willamette – Columbia Confluence: Willamette River Anchor Habitats



Cooperative Agreement
Between the
Oregon Watershed Enhancement Board and Meyer Memorial Trust

I. Purposes

OWEB and MMT recognize a shared interest in restoration of the Willamette River as described below:

A. The Oregon Watershed and Enhancement Board (OWEB), a state agency, has adopted the *Willamette Special Investment Partnership (SIP)* with the main objectives of re-establishing channel complexity and re-connecting the river with its floodplain in the historic meander corridor of the main channel of the Willamette and its major tributaries. Achievement of these objectives will restore aquatic and riparian habitats for a wide variety of species and support restoration of river processes that contribute to good water quality. The Willamette SIP allows OWEB to develop partnerships with other major funding sources and implementing entities to focus funds on significant beneficial project(s).

B. Meyer Memorial Trust (MMT), a private foundation, has adopted the *Willamette River Initiative* with the goals of achieving meaningful, measurable improvement in the health of the Willamette River and selected tributaries by 2015, and creating a national model for effective approaches to restoring large, complex ecological systems. An early objective of the MMT Willamette Initiative is to expand and accelerate effective on-the-ground restoration along the main channel and selected tributaries of the Willamette River. MMT seeks to achieve this objective in part by supporting projects that restore channel complexity and re-connect the river to its floodplain in the meander corridor of the mainstem Willamette above Willamette Falls. MMT will advance its goals and objectives for the river through partnerships with public agencies, local watershed groups, non-profit organizations and private landowners.

To advance their shared interest in the Willamette, OWEB and MMT have agreed to work in partnership to fund projects identified in the Willamette SIP-eligible project table adopted by the OWEB Board on March 19, 2008. The purpose of this agreement is to establish the respective roles, responsibilities and commitments of MMT and OWEB in this partnership.

II. Quantifiable Outcomes

OWEB and MMT agree that all jointly-funded projects will be planned, designed and implemented to achieve quantifiable outcomes. Quantifiable outcomes from successful SIP projects may include, but are not limited to, such things as:

A. For projects seeking to create or restore alcoves:
- The length of the thalweg (line of maximum depth in a stream) from the landward end of the alcove to its confluence with an active channel, and
- The surface area of the alcove.

B. For re-connected oxbow lakes and other former river channels:
- The length of the thalweg from the landward or upstream end of the lake of cut-off channel to its confluence with an active channel, and
- The surface area of the newly reconnected lake or cut-off channel.

C. For a re-connected floodplain (measured at the average 5-year, 10-year, 25-year, 50-year, and 100-year high flow events):
- The surface area of the floodplain, and
- The volume of water detained.

D. For created or restored wetlands (measured for an average water year):
- The surface area of the wetland at low water and high water, and
- The extent, distribution and type of particular wetland habitats expected to be present.

E. For restored native vegetation:
- The area restored
- Successful re-establishment of desirable species over periods of 2 years, 4 years, and 6 years, and
- The extent, distribution and type of vegetation/habitat restored.

F. For projects initiated and implemented as part of 10-year tributary sub-watershed restoration plans developed through MMT's Willamette Model Watershed Program, outcomes A-E, above, and improvements in specific parameters of watershed condition and recovery of native biota as identified in model watershed plans.

III. Roles and Responsibilities

A. OWEB
1. OWEB will allocate an amount of funding for the Willamette SIP for the current biennium. For the 2007-09 biennium, OWEB has allocated $6.0 million to the Willamette SIP.
2. OWEB funds will be used for the following SIP project purposes:
   a. Pre- and post-project monitoring necessary to evaluate project effectiveness;
   b. Project design and engineering costs directly associated with project implementation;
   c. Project implementation costs agreed to in the work plan and/or budget of an OWEB-approved project grant agreement; and
   d. In general, any project expenses that comply with the "Capital" fund requirements of ORS 541.351(4).
3. OWEB will also:
   a. Establish and run a technical review process to certify that projects receiving funding meet technical and fiscal standards;
   b. Work with the partners to design and implement effectiveness monitoring;
   c. Execute the necessary contractual agreements;
   d. Review and respond to payment requests; and
   e. Review interim and final reports from project managers on project accomplishments.
4. In addition to funding and grant management, OWEB will:

a. Review progress with the OWEB Board to seek allocation of funds for subsequent biennia;
b. Seek to engage other public and private funders in supporting SIP projects;
c. Develop public information materials about the partnership and SIP projects; and
d. Seek to align regulatory and permitting requirements for SIP projects to the extent possible.

5. OWEB has identified MMT's tributary watershed restoration funding strategy (Willamette Model Watershed Program) as a possible partnership project under the SIP. Accordingly, OWEB may allocate funds to be available to contribute to the implementation of restoration project priorities identified through MMT's tributary strategy and related to Willamette SIP objectives. However, OWEB is under no obligation to fund any particular restoration project under MMT's tributary strategy even though MMT may have elected to provide funding for that project.

B. MMT

1. MMT will allocate an amount of funds to be available for Willamette SIP projects each year that OWEB allocates such funds through July 1, 2014. MMT funds will be used to help design and implement projects approved by OWEB for funding under the Willamette SIP. MMT funds may be used for but are not limited to the following purposes:
    a. Up-front costs of project development such as aerial and land surveys, general site plans, preliminary hydrologic studies, alternative restoration scenarios, risk assessment, and initial project coordination;
    b. Technical designs and specifications for SIP projects;
    c. Landowner and other public outreach for both existing and potential projects;
    d. Pre- and post-project monitoring & evaluation;
    e. Project documentation (case studies, photo/video documentation, etc.);
    f. Interpretive displays, signage and other information designed to educate the public about the purposes and benefits of the project;
    g. Up-front costs of land acquisition made in good faith anticipation of purchase, including appraisals and preliminary site designs; and
    h. Project management.
3. MMT may also fund certain capital costs associated with SIP projects; however, MMT funds may not be used to purchase land, buildings or equipment, or to fund state agency personnel.
4. In addition to funding, MMT will:
    a. Serve on the technical review team for the Willamette SIP and participate in the review and discussion of projects located on the mainstem and in tributary watersheds above Willamette Falls (participation by MMT in discussion of projects below Willamette Falls is optional);
    b. Seek to engage other public and private funders in supporting SIP projects;

c. Help bring public attention to SIP progress, successes and lessons (e.g. by profiling projects on its website);
d. Participate in project planning and implementation meetings; and
e. Review interim and final reports from project managers on project accomplishments.

5. MMT is under no obligation to fund any particular project or any particular expense type associated with a project, even though OWEB may have elected to provide SIP funding for that project or expense type.
6. This agreement in no way constrains MMT from funding any projects or activities of its choice regardless of whether or not OWEB also funds the project or whether or not it was on the OWEB approved list of SIP eligible projects and project concepts.

IV. Funding Commitments

A. OWEB commits to provide up to $6 million in Measure 66 Capital funds from those funds available in the 2007-09 biennium.
B. OWEB commits to consider the commitment of additional funding in future biennia through 2014 if funding is available in the state budget.
C. For MMT FY 2008-09 (began in April 2008), up to $600,000 has been allocated. For MMT FY 2009-10, up to $1.2 million has been allocated.
D. MMT may fund up to one-third of the total cost of an approved SIP project located on the main channel of the Willamette or its tributaries above Willamette Falls. The exact amount of the MMT contribution will be determined on a case-by-case basis considering total project costs, project phasing, the amount and availability of other funds, and other factors.
E. MMT will participate as a SIP partner as described above in each year that OWEB commits funds to the Willamette SIP through 2014. However, after the 2007-09 biennium, MMT participation as a SIP partner will be contingent upon funding from OWEB in subsequent years, the participation of other (non-OWEB) public and private funders in each project funded by MMT, and promising results from initial projects, including timely and cost-effective implementation and observable progress toward achieving project goals.

V. Implementation

A. Any projects and actions in the implementation work plan for which partner funds will be used will be subject to detailed scrutiny and approval under a project screening and evaluation process designated by OWEB.
B. MMT will be copied on all correspondence related to technical review and will participate in site visits, meetings, conference calls and other communications regarding technical review. MMT may retain independent technical advisors to review project proposals. Should such advisors recommend against MMT participation in a particular SIP project, MMT may refrain from contributing funds for that project.
C. Implementation must proceed in a timely manner. If the entire amount of OWEB's Willamette SIP allocation for the current biennium is not committed by July 1, 2009, the

OWEB Board reserves the right to redirect the unallocated amount of their SIP commitment to other uses. Likewise, if the entire amounts of MMT's FY 2008-09 or FY 2009-10 allocations are not committed by the close of those fiscal years (March 31, 2009 and March 31, 2010, respectively), MMT reserves the right to redirect the unallocated amount to other uses.

D. OWEB SIP funds may be used for acquisition of conservation easements or title to land and water only if OWEB's standard acquisition program criteria and due diligence requirements have been satisfied.

VI. Fiscal Administration and Accounting

A. OWEB –Willamette SIP funds will be administered in accordance with all current OWEB grant administration rules and procedures, except that projects receiving "do fund" recommendations from the Willamette SIP Technical Review Team may be approved for and receive funding without further review by the OWEB board.

B. MMT - MMT funds in support of the Willamette SIP will be made available on a project-by-project basis as follows:

1. Full project costs for all Willamette SIP projects will be developed by the project partners in concert with MMT and be reviewed as part of the technical review process.
2. For each SIP project approved by OWEB, a detailed project budget in matrix format will be developed showing all anticipated costs and funding sources by line item. The project budget will also indicate which implementing partner is responsible for each major project element.
3. MMT will make funds for its portion of the project budget available directly to appropriate implementing partners within 15 business days of the award of the project grant agreement by OWEB.
4. MMT and OWEB will make every effort to use a joint project reporting form to reduce paperwork for grantees.
5. OWEB will produce an annual report showing combined SIP program revenue and expenses, by project, and progress toward goals.
6. MMT may retain an independent auditor to examine project reports and accounts to ensure appropriate fund expenditures and tracking.

VII. SIP Partnership and Project Oversight and Coordination

Primary oversight for the SIP is the responsibility of the OWEB Board SIP Subcommittee. At the project level, OWEB will designate oversight on a project-by-project basis, but will generally follow existing project oversight protocols. MMT will participate in SIP Subcommittee meetings upon request. In addition, OWEB and MMT may convene an SIP partners group to ensure on-going agency-level coordination and advancement of SIP goals, objectives and activities, and to develop new SIP opportunities.

VIII. Effective Date, Expiration and Termination

This agreement is effective through June 30, 2009 at which time it will expire unless extended. Funding allocated to a specific project pursuant to this agreement will have the effective date and expiration date as specified in its grant agreement, and both dates may be different from the effective date and expiration of this partnership agreement. Either party may terminate its participation in this agreement at any time in writing.

IX. Execution

Signed by:

For MMT	For OWEB
CEO	Executive Director
Title	Title
11/12/08	12/17/08
Date	Date

Received By
OWEB
JUL 11 2008

Memorandum of Agreement

For

Implementing the Willamette Special Investment Partnership

Between

Oregon Watershed Enhancement Board,
Oregon Parks and Recreation Department,
Oregon Department of State Lands,
And
Oregon Department of Geology & Mineral Industries.

WHEREAS: The Oregon Watershed Enhancement Board (OWEB) is responsible for granting funds for the restoration and protection of fish and wildlife habitat, water quantity and quality, and watershed functions, and

WHEREAS: OWEB has adopted the Willamette Special Investment Partnership (SIP) goals and objectives to (a) re-establish channel complexity and length and (b) re-connect, wherever feasible, flood plains in the historic meander corridor of the Willamette main stem and the major tributaries and

WHEREAS: OWEB has provided funding to meet these objectives which will contribute significantly to restoration of river processes that improve water quality, native species habitats, flood minimization, and water-based recreation, and

WHEREAS: The ability to address the key ecological objectives requires close partnerships with other public and private entities, and

WHEREAS: The Oregon Parks and Recreation Department (OPRD) owns lands in the historic meander channel of the Willamette that include opportunities for projects to implement the SIP objectives, and is responsible for establishing, maintaining, and operating state parks in Oregon, and

WHEREAS: The Oregon Department of State Lands (DSL) owns lands in the historic meander channel of the Willamette that include opportunities for projects to implement the SIP objectives, and is responsible for sound stewardship of state lands, wetlands, and waterways, and

WHEREAS: The Oregon Department of State Lands (DSL) owns lands in the historic meander channel of the Willamette that include opportunities for projects to implement the SIP objectives, and is responsible for sound stewardship of state lands, wetlands, and waterways, and

WHEREAS: The Oregon Department of Geology and Mineral Industries (DOGAMI) implements the Mined Land Regulation and Reclamation Program, and works with the aggregate industry and the public to minimize the impacts of mining and optimize the opportunities for floodplain and habitat reclamation, and

WHEREAS: Many excellent opportunities to implement the SIP exist on and adjacent to public lands and to aggregate mines, and

WHEREAS: The parties to this agreement seek to restore and protect the natural hydrologic functions of the Willamette River Basin, to the extent feasible given the need to protect public and private property from flood damage, and

WHEREAS: Implementing SIP projects on public land is a strategic and economical use of funding and staffing resources, can proceed relatively quickly, is a visible demonstration of the state's commitment to the goals and objectives of the program, and can serve as a nucleus around which similar projects on adjacent and nearby private lands may be developed in the future with interested land owners.

THEREFORE: It is mutually agreed that each party to this agreement shall:

1. Designate a primary contact for the Willamette SIP overall and designate other contacts for specific projects as necessary.
2. Work with other partners to develop concepts and approaches for SIP projects, particularly on lands in the agency's jurisdiction.
3. Share information that will assist the Willamette SIP implementation.
4. Provide in-house technical assistance where appropriate.
5. Meet periodically with other partners to discuss SIP projects.

IT IS FURTHER UNDERSTOOD THAT:

1. The lead responsibility for staffing the Willamette SIP rests with OWEB.
2. Any SIP project receiving OWEB funding will be subject to OWEB requirements for fiscal accountability, status reporting, and the documentation of expenses and implementation.
3. All projects completed under the Willamette SIP will be reported to the Oregon Watershed Restoration Inventory and their status will be annually reported to each of the parties to this agreement.
4. For most SIP projects and to the greatest extent possible non-governmental organizations or local governments will be selected to manage project implementation and will be the OWEB grantee.
5. Critical decisions about a project will be made by OWEB, the land owner(s), the project manager(s)/grantee(s), appropriate regulatory entities, and by any other project funding source(s).

IT IS FURTHER UNDERSTOOD THAT THIS AGREEMENT:

1. Does not eliminate or relieve participants from any existing rules, regulations, or requirements.
2. Does not eliminate or alter any other relationships between the participants.
3. Does not substitute for government to government consultation when appropriate.
4. Can be terminated upon thirty days notice and resolution of all fiscal arrangements by any party.
5. Will be annually reviewed along with the overall effort to assess the need to modify or amend the agreement.
6. Can be modified at any time with the mutual consent of all parties.

AGREED:

Thomas Byler, Director
OWEB

7/7/08
Date

Tim Wood, Director
OPRD

6/19/08
Date

Louise Solliday, Director
DSL

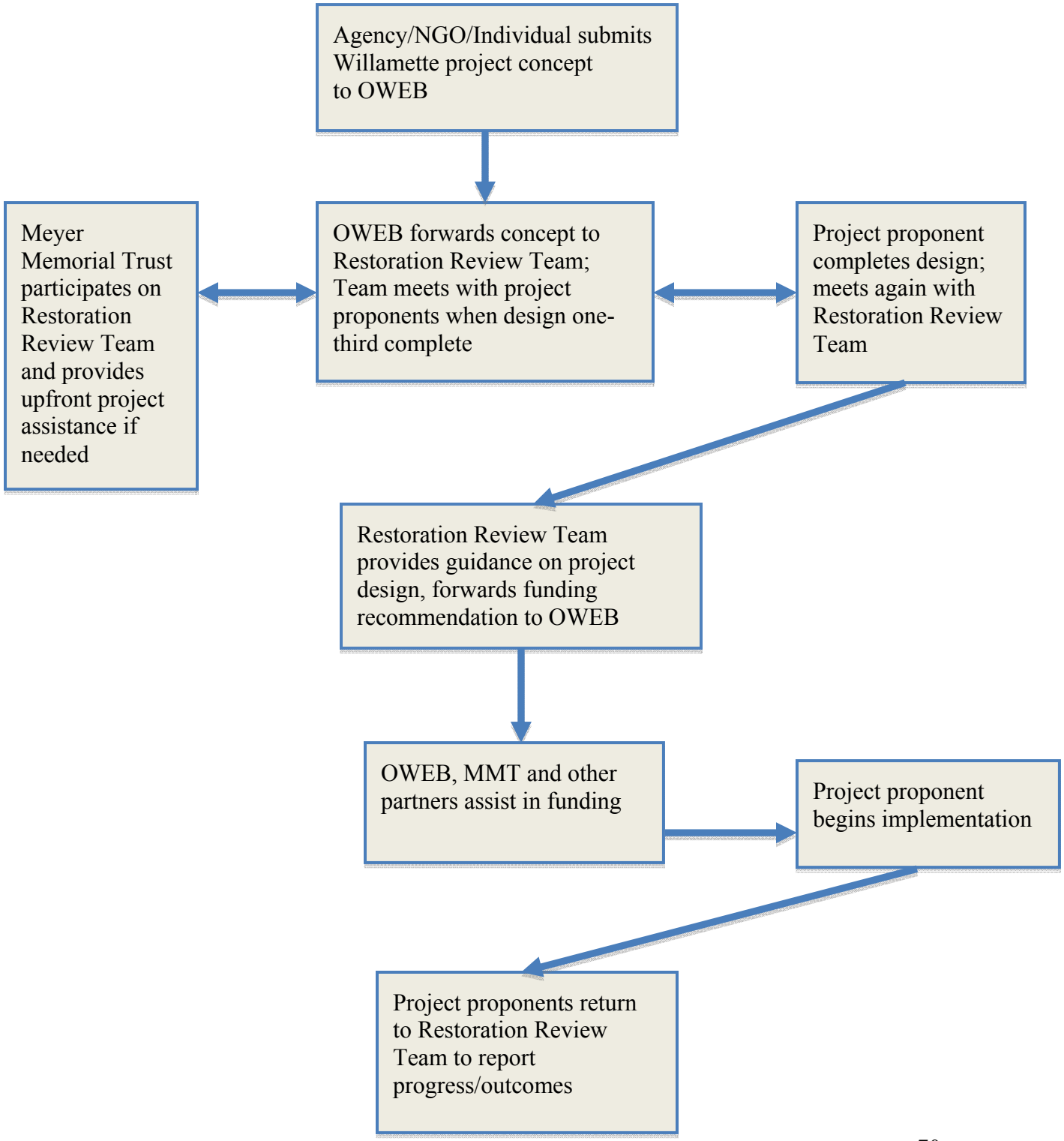
7/7/08
Date

Vicki McConnell, Director
DOGAMI

7/10/08
Date

ATTACHMENT G

Existing Willamette SIP Project Review Process



Willamette River Habitat Protection and Restoration Program Process