

Lewis River Hydroelectric Projects

FERC Project Nos. 935, 2071, 2111, 2213



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2014 Annual Report

Lewis River Aquatic Fund Projects



April 2014

Introduction

This 2014 Annual Report prepared by PacifiCorp Energy and the Public Utility District No. 1 of Cowlitz County, Washington (“Cowlitz PUD”) (collectively the “Utilities”) is provided to the Lewis River Settlement Agreement Parties to fulfill the reporting requirement in Article 7.5.3.2 (5) of the Settlement Agreement (SA). This report identifies the actions and selection of Aquatic Resource Projects (Resource Projects) to be funded from the Lewis River Aquatic Fund established under terms of the SA (Article 7.5, see **Appendix A**). Although the funding process was managed by the Utilities, the Aquatic Coordination Committee (ACC) provided final approval of funded projects. This report includes only Resource Projects selected from the 2013/2014 funding process, additional projects are expected to be selected and funded annually following the process established by the ACC.

This 2014 report is available to the Public on PacifiCorp Energy’s website at http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Lewis_River/under%20constr.pdf

Copies of this report are available from PacifiCorp Energy upon request.

Background

PacifiCorp Energy owns the Merwin, Yale, and Swift No. 1 hydroelectric projects on the Lewis River in southwest Washington. Cowlitz PUD owns the Swift No. 2 hydroelectric project, also located on the Lewis River. These projects are operated as a coordinated system by PacifiCorp Energy. On November 30, 2004, the Lewis River Settlement Agreement established the Lewis River Aquatics Fund (Fund). The purpose of the Fund is to support resource protection measures through funding aquatic related projects in the Lewis River basin.

As identified in the SA:

“Resource Projects may include, without limitation, projects that enhance and improve wetlands, riparian, and riverine habitats; projects that enhance and improve riparian and aquatic species connectivity that may be affected by the continued operation of the hydroelectric projects; and projects that increase the probability for a successful reintroduction program upstream of Merwin Dam. Species that are targeted to benefit from Resource Projects include Chinook, steelhead, coho, bull trout, chum, and sea-run cutthroat.”

Under the direction of the SA, the Utilities in Consultation with the ACC developed the “Aquatics Fund -- Strategic Plan and Administrative Procedures” (September 2005 – Revised January 2009 and September 2013). This strategic plan provides: (a) a guide to Resource Project development, solicitation, and review; and (b) provides administrative procedures to guide implementation of the Aquatics Fund.

The strategic plan is available to the Public on PacifiCorp Energy's website at: http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Lewis_River/08262013_FINAL_Rev_LR_AQ_Fund_Process.pdf

On September 5, 2013, PacifiCorp Energy announced the availability of calendar year (CY) 2013/2014 funds for aquatic related projects in the Lewis River Basin (Letter to interested parties from T. Olson, PacifiCorp Energy, see **Appendix B**). The letter requested that individuals or parties interested in obtaining project funding submit a Pre-Proposal to PacifiCorp Energy. Pre-Proposals were due by October 7, 2013.

In response to the announcement letter, three entities provided five different project Pre-Proposals. They include:

Applicant	Project Title
Cowlitz Indian Tribe	Eagle Island 2014 Knotweed Expedition
USDA Forest Service	Muddy River Tributary near Hoo Hoo Bridge
USDA Forest Service	Lewis River Alcove near 90480 Road
Lower Columbia Regional Fisheries Enhancement Group	Eagle Island – North Channel Restoration
Lower Columbia Regional Fisheries Enhancement Group	Haapa Habitat Enhancement

Following the Aquatics Fund – Strategic Plan and Administrative Procedures, PacifiCorp Energy and Cowlitz PUD reviewed and evaluated the Pre-Proposals and, on October 29, 2013, provided the ACC with a list of projects recommended for further consideration (Email to ACC from McCune – PacifiCorp Energy, see **Appendix C**). In general the Utilities' evaluation suggested that, while additional information is needed before a commitment of funds should be given, the following four projects be solicited to provide complete Proposals:

- USDA FS – Muddy River Tributary near Hoo Hoo Bridge
- USDA FS – Lewis River Alcove near 90480 Road
- Lower Columbia Regional Fisheries Enhancement Group - Eagle Island – North Channel Restoration
- Lower Columbia Regional Fisheries Haapa Habitat Enhancement

Consensus was reached to *not* select for full proposal:

Applicant	Project Title	Funding Requested	Decision
Cowlitz Indian Tribe	Eagle Island 2014 Knotweed Expedition	\$26,000	NO

On December 12, 2013, the ACC concurred with the Utilities evaluations, however, a number of ACC participants were not in attendance. To accommodate those ACC participants not in attendance, the Utilities provided an additional 7-day comment period until December 19, 2013. Shortly thereafter, PacifiCorp Energy notified the project sponsors and requested full Proposals by January 31, 2014.

Upon the due date, three full proposals were submitted. On January 23, 2014 the Lower Columbia Regional Fisheries Enhancement Group removed the Eagle Island – North Channel Restoration project for further consideration during the 2014 funding cycle.

Following receipt of the proposals the Utilities' Subject Matter Experts evaluated and scored the above proposals. Evaluations were conducted as outlined in the *Aquatic Fund – Strategic Plan and Administrative Procedures* document.

Consultation with the ACC began on February 13, 2014 with presentations of project proposals to include an opportunity for ACC questions and comments. On February 3, 2014, the ACC was provided an email (Subject: Lewis River 2013/2014 Aquatic Fund Full Proposals, 30-day Review and Comment Period), see **Appendix D** containing a link that includes a description of the proposed Resource Projects. The Utilities requested review and ACC comment by March 4, 2014.

The ACC met on March 13, 2014 for an Aquatic Project Proposal Decision Meeting. To accommodate those ACC participants not in attendance, the Utilities provided an additional 7-day comment period until March 21, 2014.



Photo courtesy of Joel Sartore – National Geographic photographer

Consensus was reached on a final Resource Project list as follows:

Applicant	Project Title	Approved Funding	Decision
USDA Forest Service	Lewis River Alcove near 90480 Road	\$84,000	YES
LCFEG	Haapa Habitat Enhancement	\$75,000	YES

On March 24, 2014 the Utilities notified all ACC Participants of the selected 2013/2014 Aquatic Funding projects approved for full funding (email dated March 24, 2014, 2013/2014 Lewis River Aquatic Fund Project Final Selection, see **Appendix E**).

Consensus was reached to not select for funding:

Applicant	Project Title	Funding Requested	Decision
USDA Forest Service	Muddy River Tributary near Hoo Hoo Bridge	\$41,000	NO

Projects Selected for Funding

The following is a summary description of the individual Resource Projects selected to be funded by the Aquatics Fund. All of these projects are expected to promote the recovery of anadromous fish post re-introduction upstream of the Lewis River dams, and the federally listed bull trout which spend a portion of their life history in the Lewis River hydroelectric project reservoirs. Included for each project is an overview of the original proposal, any ACC modifications to the project, and identification of Resource Project nexus to the hydroelectric projects. Final Resource Project Plans are provided as appendices to this document.

1) Lewis River Alcove near 90480 Road

This USDA Forest Service proposed project includes placement of approximately 60 pieces of large woody material (LWM) with rootwads in the Alcove/Side Channel, and approximately 200 pieces of LWM with rootwads in the Old Side Channel. Both of the projects are in the Lewis River, are located downstream of Spencer Creek, and are less than 1 mile downstream of the future Crab Creek acclimation pond. Research has shown that side channels provide preferred summer and overwintering habitat for juvenile coho. Each structure will contain an average of 8-12 pieces of LWM, and be strategically located to maximize summer and winter rearing habitat for coho and spring Chinook salmon, winter steelhead, and possibly bull trout. The project will improve an existing alcove with 350 feet of associated side channel, and another 700 feet in an old side channel. The Forest Service will hire a contractor to haul LWM to the site, and use an excavator and skidder to place LWM in strategic locations. A tracked excavator and skidder will access the area via an abandoned road, and will build the instream structures. LWM for this project will come from USFS lands Peppercat unit 21 and/or from Swift Reservoir cleaning operations.

The project proposed develops the opportunity to create instream fish habitat in an alcove with an associated side channel, and to restore habitat in an old side channel of the Lewis River. This will restore these habitats to their full potential, and prioritizes opportunities for ESA listed fish species. Enhancement and restoration of instream habitat will increase the overall abundance of functional habitat in the upper basin.

ACC representatives agreed to fund this project as proposed and granted funding of \$84,000.

The final Resource Project Plan is provided in **Appendix F** and would be completed in accordance with the schedule below:

Monitoring	Summer 2014
Project Implementation	July 15, 2015
As-built documents	December 31, 2015
Pre & Post Project Data	December 31, 2016

2) Haapa Habitat Enhancement

This Lower Columbia Fish Enhancement Group restores critical habitat for ESA-listed salmonids in one of the highest priority reaches in the lower NF Lewis River. Designs focus on increasing spawning and rearing habitat, including pool quantity and quality, rearing cover and refugia, and spawning habitat for fall Chinook, coho, steelhead and chum. This project includes enhancement of five acres of existing backwater habitat using LWD to increase habitat complexity, create margin habitat and cover to benefit rearing juvenile salmon and steelhead. Also included is the enhancement of > 2,000 lineal feet of the main stem NF Lewis River channel margin habitat using LWD to benefit rearing juveniles and adult salmonids over a wide range of flows and the creation of 1,186 foot low-flow side-channel habitat to provide a minimum of 23,800 square feet of new complex habitat to benefit multiple salmonid species and life-stages

ACC representatives agreed to fund this project as proposed and granted funding of \$75,000.

The final Resource Project Plan is provided in **Appendix G** and would be completed in accordance with the schedule below:

Complete final design	Feb 2014 – July 2014
Permitting Document/Constr	December 2014 – June 2015
○ <i>Install photo ref points</i>	
○ <i>Contractor selection</i>	
○ <i>Material acquisition</i>	
○ <i>Photo documentation</i>	
Project Implementation	July 2015 – September 2016
As-built survey, photos, reports	October 2016 – December 2016

Conclusion

This report provides the final CY2013/2014 Resource Project descriptions and plans for aquatic projects to be funded from the Lewis River Aquatics Fund. Distribution of funds to these projects will reduce the current Aquatic Fund - Resource by \$117,500 and the Lewis River Large Woody Debris Fund by \$41,500.

According to SA article 7.5.3.2 (5), any ACC member may initiate the Alternative Dispute Resolution Procedures to resolve disputes relating to Resource Projects 30 days after receiving this final report. If no disputes are identified, PacifiCorp Energy and Cowlitz PUD will provide funds to the identified project owners to implement Resource Projects per SA article 7.8.

APPENDIX A
LEWIS RIVER SETTLEMENT AGREEMENT ARTICLE 7.5

7.5 Aquatics Fund. PacifiCorp Energy and Cowlitz PUD shall establish the Lewis River Aquatics Fund (“Aquatics Fund”) to support resource protection measures (“Resource Projects”). Resource Projects may include, without limitation, projects that enhance and improve wetlands, riparian, and riverine habitats; projects that enhance and improve riparian and aquatic species connectivity that may be affected by the continued operation of the Projects; and projects that increase the probability for a successful reintroduction program. The Aquatics Fund shall be a Tracking Account maintained by the Licensees with all accrued interest being credited to the Aquatics Fund. PacifiCorp Energy shall provide \$5.2 million, in addition to those funds set forth in Section 7.1.1, to enhance, protect, and restore aquatic habitat in the Lewis River Basin as provided below. Cowlitz PUD shall provide or cause to be provided \$520,000 to enhance, protect, and restore aquatic habitat in the Lewis River Basin as provided below; provided that Cowlitz PUD’s funds may only be used for Resource Projects upstream of Swift No. 2, including without limitation the Bypass Reach. The Licensees shall provide such funds according to the schedules set forth below.

7.5.1 PacifiCorp’s Contributions.

- a. PacifiCorp shall make funds available as follows: on each April 30 commencing in 2005, \$300,000 per year until 2009 (a total of \$1.5 million).
- b. For each of the Merwin, Yale, and Swift No. 1 Projects, PacifiCorp shall make one-third of the following funds available as follows after the Issuance of the New License for that Project: on each April 30 commencing in 2010, \$300,000 per year through 2014 (a total of \$1.5 million); on each April 30 commencing in 2015, \$100,000 per year through 2018 (a total of \$400,000); and on each April 30 commencing in 2019, \$200,000 per year through 2027 (a total of \$1.8 million); provided that, for any New License that has not been Issued by April 30, 2009, the funding obligation for that Project shall be contributed annually in the same amounts but commencing on April 30 following the first anniversary of Issuance of the New License for that Project.
- c. PacifiCorp shall contribute \$10,000 annually to the Aquatics Fund as set forth in Section 7.1.1.

7.5.2 Cowlitz PUD’s Contributions. Cowlitz PUD shall make or cause to be made funds available as follows: \$25,000 per year on each April 30 following the first anniversary of the Issuance of the New License for the Swift No. 2 Project through the April 30 following the 20th anniversary of the Issuance of the New License for the Swift No. 2 Project (a total of \$500,000); and a single amount of \$20,000 on the April 30 following the 21st anniversary of the Issuance of the New License for the Swift No. 2 Project.

7.5.3 Use of Funds. Decisions on how to spend the Aquatics Fund, including any accrued interest, shall be made as provided in Section 7.5.3.2 below; provided that (1) at least \$600,000 of such monies shall be designated for projects designed to benefit bull trout according to the following schedule: as of April 30, 2005, \$150,000; as of April 30,

2006, \$100,000; as of April 30, 2007, \$150,000; as of April 30, 2008, \$100,000; and on or before the April 30 following the fifth anniversary of the Issuance of all New Licenses, \$100,000; and such projects shall be consistent with bull trout recovery objectives as determined by USFWS; (2) fund expenditures for the maintenance of the Constructed Channel (Section 4.1.3) shall not exceed \$20,000 per year on average; (3) if studies indicate that inadequate “Reservoir Survival,” defined as the percentage of actively migrating juvenile anadromous fish of each of the species designated in Section 4.1.7 that survive in the reservoir (from reservoir entry points, including tributary mouths to collection points) and are available to be collected, is hindering attainment of the Overall Downstream Survival standard as set forth in Section 3, then at least \$400,000 of such monies shall be used for Resource Projects specifically designed to address reservoir mortality; and (4) \$10,000 annually shall be used for lower river projects as set forth in Section 7.1.1. Projects shall be designed to further the objectives and according to the priorities set forth below in Section 7.5.3.1.

7.5.3.1 Guidance for Resource Project Approval and Aquatics Fund Expenditures.

- a. Resource Projects must be consistent with applicable Federal, State, and local laws and, to the extent feasible, shall be consistent with policies and comprehensive plans in effect at the time the project is proposed. These may include, but are not limited to, Washington’s Wild Salmonid Policy, the Lower Columbia River Bull Trout Recovery Plan, and the Lower Columbia River Anadromous Fish Recovery Plan.
- b. The Aquatics Fund shall not be used to fund Resource Projects that any entity is otherwise required by law to perform (not including obligations under this Agreement or the New Licenses for use of the Aquatics Fund), unless by agreement of the ACC.
- c. The Licensees shall evaluate Resource Projects using the following objectives:
 - (1) benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species;
 - (2) support the reintroduction of anadromous fish throughout the Basin; and
 - (3) enhance fish habitat in the Lewis River Basin, with priority given to the North Fork Lewis River.

For the purposes of this Section 7.5, the North Fork Lewis River refers to the portion of the Lewis River from its confluence with the Columbia River upstream to the headwaters, including tributaries except the East Fork of the Lewis River.

The Licensees shall also consider the following factors to reflect the feasibility of projects and give priority to Resource Projects that are more practical to

implement:

- (i) Whether the activity may be planned and initiated within one year,
- (ii) Whether the activity will provide long-term benefits,
- (iii) Whether the activity will be cost-shared with other funding sources,
- (iv) Probability of success, and
- (v) Anticipated benefits relative to cost.

7.5.3.2 Resource Project Proposal, Review, and Selection.

(1) By the first anniversary of the Effective Date, the Licensees shall develop, in Consultation with the ACC, (a) a strategic plan consistent with the guidance in Section 7.5.3.1 above to guide Resource Project development, solicitation, and review; and (b) administrative procedures to guide implementation of the Aquatics Fund. Both may be modified periodically with the approval of the ACC.

(2) Any person or entity, including the Licensees, may propose a Resource Project. In addition, the Licensees may solicit Resource Projects proposals from any person or entity.

(3) The Licensees shall review all Resource Project proposals, applying the guidance set forth in Section 7.5.3.1. The Licensees shall provide an annual report describing proposed Resource Project recommendations to the ACC. The date for submitting such report shall be determined in the strategic plan defined in subsection 7.5.3.2(1) above. The report will include a description of all proposed Resource Projects, an evaluation of each Resource Project, and the basis for recommending or not recommending a project for funding.

(4) The Licensees shall convene a meeting of the ACC on an annual basis, no sooner than 30 days and no later than 60 days after distribution of the report set forth in Section 7.5.3.2(2), for Consultation regarding Resource Projects described in the report.

(5) Licensees shall modify the report on proposed Resource Projects, based on the above Consultation, and submit the final report to the ACC within 45 days after the above Consultation. Any ACC member may, within 30 days after receiving the final report, initiate the ADR Procedures to resolve disputes relating to Resource Projects. If the ADR Procedures are commenced, the Licensees shall defer submission of the

final report on Resource Projects to the Commission, if necessary, until after the ADR Procedures are completed. If the ADR Procedures fail to resolve all disputes, the Licensees shall provide the comments of the ACC to the Commission. If no ACC member initiates the ADR Procedures, the Licensees shall submit the final report to the Commission, if necessary, within 45 days after submission of the final report to the ACC.

APPENDIX B

MEMORANDUM DATED SEPTEMBER 5, 2013
LETTER TO INTERESTED PARTIES FROM T. OLSON, PACIFICORP ENERGY
AVAILABILITY OF FUNDS FOR AQUATIC RELATED PROJECTS

September 5, 2013

Subject: Availability of Funds for Aquatic Related Projects in the Lewis River Basin

Dear Interested Party,

PacifiCorp owns the Merwin, Yale, and Swift No. 1 hydroelectric projects on the Lewis River in southwest Washington. Public Utility District No. 1 of Cowlitz County, Washington (Cowlitz PUD) owns the Swift No. 2 hydroelectric project, also located on the Lewis River. These projects are operated as a coordinated system. On November 30, 2004, the Lewis River Settlement Agreement established the Lewis River Aquatics Fund (Fund). On June 26, 2008, the Federal Energy Regulatory Commission acknowledged this fund as a stipulation of project operating licenses. The purpose of the Fund is to support resource protection measures via aquatic related projects (Resource Projects) in the Lewis River basin. The projects are evaluated for funding according to their:

- (1) Benefit to fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species;
- (2) Support of the reintroduction of anadromous fish throughout the Basin; and
- (3) Enhancement to fish habitat in the Lewis River Basin, with priority given to the North Fork Lewis River.

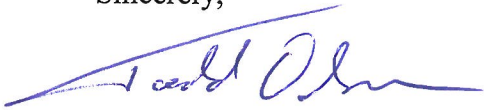
Species that are targeted to benefit from Resource Projects include Chinook, steelhead, coho, bull trout, chum, and sea-run cutthroat.

This letter is to provide you the opportunity to submit proposals for Resource Project funding. The total Fund amount available this year is limited to \$1,358,644.50 for Resource Projects and \$614,983.30 for Bull Trout Projects. If you know of other entities that may have an interest in seeking funding, please forward this opportunity to them.

The selection of Resource Projects will be conducted in two phases. To be considered, applicants must submit a completed Pre-Proposal Form (see attachment A for Form) **by close of business October 7, 2013**. Pre-Proposals will be evaluated with some projects appropriately selected for further consideration (see attachment B for evaluation criteria). If selected, applicants will be notified in early December, and be requested to submit a formal proposal by mid-January. The Utilities and representatives of the Lewis River Aquatic Coordination Committee will finalize the list of successful projects in early April 2014. Shortly thereafter the Utilities will submit the final list to the Federal Energy Regulatory Commission to meet the submittal deadline of April 15, 2014.

Please give attention to this excellent opportunity. If you should have any questions feel free to contact Mr. Frank Shrier, PacifiCorp, (503) 813-6622. We look forward to your response in October.

Sincerely,



Todd Olson
Director, Compliance Hydro Resources

Encl:	Cover Letter
	Attachment A
	Attachment B

Lewis River 2013/2014 Aquatic Fund Announcement Notification List

September 5, 2013

eMail:	Diana M. Gritten-MacDonald PUD #1 of Cowlitz County, WA PO Box 3007 Longview, WA 98632-0307 dmacdonald@cowlitzpud.org	eMail:	Bill M. Bakke The Native Fish Society 7830 SW 40 th , Suite 6 Portland, OR 97219 bmbakke@gmail.com
eMail:	Bob Nelson Rocky Mountain Elk Foundation, Inc. 45 Overmeyer Rd Raymond, WA 98577 nelson338@aol.com	Hc:	Salley Sovey United States Bureau of Land Mgmt. 915 Walla Walla Ave Wenatchee, WA 98801
eMail:	Adam Haspiel USDA Forest Service 42218 NE Yale Bridge Road Amboy, WA 98601 ahaspiel@fs.fed.us	eMail:	Kathryn Miller Trout Unlimited 227 SW Pine Street, Suite 200 Portland, OR 97204 kmiller@tu.org
eMail:	Michelle Day NMFS 1201 NE Lloyd Blvd., Suite 1100 Portland, OR 97232-2778 michelle.day@noaa.gov	Hc:	Brett Swift American Rivers 320 SW Stark St Ste 412 Portland, OR 97204-2634
Hc:	Ken S. Berg United States Fish and Wildlife Service 510 Desmond Drive SE, Ste. 102 Lacey, WA 98503-1263	eMail:	John Clapp Lewis River Citizens at-Large 9315 NE Etna Road Woodland, WA 98674 jmcmapple@gmail.com
eMail:	Bart Stepp City of Woodland 100 Davidson, Box 9 Woodland, WA 98674 steppb@ci.woodland.wa.us	eMail:	Emily Platt Gifford Pinchot Task Force 917 SW Oak St., Suite 407 Portland, OR 97205 Emily@gptaskforce.org
Hc:	Cowlitz County Department of Public Works 207 4th Ave North Kelso, WA 98626	Hc:	Jody Lando, Senior Quantitative Ecologist Stillwater Sciences 404 SE 6th Avenue Portland, OR 97214
Hc:	Ilene L. Black North County Emergency Medical Svc. 227 Frasier Rd. Amboy, WA 98601	Hc:	Darlene G. Johnson Woodland Chamber of Commerce P.O. Box 1808 Woodland, WA 98674
eMail:	Mariah Stoll-Smith Reese Lewis River Community Council 14900 Lewis River Rd. Ariel, WA 98603 m.reese@tds.net	Hc:	Washington Recreation & Conservation Office P.O. Box 40917 Olympia, WA 98504-0917
Hc:	Susan Rosebrough National Park Service 909 First Avenue Seattle, WA 98104-1060	eMail:	Peggy Miller Washington Dept. Fish & Wildlife 600 Capitol Way North Olympia, WA 98504-0001 peggy.miller@dfw.wa.gov

eMail:	James Malinowski Fish First PO Box 127 Amboy, WA 98601 jhmalin@pacifier.com	eMail:	Melody Tereski Lower Columbia Fish Recovery Board 2127 8th Ave Longview, WA 98632 Melodyt@lcfrb.gen.wa.us
eMail:	Noel Johnson Lewis River Citizens at-Large 6412 NW Amidon Road Woodland, WA 98674 noel@lewisriver.com	eMail:	Pat Frazier WDFW 2108 Grand Blvd Vancouver, WA 98661 frazipaf@dfw.wa.gov
Hc:	Don Stuart Cowlitz-Skamania Fire Dist. No. 7 11670 Lewis River Road Ariel, WA 98603	eMail:	Amy Tanska Mt. Saint Helens Institute atanska@mshinstitute.org
Hc:	Betty Sue Morris, Chair Clark County, 1013 Franklin Street PO Box 5000 Vancouver, WA 98666-5000	eMail:	Eric Kinne WDFW 2108 Grand Blvd Vancouver, WA 98661 kinneebk@dfw.wa.gov
eMail:	Jeff Breckel Lower Columbia River Fish Recovery 2127 8 th Avenue Longview, WA 98632 jbreckel@lcfrb.gen.wa.us	Hc:	Gary Stuart Cowlitz-Skamania Fire District No. 7 11310 Lewis River Road Ariel, WA 98603
eMail:	Bob Rose Yakama Nation P.O. Box 151 Toppenish, WA 98948 rosb@yakamafish-nsn.gov	eMail:	Kemper M. McMaster Wildlands of Washington 2713 NW 140th St Vancouver, WA 98685 kmcmaster@wildlandsinc.com
eMail:	David Hu USFS, Gifford Pinchot National Forest 10600 NE 51st Circle Vancouver, WA 98682 dhu@fs.fed.us	Hc:	Ken Hogan Federal Energy Regulatory Commission 888 First Street, NE Washington, DC 20426
Hc:	Steve Vigg Washington Dept. Fish & Wildlife 600 Capitol Way North Olympia, WA 98501	Hc:	Joel Rupley Clark County PO Box 5000 Vancouver, WA 98666
eMail:	Shannon Wills Cowlitz Indian Tribe PO Box 2547 Longview, WA 98632 biologist@cowlitz.org	eMail:	LouEllyn Jones US Fish & Wildlife Services 510 Desmond Drive SE, Suite 102 Lacey, WA 98503-1263 louellyn_jones@fws.gov
eMail:	Paul J. Pearce pearce@forestco.org	eMail:	Dave Burlingame Cowlitz Indian Tribe PO Box 2547 Longview, WA 98632 culture@cowlitz.org
eMail:	Eric Holman Washington Dept. Fish & Wildlife 2108 Grand Blvd. Vancouver, WA 98661 eric.holman@dfw.wa.gov	Hc:	Olympic Resource Management 321 Maurin Road Chehalis, WA 98520

eMail:	Erich Gaedeke Federal Energy Regulatory Commission 805 SW Broadway, Suite 550 Portland, OR 97205 Erich.Gaedeke@ferc.gov	eMail:	Bryan Nordlund NMFS 510 Desmond Drive Lacey, WA 98503 bryan.nordlund@noaa.gov
eMail:	Chris Maynard Department of Ecology PO Box 47600 Olympia WA 98504-7600 cmay461@ecy.wa.gov	eMail:	Taylor Aalvik PO Box 2547 Longview, WA 98632 taalvik@cowlitz.org
Hc:	Tony Pranger ANE/Elkhorn Forestry, Inc. PO Box 1864 Oregon City, OR 97045	eMail:	Rhidian Morgan PO Box 428 Ridgefield, WA 98642 rmmorgan@plasnewydd.org
eMail:	Evan Haas Habitat Restoration Coordinator Lower Columbia River Estuary Par. 811 SW Naito Parkway, Suite 410 Portland, OR 97204 haas@lcrep.org	eMail:	LCFEG Tony Meyer 12404 SE Evergreen Hwy Vancouver, WA 98683 cwfish@comcast.net
eMail:	Gardner Johnston Inter-fluve gjohnston@interfluve.com	eMail:	Lisa Moscinski Deputy Director Gifford Pinchot Task Force 917 SW Oak Street, Suite 410 Portland, OR 97205 lisa@gptaskforce.org
eMail:	James Bryne WDFW James.Byrne@dfw.wa.gov	eMail:	Tammy Weisman Lower Columbia Fish Enhancement Group tweisman@lcfeg.org

APPENDIX C

EMAIL DATED OCTOBER 29, 2013

EMAIL TO ACC FROM K. McCUNE – PACIFICORP ENERGY

2013/2014 AQUATIC FUN PRE-PROPOSALS – UTILITIES RECOMMENDATIONS

McCune, Kimberly

From: McCune, Kimberly
Sent: Tuesday, October 29, 2013 11:01 AM
To: (Aaron.roberts@dfw.wa.gov); (michael_hudson@fws.gov); (Timothy_Whitesel@fws.gov); Adam Haspiel (ahaspiel@fs.fed.us); Bart Stepp; Bob Rose (rosb@yakamafish-nsn.gov); Bryan Nordlund; Diana MacDonald; Doyle, Jeremiah; Eli Asher (easher@cowlitz.org); Eric Kinne; Ferraiolo, Mark; Fish First (j.malinowski@ieee.org); gghalseth@gmail.com; James H Malinowski (jim.malinowski@icloud.com); 'Jeff Breckel'; Karchesky, Chris; Karen Adams; Kathryn Miller (kmiller@tu.org); Lesko, Erik; LouEllyn Jones; Mariah Stoll-Smith Reese (M.Reese@tds.net); Maynard, Chris (ECY); Melody Tereski; Michelle Day; Olson, Todd; Pam Johnson (johnson@co.skamania.wa.us); Patrick Frazier (pfrazier@lcfrb.gen.wa.us); Patrick Lee; Peggy Miller; Rhidian Morgan (rmmorgan@plasnewydd.org); Ruth Tracy; Samagaio, James; Shannon Wills; Shrier, Frank; Taylor Aalvik (taalvik@cowlitz.org)
Subject: RE: 2013/2014 Aquatic Fund Pre-Proposals
Attachments: 10292013 - ACC Lewis River AQ Fund evaluation (2013-2014) Utilities' comments.xls

Attn: ACC Participants

Please find attached the Utilities recommendations for the five (5) Aquatic Fund Pre-Proposals received. Please review prior to the ACC Meeting on Thursday, November 14th as this will be an agenda item.

Thank you.

Kim

From: McCune, Kimberly
Sent: Wednesday, October 09, 2013 9:52 AM
To: (Aaron.roberts@dfw.wa.gov); (michael_hudson@fws.gov); (Timothy_Whitesel@fws.gov); Adam Haspiel (ahaspiel@fs.fed.us); Bart Stepp; Bob Rose (rosb@yakamafish-nsn.gov); Bryan Nordlund; Diana MacDonald; Doyle, Jeremiah; Eli Asher (easher@cowlitz.org); Eric Kinne; Ferraiolo, Mark; Fish First (j.malinowski@ieee.org); gghalseth@gmail.com; James H Malinowski (jim.malinowski@icloud.com); 'Jeff Breckel'; Karchesky, Chris; Karen Adams; Kathryn Miller (kmiller@tu.org); Lesko, Erik; LouEllyn Jones; Mariah Stoll-Smith Reese (M.Reese@tds.net); Maynard, Chris (ECY); Melody Tereski; Michelle Day; Olson, Todd; Pam Johnson (johnson@co.skamania.wa.us); Patrick Frazier (pfrazier@lcfrb.gen.wa.us); Patrick Lee; Peggy Miller; Rhidian Morgan (rmmorgan@plasnewydd.org); Ruth Tracy; Samagaio, James; Shannon Wills; Shrier, Frank; Taylor Aalvik (taalvik@cowlitz.org)
Subject: 2013/2014 Aquatic Fund Pre-Proposals

Attn: ACC Participants

The Utilities have received five (5) Aquatic Fund Pre-Proposals for the 2013/2014 aquatic funding cycle. You may view each Pre-Proposal on the Lewis River website at the link provided below.

<http://www.pacificorp.com/es/hydro/hl/lr.html#>

- License Implementation
- ACC
- Aquatics Coordination Committee 2014

The Utilities are reviewing and will provide its recommendations prior to the ACC November meeting.

Thank you.

Kimberly McCune

Sr. Project Coordinator

PacifiCorp Energy - Hydro Resources

825 NE Multnomah, Suite 1500

Portland, OR 97232

Ph: (503) 813-6078

From: McCune, Kimberly

Sent: Thursday, September 05, 2013 8:07 AM

To: Amy Tanska (atanska@mshinstitute.org); Bill Bakke (bmbakke@gmail.com); Bryan Nordlund (Bryan.Nordlund@noaa.gov); Byron Hinners; Christine Champe; culture@cowlitz.org; Darlene Johnson (darlene@gowoot.net); Emily Platt; Erich Gaedeke (Erich.Gaedeke@ferc.gov); Evan Haas; Gardner Johnston (gjohnston@interfluve.com); James Byrne; jklings@westernrivers.org; Jody Iando; John Clapp (jmcmapple@gmail.com); Kemper McMaster; Lisa Moscinski; Noel Johnson; Patrick Lee (patrick.lee@clark.wa.gov); Paul Pearce - NFCSC (pearce@forestco.org); Rhidian Morgan (rmmorgan@plasnewydd.org); Rudy Salakory (rsalakory@cowlitz.org); Tammy Weisman (TWeisman@lcfeg.org); Tony Meyer; toppacific2@msn.com; (Aaron.roberts@dfw.wa.gov); (michael_hudson@fws.gov); (Timothy.Whiteasel@fws.gov); Adam Haspiel (ahaspiel@fs.fed.us); Bart Stepp; Bob Rose (rosb@yakamafish-nsn.gov); David Hu; Diana MacDonald; Doyle, Jeremiah; Eli Asher (easher@cowlitz.org); Eric Kinne; Ferraiolo, Mark; gghalseth@gmail.com; 'Jeff Breckel'; Jim Malinowski (jhmalin@pacifier.com); Karchesky, Chris; Kathryn Miller (kmiller@tu.org); Lesko, Erik; LouEllyn Jones; Mariah Stoll-Smith Reese (M.Reese@tds.net); Maynard, Chris (ECY); Melody Tereski; Michelle Day; Olson, Todd; Pam Johnson (johnson@co.skamania.wa.us); Patrick Frazier (pfrazier@lcfwb.gen.wa.us); Peggy Miller; Ruth Tracy; Samagaio, James; Shannon Wills; Shrier, Frank; Taylor Aalvik (taalvik@cowlitz.org); ('brichardson@RMEF.org'); (ewhite@cowlitz.org); Bob Nelson (nelson338@aol.com); Emmerson, Kendel; Eric Holman (holmaewh@dfw.wa.gov); Joanna Meninick (joannam@yakama.com); Mitch Wainwright; Nathan Reynolds (nreynolds@cowlitz.org); Naylor, Kirk; Ray Crosswell (shedhunt@aol.com); 'Weinheimer, John (DFW)'
Subject: ANNOUNCEMENT - 2013/2014 Availability of Funds for Aquatic Related Projects in the Lewis River Basin

Please see the attached Lewis River Aquatic Fund 2013/2014 announcement. The deadline for Pre-Proposal Form submission is **October 7, 2013**. Please submit materials to:

Frank Shrier

PacifiCorp – LCT 1500

825 NE Multnomah

Portland, OR 97232

Thank you.

Kimberly McCune

Sr. Project Coordinator

PacifiCorp Energy - Hydro Resources

825 NE Multnomah, Suite 1500

Portland, OR 97232

APPENDIX D

EMAIL DATED FEBRUARY 3, 2014

MEMO TO ACC FROM K. McCUNE – PACIFICORP ENERGY

LEWIS RIVER 2013/2014 AQUATIC FUND FULL PROPOSALS, 30-DAY REVIEW
AND COMMENT PERIOD

McCune, Kimberly

From: McCune, Kimberly
Sent: Monday, February 03, 2014 8:08 AM
To: (Aaron.roberts@dfw.wa.gov); (michael_hudson@fws.gov); (Timothy_Whitesel@fws.gov); 'Adam Haspiel (ahaspiel@fs.fed.us)'; 'Bart Stepp'; 'Bob Rose (rosb@yakamafish-nsn.gov)'; 'Bryan Nordlund'; 'Diana MacDonald'; Doyle, Jeremiah; Eli Asher (easher@cowlitz.org); 'Eric Kinne'; Ferraiolo, Mark; Fish First (j.malinowski@ieee.org); gghalseth@gmail.com; James H Malinowski (jim.malinowski@icloud.com); 'Jeff Breckel'; Karchesky, Chris; Karen Adams; 'Kathryn Miller (kmiller@tu.org)'; Lesko, Erik; 'LouEllyn Jones'; 'Mariah Stoll-Smith Reese (M.Reese@tds.net)'; 'Maynard, Chris (ECY)'; 'Melody Tereski'; 'Michelle Day'; Olson, Todd; Pam Johnson (johnson@co.skamania.wa.us); Patrick Frazier (pfrazier@lcfwb.gen.wa.us); 'Patrick Lee'; Peggy Miller; 'Rhidian Morgan (rmmorgan@plasnewydd.org)'; 'Ruth Tracy'; Samagaio, James; 'Shannon Wills'; Shrier, Frank; 'Taylor Aalvik (taalvik@cowlitz.org)'; Weatherly, Briana
Subject: RE: ACTION REQUESTED: Lewis River 2013/2014 Aquatic Fund full proposals, 30-DAY REVIEW AND COMMENT PERIOD
Attachments: 02132014 - ACC Lewis River AQ Fund evaluation (2013-2014) Utilities' ACC comments.xls

Attn: ACC Participants and interested parties

Please be advised that we received three (3) Lewis River habitat enhancement full proposals by the deadline of January 31, 2014.

Note: PacifiCorp was contacted by LCFEG on January 23, 2014 to withdraw their Eagle Island – North Channel Restoration project from the 2013/2014 funding cycle.

Complete and detailed electronic copies of the full proposals can be located at: <http://www.pacificorp.com/es/hydro.html> <License Implementation>, <ACC>, <2014>

A representative(s) from USFS and LCFEG will be providing more detailed presentations of their proposed projects to the ACC on Thursday, February 13, 2014.

We ask that you provide your written comments on the full proposals to PacifiCorp **on or before Tuesday, March 4, 2014** to my attention at kimberly.mccune@pacificorp.com

In addition, I've attached the ACC/Utilities evaluation matrix for your reference.

Thank you.

Kimberly McCune
Sr. Project Coordinator
PacifiCorp Energy - Hydro Resources
825 NE Multnomah, Suite 1500
Portland, OR 97232
Ph: (503) 813-6078

APPENDIX E
EMAIL DATED MARCH 24, 2014
TO THE ACC FROM K. McCUNE – PACIFICORP ENERGY
CY 2013/2014 LEWIS RIVER AQUATIC FUND PROJECT FINAL SELECTION

McCune, Kimberly

From: McCune, Kimberly
Sent: Monday, March 24, 2014 9:00 AM
To: (Aaron.roberts@dfw.wa.gov); (michael_hudson@fws.gov); (Timothy_Whitesel@fws.gov); 'Adam Haspiel (ahaspiel@fs.fed.us)'; 'Bart Stepp'; 'Bob Rose (rosb@yakamafish-nsn.gov)'; 'Bryan Nordlund'; cser461@ECY.WA.GOV; 'Diana MacDonald'; 'Doyle, Jeremiah'; Eli Asher (easher@cowlitz.org); 'Eric Kinne'; 'Ferraiolo, Mark'; Fish First (j.malinowski@ieee.org); ggshalseth@gmail.com; James H Malinowski (jim.malinowski@icloud.com); 'Jeff Breckel'; 'Karchesky, Chris'; Karen Adams; 'Kathryn Miller (kmiller@tu.org)'; Ken Weiman (kwieman@fs.fed.us); 'Lesko, Erik'; 'LouEllyn Jones'; 'Mariah Stoll-Smith Reese (M.Reese@tds.net)'; 'Maynard, Chris (ECY)'; 'Melody Tereski'; 'Michelle Day'; 'Olson, Todd'; Pam Johnson (johnson@co.skamania.wa.us); Patrick Frazier (pfrazier@lcfwb.gen.wa.us); 'Patrick Lee'; Peggy Miller; 'Rhidian Morgan (rmmorgan@plasnewydd.org)'; 'Ruth Tracy'; 'Samagaio, James'; 'Shannon Wills'; 'Shrier, Frank'; 'Taylor Aalvik (taalvik@cowlitz.org)'; Weatherly, Briana
Cc: Pete Barber (Peter@lcfeg.org)
Subject: RE: 2013/2014 Lewis River Aquatic Fund Project Final Selection
Attachments: 03242014 - ACC Lewis River AQ Fund evaluation (2013-2014) Evaluations & Decisions.xls

Attn: ACC Participants and Interested Parties

Please be advised that consensus was reached at the March 13, 2014 ACC meeting. To accommodate those ACC participants not in attendance, the Utilities provided an additional 7-day comment period until March 21, 2014. No additional comments were received by the Utilities.

The final Resource Project list is as follows:

Project No.	Applicant	Project Title	Funding Requested	Decision
3	USDA Forest Service	Lewis River Alcove near 90480 Road	\$84,000 (Resource Funds)	Yes, contingent on more detail of pre & post juvenile monitoring methodology
5	Lower Columbia Regional Fisheries Enhancement Group	Haapa Habitat Enhancement	\$75,000 (Resource Funds & LWD Funds)	Yes, contingent on securing landowner access agreements and needed insurance as required by PacifiCorp

Consensus was reached to *not* select the following project for funding:

Project No.	Applicant	Project Title	Funding Requested	Decision
2	USDA Forest Service	Muddy River Tributary near Hoo Hoo Bridge	\$41,000	NO

The 2014 Aquatics Fund Annual Report will be submitted to the Commission prior to April 15, 2014 and the final document will be posted to the Lewis River website. PacifiCorp will notify the ACC and interested parties once we have received Commission approval.

We greatly appreciate your time and efforts in participating in the Lewis River 2013/2014 Aquatic Fund selection process.

Kimberly McCune
 Sr. Project Coordinator
 PacifiCorp Energy - Hydro Resources
 825 NE Multnomah, Suite 1500
 Portland, OR 97232
 Ph: (503) 813-6078

Lewis River Aquatic Fund - Utilities' Evaluation of 2013/2014 Project Proposals										
								Cost	Consistency with	Selected by ACC
No.	Applicant	Project Title	Project Schedule	Benefit	Bull Trout	Project Partners	Funding	Share?	Fund Objectives	for funding
2	USDA Forest Service	Muddy River Tributary near Hoo Hoo Bridge	2015/2016	Restore one mile of fish habitat on tributary of Muddy River that crosses the 8322 road at Hoo Hoo Bridge. Place 200 pieces of LWD with rootwads to create 15 structures, creating rearing pools to enhance juvenile salmonid rearing habitat. Coho is the main species to benefit. <i>*Conducted survey on 9/27/13 revealing 2 coho redds from landlocked coho. Government furloughs restricted subsequent surveys.</i>	No	Gifford Pinchot National Forest, Mt. St. Helens Institute	\$ 41,000.00	Yes	1 Benefit Recovery Y 2 Support reintro. Y 3 Enhance habitat Y	NO
3	USDA Forest Service	Lewis River Alcove near 90480 Road	2015/2017	Restore approx. 200-300 feet of alcove habitat on the Lewis River. Place appx. 60 pieces of LWM in the alcove to improve rearing habitat. Coho salmon primary species to benefit from these actions, however steelhead and Chinook juveniles may also use this alcove.	No	Gifford Pinchot National Forest, Mt. St. Helens Institute	\$ 84,000.00	Yes	1 Benefit Recovery Y 2 Support reintro. Y 3 Enhance habitat Y	Yes, contingent on more detail of pre & post juvenile monitoring methodology
4	Lower Columbia Fish Enhancement Group	Eagle Island - North Channel Restoration	2015/2016	Construction funding to implement designs for modifying the Lewis River at the upstream end of Eagle Island in order to increase flows into the North Channel to benefit salmonid habitat. <i>LCFEG was awarded \$167,000 to create designs to address flow-related habitat impairments (copy of designs and report provided)</i>	No	SRFB, LCFEG	\$ 100,000.00	Yes	1 Benefit Recovery Y 2 Support reintro. Y 3 Enhance habitat Y	Project withdrawn by LCFEG on 1/23/14
5	Lower Columbia Fish Enhancement Group	Haapa Habitat Enhancement	2015/2016	Restore critical habitat for ESA-listed salmonids in one of the highest priority reaches in the lower NF Lewis River. Designs focus on increasing spawning and rearing habitat, including pool quantity and quality, rearing cover and refugia, and spawning habitat for fall Chinook, coho, steelhead and chum. Enhance 1,000 lineal feet (5 acres) using large wood structures; creation of 1,000 lineal feet of connected low-flow side-channel habitat; restore native riparian plan community on up to 9 acres; construct bar apex jams, enhance/create appx. 800 feet of off-channel alcove habitat.	No	WDFW, Clark County Parks and Recr, PacifiCorp, BPA, Cowlitz Indian Tribe, WA DNR Aquatics and local private landowners.	\$ 75,000.00	Yes	1 Benefit Recovery Y 2 Support reintro. Y 3 Enhance habitat Y	Yes, contingent on securing landowner access agreements and needed insurance as required by PacifiCorp
Fund Objectives:							Resource & LWD Funds Requested	\$ 159,000.00		
							Bull Trout Funds Requested	\$ -		
							Total Aquatic Funds	\$ 159,000.00		

APPENDIX F
LEWIS RIVER ALCOVE NEAR 90480 ROAD

1. Project Title

Lewis River Alcove/Side Channel and Old Side Channel near 90480 Road

2. Project Manager

Adam Haspiel

Mt. St. Helens National Volcanic Monument
42218 NE Yale Bridge Road
Amboy, WA 98604
360-449-7833
360-449-7801 (fax)
ahaspiel@fs.fed.us

3. Identification of problem or opportunity to be addressed

Problem:

Minimal high quality side channel spawning and rearing habitat exists in the Upper North Fork Lewis River. This habitat is essential for species listed under the Endangered Species Act (ESA) that use the Lewis River Basin and include coho and Chinook salmon, steelhead trout, and bull trout. These species have endured many effects that threaten the survival of the species. Effects to their habitats include past land management activities such as logging, road building, and development of hydro-resources, which until recently has blocked all anadromous species access into the Upper North Fork Lewis River. To ensure reintroduction efforts of salmon and steelhead into the watersheds above the dams are successful, the Forest Service has worked with PacifiCorp on a variety of projects including acclimation ponds for juvenile spring Chinook salmon, road decommissioning, replacement of migration blocking culverts with bridges, and various streambank and instream fish habitat restoration projects.

Opportunity:

This project proposal develops the opportunity to ensure fish reintroduction efforts into the upper North Fork Basin are successful. This project has two components. The first is to restore instream fish habitat in an alcove with an associated side channel, and the second is to restore habitat in an old side channel of the Lewis River. This will restore these habitats to their full potential, and prioritizes opportunities for ESA listed fish species. Enhancement and restoration of instream habitat will increase the overall abundance of functional habitat in the upper basin.

The Forest Service proposes to place approximately 60 pieces of Large Woody Material (LWM) with rootwads in the Alcove/Side Channel, and approximately 200 pieces of LWM with rootwads in the Old Side Channel. Both of the projects are in the Lewis River, are located downstream of Spencer Creek, and are less than 1 mile downstream of the future Crab Creek acclimation pond. Research has shown that side channels provide preferred summer and overwintering habitat for juvenile coho (Everest et al. 1985; Everest et al. 1986). Each structure will contain an average of 8-12 pieces of large wood, and be strategically located to maximize summer and winter rearing habitat for coho and spring Chinook salmon, winter steelhead, and possibly bull trout. The project will improve an existing alcove with 350 feet of associated side channel, and another 700 feet in an old side channel. The Forest Service will hire a contractor to haul LWM to the site, and use an excavator and skidder to place wood in strategic locations. A tracked

excavator and skidder will access the area via an abandoned road, and will build the instream structures. Wood for this project will come from USFS lands Peppercat unit 21 and/or from Swift Reservoir cleaning operations.

4. Background

Reconnaissance surveys conducted for this project occurred during September and December 2013. Currently water flows year round through the Alcove/Side Channel location on the east side of the river. The amount of flow is controlled by an island at the head of the channel. Side channel flows vary with river flows. An outlet to the river is always flowing, providing easy access into and out of the side channel. The inlet is located approximately 2,700 feet downstream from the confluence of Spencer Creek. The side channel width varies between 20 and 30 feet, and the location is stabilized by an island vegetated with alder trees.

The Old Side Channel is located on the east side of the river and is no longer functional due to the lack of flow. The inlet and outlet are both blocked by sediment deposits, about 20 feet in width. This 4- 5 foot deep side channel will provide excellent habitat once LWM and flow is reestablished. The inlet for this channel is approximately 500 feet downstream from Spencer Creek. The outlet of this channel is approximately 1300 feet upstream from the Alcove/Side Channel. This side channel width varies from 12 to 20 feet and the location is stabilized by a large gravel bar. The inlet is approximately 4,000 feet downstream from the Crab Creek Acclimation Pond. This location will directly benefit juvenile fish released from the acclimation pond, and lead to overall success of both the acclimation pond and the alcove and side channels restoration project.

Presently, habitat in the Alcove/Side Channel is limited due to lack of cover and large woody material. Some hiding cover in the form of depth is present in the alcove. Large woody material will provide additional cover in the side channel allowing full use of the channel by juvenile salmonids. In addition to cover, gravels will be sorted during high flow events increasing spawning opportunities.

The 2009 Lower Columbia Salmon Recovery Plan Six Year Habitat Work Schedule identifies this as a Tier 2 (Medium priority) reach (reach 23). Ecosystem Diagnosis and Treatment (EDT) analysis identifies Medium production potential for spring Chinook, high for winter steelhead, and low potential for coho. EDT results suggest that off channel and side channel habitat and channel structure restoration are high multi-species priorities in the reach. The ACC Synthesis Matrix rated this section of the river as having low restoration potential and as a Primary coho population area, and a low rating for coho reach potential. Habitat needs in this reach were identified as low instream LWM, high competition and predation. It has a Primary population designation for Chinook, coho, and a contributing population designation for winter steelhead.

5. Project Objective(s)

GOAL:

Enhance the quality of fish habitat in the Lewis River by:

- ◆ Improving habitat complexity and diversity in the alcove and side channels using LWM
- ◆ Providing refugia during winter flows for juvenile salmonids.

- ◆ Providing rearing opportunities for juvenile salmonids during summer months.
- ◆ Providing increased spawning opportunities for adult salmonids.

This project addresses the following Aquatic Fund priorities.

Priority 1: Benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species.

Chinook, coho, and steelhead trout are listed as a threatened species under the ESA. This project will contribute to the recovery of these species by increasing the amount and quality of rearing pools in side channels. In addition, spawning areas will be associated with the log complexes.

Lower Columbia ESU coho salmon are listed as a threatened species under the ESA

Lower Columbia ESU steelhead trout are listed as a threatened species under the ESA

Lower Columbia ESU Chinook Salmon are listed as a threatened species under the ESA

Priority 2: Support the reintroduction of anadromous fish throughout the basin.

Juvenile anadromous salmonids will have a quality rearing and refugia area when this project is complete, thus ensuring survival and promotion of the various species during reintroduction efforts.

Priority 3: Enhance fish habitat in the Lewis River Basin-, with priority given to the North Fork Lewis River.

This project is located in the North Fork Lewis River basin. This project consists of large woody material placed instream in an alcove and side channels, designed specifically to enhance and restore fish habitat. This project will increase instream habitat diversity, and in turn it is expected that this project will contribute to increasing fish production in this area.

6. Tasks:

Task 1: NEPA and required permits.

- 1) Complete NEPA documentation. Field work for this NEPA document would be accomplished during the summer and fall of 2014. The final document should be completed and signed by May 2015, and the project would be implemented July 2015.
- 2) Instream restoration activities are covered within the WDFW-MOU, and the Regional Permit with the Army Corps of Engineers.
- 3) The Forest Service is the landowner and project sponsor, and permission has been obtained to do this project.

Task 2: Project Design.

- 1) Finalize project design and project preparation details. Preliminary designs were completed during reconnaissance visits in 2013.
- 2) A laser level will be used to obtain a longitudinal profile and cross-sectional information as we finalize designs.
- 3) Secure materials. We have a 35 acre Peppercat timber sale unit set aside to use for fish habitat restoration activities over the next ten years. We will layout an area within this stand to thin and prepare for harvest operations. Additional material may be acquired from PacifiCorp Swift Reservoir Cleaning operations.

Task 3: Project Implementation

- 1) Develop equipment and logging contract. A standard RFQ contract will be developed specifying the scope of the project and project requirements. We will use an equipment rental contract to perform the actual work, which will allow us the flexibility to make changes to the project as implementation is occurring.
- 2) Administer contract. A Fish Biologist or Fisheries Technician will administer the contract to ensure contract compliance and project specifications are met.

Task 4: Monitoring

- 1) Perform baseline monitoring. This monitoring will occur prior to project implementation and include a longitudinal profile, cross-sections, pebble counts, photo-documentation and snorkel surveys. Mount St. Helens Institute (MSHI) will provide two interns and volunteers including urban youth to perform monitoring work, they will perform most aspects of the monitoring with supervision and training from the Forest Service. Snorkel surveys will be conducted by the Forest Service
- 2) Perform after project monitoring. This monitoring will occur following project implementation and will continue on an annual basis for several years following project completion. MSHI will provide two interns and volunteers for this portion of the work supervised by the Forest Service
- 3) Monitoring Report. A monitoring report will be written each year following project implementation. MSHI will provide raw data in excel format, provide analysis of data and will complete the report with USFS assistance.

7. Methods:

The Mt. St. Helens Fisheries department will oversee all phases of this project including project design, implementation and monitoring.

Approximately 260 pieces of LWM would be harvested during thinning operations from a nearby timber sale unit which would allow us to use long stems (60+ feet) with attached rootwads. Woody material will be trucked via Forest Road 9039 and the reopened 90480 road. Wood will be stockpiled at the end of the 90480 Road. From there, the wood will be transported to the river using a skidder, and the skidder will continue up or down river to deliver the wood to structure locations. Once at the site the logs will be moved and placed by an excavator. The excavator would gain access to the Lewis River using the closed (and reopened for this project) 90480 road, and then on a skid trail created through the woods to access the Lewis River. Wood for this project would primarily come from USFS lands; however any opportunity to acquire large wood from Swift Reservoir cleaning operations will also be pursued.

Approximately 8 to 12 pieces of LWM will be used at each structure location to form complex habitat. Structures will protrude 1/2 to 1/3 of the way into the channel to minimize water shear stress and create a meandering thalweg. Key pieces of wood at each location will be anchored into the streambanks using an excavator to dig trenches up to 30 feet long, and to bury the wood. Other pieces of LWM will be interwoven into these key pieces and riparian vegetation. The overall design will appear natural and meet scenery management objectives.

The FR 90480 will be re-closed after all activities are completed, by re-establishing drainage and blocking vehicular access.

8. Specific Work Products

Deliverable 1: Completed project.

Deliverable 2: A report describing the project. Report to include project narrative, financial information, and photographs of completed projects.

Deliverable 3: Monitoring Report.

9. Project Duration

Monitoring for this project would begin during the summer of 2015. Project implementation would occur July 15th 2015 and is expected to take two weeks to complete. 'As built' documents will be completed by December 31st, 2015. An initial report documenting fish response to the structures will be completed by December 31st, 2016. The first monitoring report with pre and post project data will be available December 31, 2016. If funding or LWM supply becomes an issue, project dates would be delayed by one year from above.

A project closeout meeting would occur at an ACC meeting following project completion.

10. Permits

NEPA- Field work will be completed during the summer and fall of 2014, NEPA document will be completed Spring 2015.

The Gifford Pinchot National Forest has a Memorandum of Agreement with the Washington State Department of Ecology (DOE). The agreement recognizes the Forest Service will ensure that 1) all waters on National Forest lands meet or exceed water quality laws and regulations (Sections 301, 302, 303, 306 and 307) of the Clean Water Act and 2) activities on those lands are consistent with the level of protection of the Washington Administrative Code relevant to state and federal water quality requirements. This agreement is neither a fiscal nor a funds obligation document.

The Gifford Pinchot National Forest has a Memorandum of Understanding (MOU) with the Washington State Department of Fish and Wildlife Regarding Hydraulic Projects conducted by USDA Forest Service Northwest Region (2005). Compliance with the instream restoration provisions within this MOU replaces the need for an individual hydraulic project approval (HPA). This fish habitat enhancement project will be conducted within the provisions set forth in this MOU.

The Clean Water Act (as amended by the Water Quality Act of 1987, Public Law 100-4) authorizes the states to regulate the "fill and removal" activities of Federal agencies. In Washington, the Forest Service has authorization for its fill and removal projects through the MOU with WDFW when the projects comply with the provisions of the MOU.

The US Forest Service has a state wide Regional General Permit (RGP) with the Army Corps of Engineers to perform aquatic restoration activities in waterways. Permit

CENWS-OD-RG-RGP-8 authorizes the USFS to perform 13 restoration activities including Large Wood, Boulder and Gravel Placement on National Forest Lands.

Land ownership in this section of the Lewis River is comprised of public lands administered by the Forest Service. The project is wholly on public lands.

11. Matching Funds and In-kind Contributions

Partner	Contribution	Funds
Forest Service	Project development, Contracting, Permitting, Monitoring	\$29,000 In-kind
Materials from USFS	Trees with rootwads	\$52,000 In-kind
Mt. St. Helens Institute	Monitoring	\$3,000 In-kind

12. Professional Review of Proposed Project

This project proposal was reviewed by Gifford Pinchot National Forest (GPNF) Soil and Water program manager, Ruth Tracy, Mt St. Helens Institute Science and Education Programs Manager, Abi Groskopf, and acting Forest Fisheries program manager Ken Wieman.

13. Budget

	NEPA	Final designs	Project Mgmt	Construction	Monitoring/Labor /Reporting/Coord.
Personnel Costs					
FS - Zone Team or Contract	\$12,000 (IK) \$12,000 (ACC)				
FS –Fish Bio and Hydrologist		\$3,000 (IK) \$3,000 (ACC)			
FS - Fish Bio and Bio technician			\$5,000 (IK) \$5,000 (ACC)		\$1,000 (IK) \$1,000 (ACC)
FS - Contract administrator -				\$5,000 (IK) \$5,000 (ACC)	
FS - Contract Specialist				\$2,000 (IK)	
Mt St. Helens Institute					\$3,000 (IK)
Mt. St. Helens Institute Community Education					\$3,000 (ACC)
Travel			\$1,000 (IK) \$1,000 (ACC)		
Materials					
Forest Service 260 Pieces of LWM with rootwads				\$52,000 (IK)	
Contract Payables					
Excavator Contract				\$18,000 (ACC)	
Logging and hauling of trees				\$35, 000 (ACC)	
Materials and Supplies			\$ 1,000(ACC)		
Total ACC Funds	\$84,000	\$12,000	\$3,000	\$7,000	\$58,000
<i>Total FS Funds</i>	<i>\$81,000</i>	<i>\$12,000</i>	<i>\$3,000</i>	<i>\$6,000</i>	<i>\$59,000</i>
<i>Total Partner Funds</i>	<i>\$3,000</i>				<i>\$3,000</i>
Project Total	\$168,000				
FS personnel estimated as \$400/day.					

Lewis River Side Channel IV expanded budget 2014

Item	Personnel	Estimated Days/units*	Cost Per Unit	Total*
NEPA Environmental Assessment required by Federal Law	Fish Biologist	10	\$400 per day per person	\$12,000 (ACC)
	Wildlife Biologist	6		\$12,000 (IK)
	Hydrologist	5		
	Botanist	8		
	Archeologist	10		
	Soil Scientist	3		
	Recreation	3		
	NEPA Coordinator	15		
Final Designs	Fish Biologist	7	\$400 per day per person	\$3,000 (IK)
	Hydrologist	2		\$3,000 (ACC)
	Fish Technician	6		
Project Management	Fish Biologist	15	\$400 per day per person	\$5,000 (IK)
	Fish Technician	10		\$5,000 (ACC)
	Mileage			
Travel	½ ton PU	Fleet Cost	\$500	\$1,000 (IK)
		2000 miles	\$0.75/mile	\$1,000 (ACC)
Construction	Contract Administration/Prep	30	\$400 per day per person	\$7,000 (IK)
	Logging contract			\$5,000 (ACC)
	Equipment contract			\$35,000(ACC) \$18,000 (ACC)
Materials & Supplies	Field Equipment, Notebooks, Misc Supplies			\$1,000 (ACC)
Trees with rootwads		260		\$52,000 (IK)
Monitoring <i>MSHI</i>	Supervisor	25	\$300 per day per person	\$1,000 (IK)
	Assistant			\$2,500 (ACC)
	Volunteers	20	\$100/EA	\$2,000 (IK)
	Travel	500	1.00/mile	\$500 (ACC)
<i>USFS</i>	Fish Biologist	2.5	\$400/day	\$1,000 (IK)
	Fish Technician	2.5		\$1,000 (ACC)
Total				\$168,000

*Values are rounded up or down as need to display whole number and days

Lewis Side Channel IV Equipment Budget 2014

Item	Cost per unit	Number of units	ACC cost	Total Cost
Excavator/Skidder Operator/Fuel/Supplies, misc.	\$125 hour	132	\$16,500	\$16,500
Equipment Move in/out	\$1,500	1	\$1,500	\$1,500
Logging and Hauling cost: Based on Previous Contract	\$35,000	1	\$35,000	\$35,000
Total			\$53,000	\$53,000

14. Photo Documentation (Per National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects):

Identify process or methodology project will include to provide photo documentation of habitat conditions at the project site before, during, and after project completion.

- a. Include general views and close-ups showing details of the project and project area, including pre- and post-construction.
- b. Label each photo with date, time, project name, photographer's name, and documentation of the subject activity.

15. Insurance. All qualifying applicants shall comply with PacifiCorp's insurance requirements set forth in Appendix E. The policy limits are deemed sufficient by PacifiCorp for project activities involving significant risk, including placement of large woody debris in navigable waterways, and are presumed to be sufficient for all activities likely to be funded under this RFP.

Should applicant's insurance program not meet these requirements, bid pricing should include any additional costs applicant would incur to comply with these requirements.

Questions from ACC members

All projects: Proposals should demonstrate that the project is scientifically supported, has a clear nexus to the Lewis River hydroelectric projects, and clearly supports the Aquatic Fund objectives. Please prepare the document with the assumption that the reader is not familiar with the Lewis River basin, its issues, or its resources.

Lewis River Alcove near 90480 Road

LCFRB: The proposal says it will address two life stages: overwintering and rearing. For overwintering: will alcove be protected from high flows? For rearing: are there any temperature or low flow issues that need to be addressed? Are overwintering and rearing life stages limiting production at this time? Will juveniles have access in and out of alcove at all river flow conditions? The proposal should provide information regarding the current habitat status and how much will the habitat in this location be improved as a result of this project. A similar question from the previous project applies here in terms of is this the best place to invest Aquatic Fund dollars. This project appears to be situated in a location where other work is already occurring so it appears that the project is well located, but proposal should justify why a project should be implemented at this location. Additionally, we suggest that the proposal would benefit from incorporating the side channel also. This appears to be a good project very good price, but is this the best location?

Both the Alcove/Side Channel and the Old Side Channel are protected from high flows by islands, and by the morphology of the terrain. Rearing- on the ground observations indicate that the Alcove/Side Channel currently has adequate flow into the project area during summer periods. The Alcove/Side Channel is well shaded by terrain and older fir trees, this coupled with flow directly from the Lewis River will keep temperatures the same as the mainstem. The Old Side Channel has a young alder component on both sides of it that will help keep summer temperatures cool, in addition the location is on the east side of the river, so shade from older conifers will also play a contributing role. Flow through the side channel is expected to be similar to the Alcove/Side Channel portion when completed. Both the Alcove Side Channel and the Old Side Channel will allow juvenile access in and out at all river flow conditions. Current habitat status is described in detail in the body of the proposal. The habitat will be improved to its full potential in this area. This project is well located for several reasons, it takes advantage of natural conditions such as old growth conifers and existing habitat features to ensure success. In addition the Crab Creek Acclimation pond is located only 4,000 feet upstream so juvenile Chinook from the ponds will have a protected rearing habitat to transition into.

Utilities: It should be made clear that the benefits are to juveniles - not necessarily adults. Contractors have observed considerable amounts of coho spawning in upper Lewis side channels this year. Contingent on receiving GPS points of this year's spawner surveys, this project may directly enhance coho spawning habitat.

These habitat restoration features will provide the greatest benefit to juvenile salmonids. Adults may use the restored areas to escape from high flows, and spawn in gravel that may accumulate.

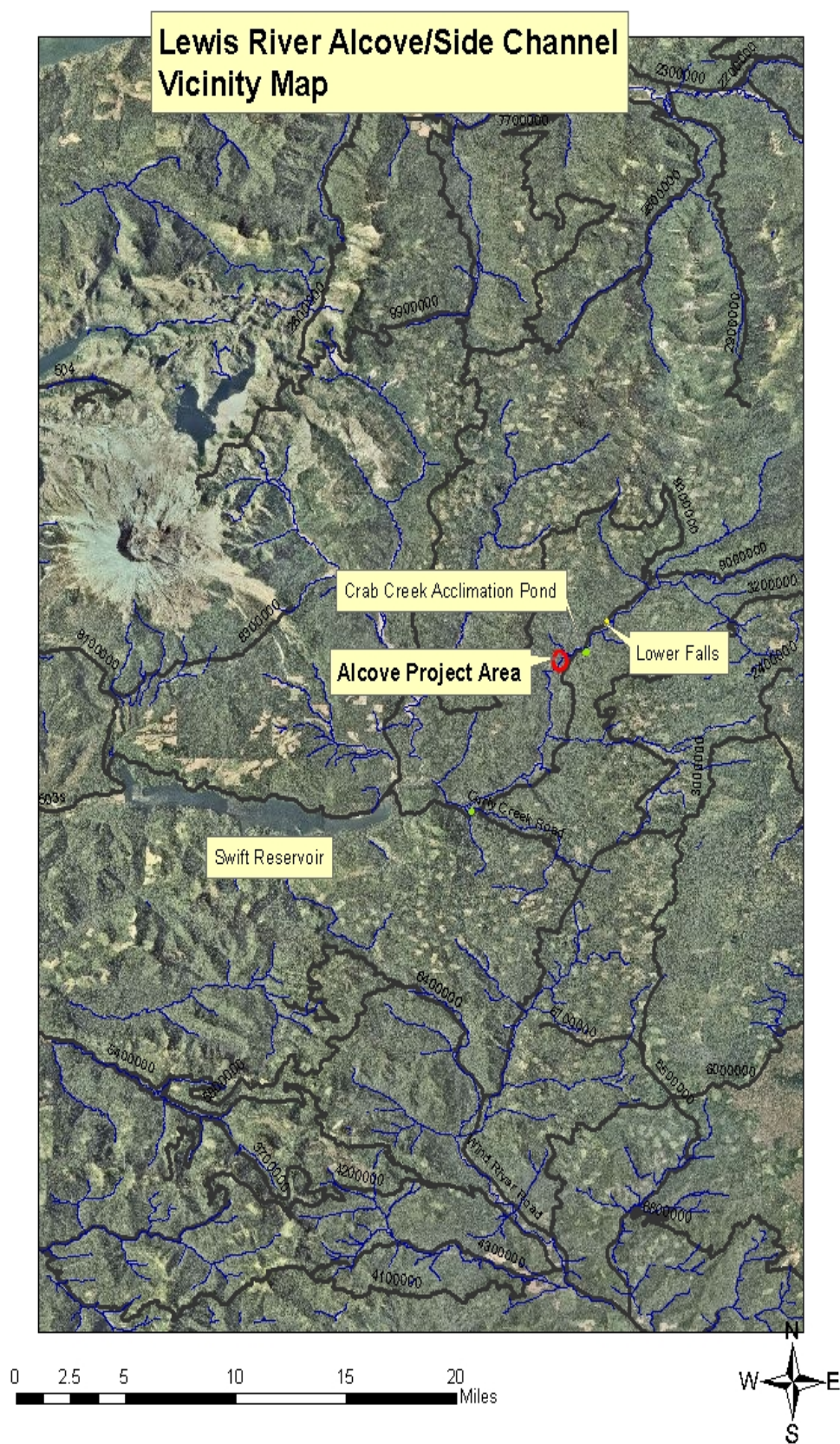


Figure 1. Map displays project location in relation to other known features

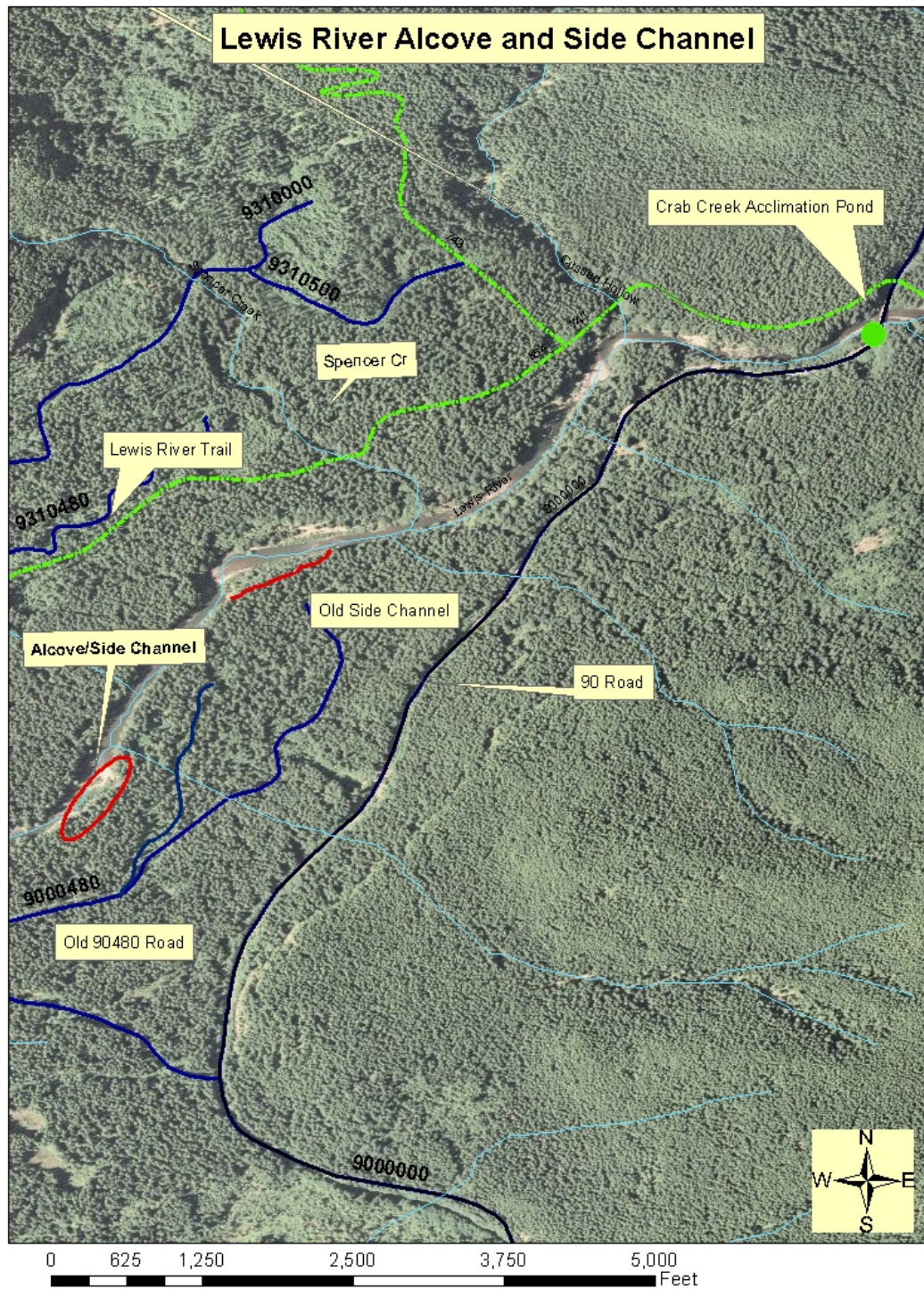


Figure 2. Map displays the location of the project

Lewis River Alcove/Side Channel



Figure 3. Map displays a close up view of the Alcove/ Side Channel

Old Side Channel

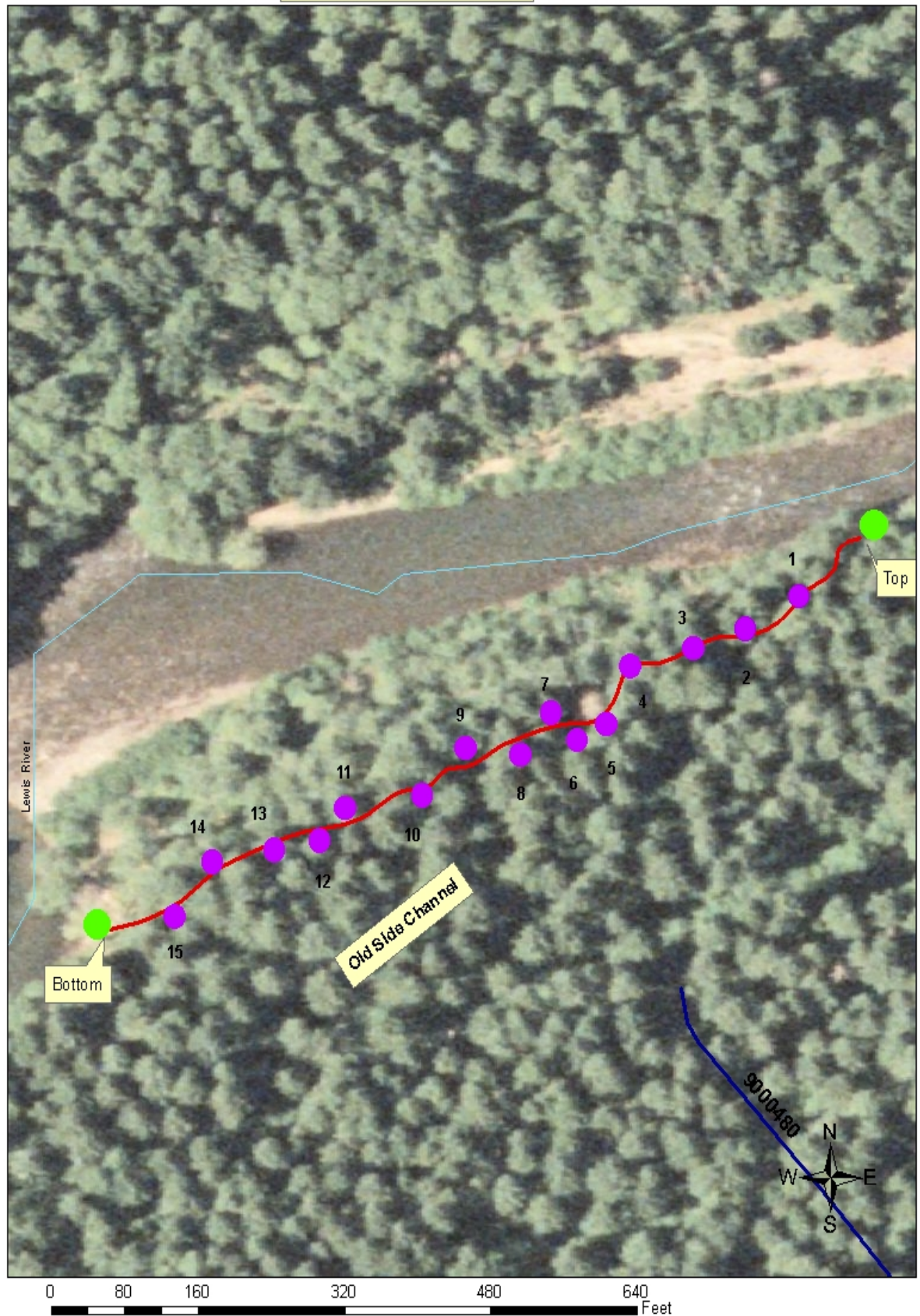


Figure 4. Map displays close up view of the Old Side Channel



5. Old Side Channel, looking upstream



6. Close up of old side channel



7. Upper end of Alcove/Side Channel looking downstream-Alcove is on the left



8. Alcove



9. Back End of Alcove



10. Alcove/Side Channel-Looking at the Side Channel -Downstream of the Alcove



11. Upper End of Alcove/Side Channel -Upstream of Alcove

References

Everest, Fred, James Sedell, John Wolfe, 1985. "Fisheries Enhancement in the Fish Creek Basin", Project No. 1984-01100, 234 electronic pages, (BPA report DOE/BP-16726-1)

Everest, Fred H. Gordon H. Reeves, James R. Sedell, Pacific Northwest Forest and Range Experiment Station 1986. Abundance, Behavior, and Habitat Utilization by Coho Salmon and Steelhead in Fish Creek, Oregon as Influenced by Habitat Enhancement 1985 Annual Report.

APPENDIX G
HAAPA HABITAT ENHANCEMENT

PROPOSAL FORM

Lewis River Aquatic Fund

1. Project Title:

Haapa Habitat Enhancement Project

2. Project Manager:

Peter Barber, Lower Columbia Fish Enhancement Group (LCFEG)

3. Identification of problem or opportunity to be addressed

Historically, the North Fork (NF) Lewis River has been heavily impacted by past clearing and snagging, past gravel mining, residential development, blockage of large wood transport due to the dams, and flow regulation (Inter-Fluve et al 2008, historic aerial photo analysis, and site visits). These cumulative impacts have reduced wood loading, reduced channel complexity, reduced the development of side-channels and off-channels, and have reduced habitat-forming processes (e.g. floods) necessary for creating and maintaining complex habitats.

During 2011, LCFEG was awarded \$112,900 by the Salmon Recovery Funding Board (SRFB) to complete the Haapa Habitat Enhancement Design project (#12-1165). The Haapa project assessed the limiting factors in the NF Lewis River (RM 13.8-15) and will (June 6, 2014) produce final designs to increase the quality and quantity of fish habitat within this project reach. The current request for ACC Haapa funding will provide construction support in the event that LCFEG is successful in securing additional restoration funding via SRFB during 2014. If SRFB Haapa construction funds are not secured during 2014, the ACC Funds will be returned.

4. Background

Provide information related to how this project fits into greater watershed objectives and any previously collected information at the project site (e.g. fish surveys, habitat delineation, etc)

The proposed Haapa Habitat Enhancement project site is located between RM 13.8 & 15.0 of the NF Lewis River. The Haapa Site is located in reach Lewis 5 and listed as high priority Tier 1 reach identified in the Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan (LCFRB 2010). Restoration of this area has been recommended as part of multiple previous reports including the large wood study (Inter-Fluve et al. 2008) and the LCFRB habitat assessment (R2 Resource Consultants 2004).

The project site is located adjacent to the Haapa Boat Ramp and river access points owned by Clark County, WDFW, DNR State Owned Aquatic Lands (SOAL), BPA and private landowners (Loomis, Kysar). The site currently consists of an existing backwater area that extends for 1,500 feet along the left bank. This area is dominated by silt-bedded shallow water habitat with virtually no structure to provide cover for juvenile salmonid species. A relic flood overflow channel currently connects the main stem to the

backwater channel, but is only activated during high water events. The main stem channel margin is generally composed of uniform habitat with little cover or complexity and contains sections of bank erosion.

Previous large wood enumeration study (Inter-Fluve et al. 2008) documented very low wood quantities, in particular, few large key pieces required to initiate log jam formation in the Lewis River. Similar results for LWD quantities were obtained as part of re-licensing studies (WTS-3 Relicensing Report, PacifiCorp, 2004a) and only 3 “key” pieces throughout the entire 3-mile reach in which the project area is located. Stream habitat surveys and other analyses conducted by R2 Resource Consultants (2004) documented the following impaired habitat conditions in this reach (Lewis 5):

- 1.) Loss of bar and connected side channel habitat,
- 2.) Poor shade condition ratings,
- 3.) Lack of pools or pool tail-outs (0%)
- 4.) Low large wood quantities (< 14 pieces per mile)

This project addresses “stream channel habitat structure and bank stability” and “riparian conditions and functions”, both of which are considered a High priority according to the LCFRB 6-year Habitat Work Schedule and Lead Entity Habitat Strategy (LCFRB 2010). Pool habitat, riparian shade, off-channel habitat, and LWD quantities were all in poor condition in this reach (reach Lewis 5) according to the 2004 habitat assessment commissioned by LCFRB (R2 Resource Consultants, 2004). Habitat unit composition was rated as 0% pool habitat, 48% riffle habitat, and 52% glide habitat.

Native riparian vegetation is impaired and is affected by invasive species including Himalayan blackberry, scotch broom, and knotweed. An island complex across from the Haapa Boat launch in the NF Lewis main stem currently provides a multi-thread channel system but aerial photo evidence indicates that this area had even greater channel complexity historically. Historical air photos and landowner reports indicate the presence of a large gravel mining operation at the Haapa Site in the 1950s. This site is also known as the “Haapa Crusher” site. Stream gravel extraction removed a significant amount of material and likely contributed to channel simplification and disconnection of side-channel habitat. A blockage of bedload transport due to the hydro-system may also be affecting channel complexity and availability of spawning and rearing habitat.

The SRFB Haapa Habitat Enhancement Design project has focused upon addressing these limiting factors. During the design process, an inter-disciplinary oversight team has convened to provide guidance and to ensure that landowners and managers are involved throughout project development. The team consists of private landowners as well as representatives from Washington Department of Fish and Wildlife (WDFW), LCFRB, Clark County, PacifiCorp, Washington Department of Natural Resources (WDNR), Bonneville Power Administration (BPA), and other permitting and resource agencies. Inter-fluve Inc. was hired as the design engineer due to their past history and extensive experience working in the NF Lewis watershed. Project staff have collected topographic and bathymetry survey design data via ground and boat-based surveys. Inter-fluve has developed hydraulic models, performed energy analysis, and conducted geomorphic assessments in the development of the final design plans. Site and aerial photo analysis was used to identify geomorphic trends in the study area, which will help to determine

appropriate restoration actions and future potential modes of channel adjustment in the reach. Hydrologic analysis identified historic flow levels for analysis/modeling based on relevance to fish usage, risks to property, and geomorphic changes over time. A 1-D hydraulic model has been developed to evaluate flow hydraulics under existing and proposed conditions. The final project design will be completed June 6th, 2014 and will focus on achieving the restoration objectives and creating and enhancing habitat that has been lost through past and on-going human uses. Thus far, preliminary designs have been developed and include technical specifications, a design narrative, and a construction cost estimate. We are currently in-process of reviewing the preliminary designs with the technical work group and the final design plans will be stamped by a licensed professional engineer.

5. Project Objective(s)

State the objectives of your proposal including how the project is consistent with Aquatics Fund objectives and recovery plans. Clearly describe the biological benefits and expected outcome of your project. Describe the technical basis for the objectives including the identification of any supporting technical references. Identify biological metrics to help quantify the benefit of the project.

The project directly benefits all salmonids originating in and returning to the NF Lewis River. The following restoration objectives have been developed to address the NF Lewis process impairments and to create and enhance habitats to benefit ESA listed salmon and steelhead populations.

Project Objectives:

1. Enhance five acres of existing backwater habitat using large wood structures to increase habitat complexity, create margin habitat and cover to benefit rearing juvenile salmon and steelhead.
2. Enhance > 2,000 lineal feet of the main stem NF Lewis River channel margin habitat using large wood structures to benefit rearing juveniles and adult salmonids over a wide range of flows.
3. Creation of 1,186 foot low-flow side-channel habitat to provide a minimum of 23,800 square feet of new complex habitat to benefit multiple salmonid species and life-stages. Caveat – may include a 340 groundwater connective channel per the review of the stakeholder committee.
4. Increase hydraulic floodplain roughness on four acres by adding large wood structures in addition to removing invasive plant species and under-planting with native riparian plantings.

The Haapa Habitat Enhancement Project will restore critical habitat to benefit ESA-listed salmonids in one of the highest priority reaches in the lower NF Lewis River. This project addresses the Lewis River Aquatic Fund priorities #1 & #3 and has high restoration

potential for multiple salmonid populations, including fall Chinook, coho, steelhead, and chum.

Priority 1: *Benefit fish recovery throughout the North Fork Lewis River, with priority to Federal ESA-listed species.*

&

Priority 3: *Enhance fish habitat in the Lewis River Basin-, with priority given to the North Fork Lewis River.*

NF Lewis Fish Benefits:

Chinook – Primary habitat objective is to increase the quantity and quality of shallow margin juvenile rearing habitat consisting of low depths and velocities along gently sloping gravel banks. Provide adult holding habitat in the form of main stem cover. Addressing Chinook spawning is less a focus because most spawning occurs upstream; however, increasing the suitable depth, velocity, and substrate will yield some benefit to the creation of future spawning habitat.

Chum – Increase off-channel chum spawning habitat. It is anticipated that this will primarily be addressed by a future WDFW groundwater-fed 340 foot chum spawning channel; however, creating a flow-through side-channel may provide some opportunity for chum spawning and early rearing.

Coho – Enhance off-channel juvenile rearing habitat via increased cover and complexity with LWD placement and surface fed side channel. Enhance juvenile rearing and adult habitat by increasing main stem cover and habitat diversity, via side channel enhancement and margin LWD placement.

Steelhead – Enhance main channel juvenile rearing habitat cover, adult spawning habitat (gravel sorting), and adult holding cover via pool creation/velocity refuge with margin LWD placement and side channel enhancement.

The implementation of the Haapa restoration project will contribute to the recovery of these species by increasing the amount and quality of rearing habitat, including pool quantity and quality, rearing cover and flood refugia, and spawning habitat availability. The project builds upon past success after constructing a 3,500ft side channel just downstream of the proposed Haapa project site and observing an immediate fish utilization/response. This project will address the limiting habitat factors in the NF Lewis and create/enhance in-stream habitat to benefit high priority ESA-listed salmon and steelhead populations.

6. Tasks

State the specific actions which must be taken to achieve the project objectives.

Task 1: Finalize Design. Complete final designs and prepare permit applications (including HPA, USACE, and DNR Right of Entry).

Task 2: Secure Construction Funding. LCFEG plans to submit the Haapa Habitat Enhancement project to SRFB during 2014. We strongly believe this project will be selected for SRFB funding during 2015.

(Contingent upon securing SRFB funds)

Task 3: Permitting/Landowner Agreement. Secure signed landowner agreement forms and submit all relevant permitting applications for construction at the beginning of 2015.

Task 4: Contracting. Selection of the construction contractor to implement the final designs created by the Haapa Habitat Enhancement Design project (#12-1165). Inter-Fluve and LCFEG will provide construction oversight.

Task 5: Project implementation, Summer 2015/16.

Phase I: Construction of backwater LWD placement and main stem margin LWD placement

Phase II: Side channel construction and riparian enhancement/flood plain roughness component.

Warning signage will be placed at the Haapa Boat launch in addition to boating warning signs both upstream and downstream of the project site.

Task 6: Follow-up riparian enhancement and LWD maintenance will occur in the fall and spring following 2016 construction. All components will be monitored for success in subsequent years by LCFEG.

7. Methods

Describe methods to be used. When using Best Management Practices (BMPs) identify sources of BMPs and how they will protect resource values.

Methods for design and construction have and will follow established protocols that have a proven track record for successfully improving habitat conditions in the Lewis River Basin and in the Lower Columbia Region as a whole. Design, engineering and construction techniques, as well as benefits of proposed enhancements for fish habitat, are well-documented (e.g. Washington Stream Habitat Restoration Guidelines). The project sponsor (LCFEG) and project consultant (Inter-Fluve) have an extensive experience designing these types of enhancement features and successfully constructed a 3,500 ft long side channel less than a ½ mile downstream. We expect to hire a contractor with tracked excavators and haul trucks to implement the final designs for the project. Access for construction will occur from the NE 434th roadway and the Clark County Haapa Boat Launch. Any areas disturbed by construction will be re-planted with native riparian species and follow accepted stream restoration and engineering standards, best management practices and guidelines (e.g. Saldi-Caromile et al. 2004).

8. Specific Work Products

Identify specific deliverable results of the project. Project managers will be required to provide status updates with submission of project invoices.

Benefits of project will be increased number pools, habitat complexity/diversity, increased spawning and rearing habitat associated with LWD placement and side channel construction. We expect to see an increased number of juvenile Chinook, Coho and steelhead occupying the new complex habitat additions similar to the results observed after the RM 13.5 Kysar side channel construction.

Deliverables:

- 1) Final Design packages, Design narrative report
- 2) Permits
- 3) Construction, placement of >500 pieces of wood
- 4) As-built drawings
- 5) Tech memo of monitoring results

Habitat Enhancement Deliverables:

- 1) Creation 1,186ft low-flow side channel, producing 23,800 ft² new complex habitat
- 2) Placement > 10 main stem margin complexity log structures, create a minimum of 8 new pools.
- 3) LWD backwater enhancement = 217,800 ft² new complex rearing habitat
- 4) Floodplain roughness and riparian enhancement = 172,240 ft²
- 5) Two fold increase in observed juvenile and adult fish use/productivity

9. Project Duration

- a. Identify project duration.
2014 – December 2016

- b. Provide a detailed project schedule to include:

Feb 2014 thru July 2014

- Complete Haapa Final Design, report, permitting documents, final cost estimate
- Submit 2014 SRFB Haapa Habitat Enhancement Project pre-proposal & final proposal.

December 2014 - June 2015 (if SRFB are secured)

- Installation of photo reference points
- Submit permitting documents for construction
- Contractor selection
- Material acquisition
- Photo documentation

July 2015 thru September 2015

- LWD placement in backwater channel and main stem channel margin

- Photo documentation

November 2015 - June 2016

- Installation of riparian plantings in disturbed areas
- Monitoring of wood structures and fish response, documentation of channel changes
- Begin clearing 5 acres of flood plain invasive plant species
- Photo documentation

July 2016 thru September 2016

- Side channel construction and floodplain roughness installation
- LWD Project maintenance (if required)
- Photo documentation

October 2016 thru December 2016

- As-built survey, photo documentation
- Complete final reports, closeout project

10. Permits and Authorizations

Identify any applicable permits and resource surveys required for project. Please include timeline for obtaining and any action taken to-date. Applicant will be responsible for securing all such necessary permits.

On-the-ground (dirt moving) projects will be required to be in compliance with Sections 401 and 404 of the Clean Water Act, Sections 7 and 10 of the Endangered Species Act, and the National Historic Preservation Act of 1966, as well as Department of the Interior regulations on hazardous substance determinations. Project site surveys may be required in order to comply with these and other regulations. Obtain permission of all owners of land used for access to and completion of, the project. Landowner(s) must sign PacifiCorp's consent and release form prior to finalization of a Funding Agreement with PacifiCorp.

The Haapa Habitat Enhancement project will require the following permitting documents; USACE NWP 27, DAHP, WDFW HPA and landowner agreements with two private and four governmental agency landowners.

11. Matching Funds and In-kind Contributions

\$74,280 LCFEG (in-kind)

\$547,720 SRFB (proposed 2014)

12. Peer Review of Proposed Project

This proposal is the product of a design proposal reviewed and approved for funding by numerous resource professionals on behalf of the Lower Columbia Fish Recovery Board and Salmon Recovery Funding Board (SRFB). The completed Haapa final designs will be reviewed in the future by the Lower Columbia Fish Recovery Board and the Technical Advisory Committee (TAC) when LCFEG submits a SRFB proposal during 2014.

13. Budget

See Attached

14. Photo Documentation (Per National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects):

Monitoring procedures will be developed collaboratively with Inter-fluve. Reporting of results will be done using ACC protocols (if existing), or standard SRFB protocols which include a final as-built report and photo summary.

15. Insurance. All qualifying applicants shall comply with PacifiCorp's insurance requirements set forth in Appendix E. The policy limits are deemed sufficient by PacifiCorp for project activities involving significant risk, including placement of large woody debris in navigable waterways, and are presumed to be sufficient for all activities likely to be funded under this RFP.

Should applicant's insurance program not meet these requirements, bid pricing should include any additional costs applicant would incur to comply with these requirements.

Attachment 2

ACC Questions/Comments:

Does this project address any invasive weed issues that may be on site?

Yes. We propose to restore of more than five acres of the western floodplain that includes property ownership by WDFW, Loomis, Kysar, Clark Parks, and BPA. Invasive species have established a foothold in the area and are continuing to spread. Invasives include Scotch broom (*Cytisus scoparius*), Himalayan blackberry, reed canary grass (*Phalaris arundinacea*), and Japanese knotweed (*Fallopia japonica*). We are planning to mechanically clear the noxious weed species, apply herbicide treatment during the fall and replant with native species. Placement of floodplain roughness features (LWD) will be pair with dense riparian planting to create vegetated islands during bank full flood events. We believe controlling invasives and re-establishing a native vegetation community is an important component of this project and will support long-term ecological processes and future LWD/habitat formation.

Are landowner agreements in place?

LCFEG and Inter-Fluve Inc. have been collaborating with Federal, state and private landowners during the development of the Haapa Habitat project designs. We have received landowner right of entry forms from BPA, Clark County Parks, and WDFW and coordinated heavily with the private landowners, Loomis and Kysar. We will not pursue landowner agreements until the final design has been completed.

Project should include total cost. Difficult to evaluate this project due to lack of true project designs. Inclusion of professional grade designs would assist in understanding the project and potentially support for funding request.

We have updated the project designs and completed a professional grade 30% design, including a cost estimate.

Supportive of all components with the exception of No. 1 and No. 2. The benefits of these two components should be detailed out and have data to support expenditures.

Component 1. Side-Channel Creation: The proposed 1,186 ft side-channel will create 23,800 square feet of complex habitat – a habitat type that the NF Lewis no longer creates itself due to past gravel removal, interruption of bedload transport, lack of large log jams, peak flow disturbance due to flow regulation and associated feedback with channel processes. Side channel construction and excavation totals (therefore cost) are minimal due to utilizing a relic flood over flow channel depression that was located during ground based surveys. The flow-through side-channel is expected to be used by coho (spawning and rearing), winter steelhead (rearing), Chinook (transient rearing along the margins of a flow-through channel), and chum (spawning).

Component 2. Backwater Channel Enhancement: Currently, the backwater is adjacent to a steep armored bank on the left side, and a gradual natural bank on the right side. Although existing conditions provide velocity refuge from the main channel, there is very little cover, habitat complexity associated with LWD, or refuge from avian predators. Large wood placements would consist of accumulations/jams of approximately 3 – 5 pieces per structure, loaded with slash (limbs/brush) to provide overhead cover, interstitial spaces for micro habitats, and to provide complexity to the existing margin habitat. There is fish access to this backwater habitat year-round, however there is a large opportunity to greatly improve habitat conditions for both summer rearing and winter flood refuge to primarily benefit rearing coho and steelhead juveniles.

This project will accrue large benefits per cost due to: 1) the large potential for significantly improving habitat quantity and quality in the reach, 2) Completed final design and permitting package (June 6, 2014), 3) cost-sharing with LCFEG, and the SRFB.

Placing LWD in the main stem Lewis seems risky. Does the project create a boating hazard?

The margin LWD placements have been designed to provide the habitat complexity and suitable rearing habitat during low flow that would historically been provided by naturally occurring LWD in the system. The proposed LWD margin wood placement locations have been selected to avoid areas with high levels of recreational boat traffic. LCFEG and Inter-Fluve have been monitoring similar types of LWD complexity structures less than a mile downstream at our recently (2012) completed RM 13.5 side channel. We have monitored these structures to ensure they do not become boating hazards. Furthermore, monitoring efforts have documented high numbers of adult and juvenile salmonids occupying the new habitat.

Will the expected benefits be sustainable over the long term. Concerned about the long term stability of the back channel.

The multi-faceted purpose of the design criteria defined project elements to ensure goals and objectives are achieved, and considered/addressed landowner constraints and concerns. The deliverables of the Haapa design implores habitat restoration techniques that have been proven to be successful in the creation and enhancement of fish habitat, per the RM 13.5 Ksyar side channel & main stem margin LWD treatment just downstream. The project components/objectives have been developed based on site visits, and extensive topographic survey, LiDAR analysis, geomorphic analysis, and hydraulic modeling. The evaluation of the site during the design development leads us to believe this project will remain stable and function as designed in a variety of hydrological scenarios.

Insurance Requirements

1. INSURANCE

Without limiting any liabilities or any other obligations of [CONTRACTOR], [CONTRACTOR] shall, prior to commencing the Project, secure and continuously carry with insurers having an A.M. Best Insurance Reports rating of A-:VII or better the following insurance coverage:

1.1 Workers' Compensation. [CONTRACTOR] shall comply with all applicable Workers' Compensation Laws and shall furnish proof thereof satisfactory to PacifiCorp prior to commencing the Project.

All Workers' Compensation policies shall contain provisions that the insurance companies will have no right of recovery or subrogation against PacifiCorp, its parent, divisions, affiliates, subsidiary companies, co-lessees, or co-venturers, agents, directors, officers, employees, servants, and insurers, it being the intention of the parties that the insurance as effected shall protect all parties.

1.2 Employers' Liability. Insurance with a minimum single limit of \$1,000,000 each accident, \$1,000,000 disease each employee, and \$1,000,000 disease policy limit.

1.3 Commercial General Liability. The most recently approved ISO policy, or its equivalent, written on an occurrence basis, with limits not less than \$1,000,000 per occurrence/ \$2,000,000 general aggregate (on a per location and/or per job basis) bodily injury (with no exclusions applicable to injuries sustained by volunteers working or participating in the Project) and property damage, including the following coverages:

- a. Premises and operations coverage
- b. Independent contractor's coverage
- c. Contractual liability
- d. Products and completed operations coverage
- e. Coverage for explosion, collapse, and underground property damage
- f. Broad form property damage liability
- g. Personal and advertising injury liability, with the contractual exclusion removed

- h. Sudden and accidental pollution liability, if appropriate
- i. Watercraft liability, either included or insured under a separate policy

1.4 Business Automobile Liability. The most recently approved ISO policy, or its equivalent, with a minimum single limit of \$1,000,000 each accident for bodily injury and property damage including sudden and accidental pollution liability, with respect to [CONTRACTOR]'s vehicles whether owned, hired or non-owned, assigned to or used in the performance of the Project.

1.5 Umbrella Liability. Insurance with a minimum limit of \$4,000,000 each occurrence/aggregate where applicable to be provided on a following form basis in excess of the coverages and limits required in Employers' Liability insurance, Commercial General Liability insurance and Business Automobile Liability insurance above. [CONTRACTOR] shall notify PacifiCorp, if at any time their minimum umbrella limit is not available during the term of this Agreement, and will purchase additional limits, if requested by PacifiCorp.

1.6 In addition to the requirements stated above any and all parties providing underground locate, engineering, design, or soil sample testing services including [CONTRACTOR], subcontractor and all other independent contractors shall be required to provide the followings insurance:

Professional Liability: [CONTRACTOR] (or its contractors) shall maintain Professional Liability insurance covering damages arising out of negligent acts, errors or omissions committed by [CONTRACTOR] (or its contractors) in the performance of this Agreement, with a liability limit of not less than \$1,000,000 each claim. [CONTRACTOR] (or its subcontractors of any tier) shall maintain this policy for a minimum of two (2) years after completion of the work or shall arrange for a two (2) year extended discovery (tail) provision if the policy is not renewed. The intent of this policy is to provide coverage for claims arising out of the performance of work or services contracted or permitted under this Agreement and caused by any error, omission for which the [CONTRACTOR] its subcontractor or other independent contractor is held liable.

Except for Workers' Compensation insurance, the policies required herein shall include provisions or endorsements naming PacifiCorp, its affiliates, officers, directors, agents, and employees as additional insureds.

To the extent of [CONTRACTOR]'s negligent acts or omission, all policies required by this Agreement shall include provisions that such insurance is primary insurance with respect to the interests of PacifiCorp and that any other insurance maintained by PacifiCorp is excess and not contributory insurance with the insurance required hereunder, provisions that the policy contain a cross liability or severability of interest clause or endorsement, and that [CONTRACTOR] shall notify PacifiCorp immediately upon receipt of notice of cancellation, and shall provide proof of replacement insurance prior to the effective date of cancellation. No required insurance policies, except Workers' Compensation, shall contain any provisions prohibiting waivers of subrogation. Unless prohibited by applicable law, all required insurance policies shall contain provisions that the insurer will have no right of recovery or subrogation against

PacifiCorp, its parent, affiliates, subsidiary companies, co-lessees, agents, directors, officers, employees, servants, and insurers, it being the intention of the Parties that the insurance as effected shall protect all parties.

A certificate in a form satisfactory to PacifiCorp certifying to the issuance of such insurance shall be furnished to PacifiCorp prior to commencement of the Project by [CONTRACTOR] or its volunteers or contractors. If requested, [CONTRACTOR] shall provide a copy of each insurance policy, certified as a true copy by an authorized representative of the issuing insurance company, to PacifiCorp.

[CONTRACTOR] shall require subcontractors who perform work at the Project to carry liability insurance (auto, commercial general liability and excess) workers' compensation/ employers' or stop gap liability and professional liability (as required) insurance commensurate with their respective scopes of work. [CONTRACTOR] shall remain responsible for any claims, lawsuits, losses and expenses including defense costs that exceed any of its subcontractors' insurance limits or for uninsured claims or losses.

PacifiCorp does not represent that the insurance coverage's specified herein (whether in scope of coverage or amounts of coverage) are adequate to protect the obligations [CONTRACTOR], and [CONTRACTOR] shall be solely responsible for any deficiencies thereof.

Haapa Habitat Restoration

ACC Funds - Expanded Budget

Description	Unit	Quantity	Unit Cost	Proposed SRFB Funds	ACC Funds	LCFEG Match	Total Cost	Comment
Mobilization and demobilization	LS	2	\$7,500	\$15,000	\$0	\$0	\$ 15,000	Mob excavators to project site
Site Access Measures	LS	2	\$10,000	\$20,000	\$0	\$0	\$ 20,000	Includes clearing of two access paths 1.) 1,400ft by 12 ft SE edge of side channel alignment & 2.) 2,250 ft by 12 ft to access backwater channel from NE 434th St.
Dewatering and environmental protection measur	LS	2	\$10,000	\$20,000	\$0	\$0	\$ 20,000	Includes dewatering, coffer dams, fish relocation, dust control and erosion control BMPs.
LWD- Standard straight logs	EA	320	\$500	\$145,000	\$15,000	\$0	\$ 160,000	Purchased, delivered and installed. 40 ft conifer logs with 18" or greater diameter.
LWD- Large straight logs	EA	50	\$650	\$32,500	\$0	\$0	\$ 32,500	Purchased, delivered and installed. 40 ft conifer logs with 24" or greater diameter.
LWD- Standard Rootwads	EA	165	\$700	\$98,500	\$17,000	\$0	\$ 115,500	Purchased, delivered and installed. 35'-40' long x 18" dia. x 5' dia. rootwads
LWD- Large Rootwads	EA	30	\$900	\$27,000	\$0	\$0	\$ 27,000	Purchased, delivered and installed. 35'-40' long x 24" dia. x 8-10' dia. rootwads
LWD- Racking wood/slash	LS	10	\$1,000	\$5,000	\$5,000	\$0	\$ 10,000	Small diameter logs 3-8" dia.; misc conifer slash material
LWD- Wood pile logs	EA	250	\$120	\$25,000	\$5,000	\$0	\$ 30,000	Conifer piling logs, 10-15" diameter, 40ft length
Bulk Excavation/hauling - Side channel construc	CY	5,190	\$6	\$31,140	\$0	\$0	\$ 31,140	Excavator and off-road haul truck, assumes disposal to be off-site, within 1 mile.
Misc. Project Materials	LS	2	\$10,000	\$12,500	\$7,500	\$0	\$ 20,000	Chain, cable, clamps, threaded rod, nuts, washers.
Misc.rented tools and equipment repair	LS	2	\$8,000	\$8,500	\$7,500	\$0	\$ 16,000	180 cfm air compressor; gas cut-off saw, rock drill & bits
Riparian plants- rooted Dee pot Willow/Dogwood	EA	5,000	\$1.07	\$0	\$0	\$5,350	\$ 5,350	Harvested and planted willow, dogwood or nine-bark cutting, grown in LCFEG greenhouse
Riparian plants- T-1 One gallon containerized	EA	4,000	\$4.30	\$0	\$0	\$17,200	\$ 17,200	native trees/ shrubs, LCFEG nursery grown
Riparian plants- Native live-cuttings Willow sp.	EA	7,000	\$0.39	\$0	\$0	\$2,730	\$ 2,730	Harvest live-cuttings, cost per foot.
Labor- LCFEG Construction Mgmt.	HR	180	\$55	\$4,900	\$5,000	\$0	\$ 9,900	LCFEG construction supervision
Labor- LCFEG Crew Supervision	HR	640	\$35	\$12,400	\$10,000	\$0	\$ 22,400	LCFEG construction foreman/DOC crew direction
Labor- DOC Contract/officer	EA	64	\$145	\$9,280	\$0	\$0	\$ 9,280	\$145.00 per day to cover DOC officer & transport
Labor- Donated (DOC Larch Mtn Crew)	HR	3,500	\$14	\$0	\$0	\$49,000	\$ 49,000	DOC 6-10 person labor crew to fasten large wood, clear/install riparian plantings.
Signage - Boater warning signs	LS	1	\$3,000	\$0	\$3,000	\$0	\$ 3,000	Acquire permits
Construction Sub-Total				\$466,720	\$75,000	\$74,280	\$ 616,000	
A&E, audit, project management, permitting fees, administration				\$81,000				
Project Sub-Total				\$547,720				
Proposed 2014 SRFB Project Amount				\$547,720				
LCFEG Project Match				\$74,280				
ACC Request				\$75,000				
Project Grand Total				\$697,000				

Key

LS = Lump sum
CY = Cubic yard
LF = Lineal foot
SF = Square foot
AC = Acre
EA = Each
HR = Hours

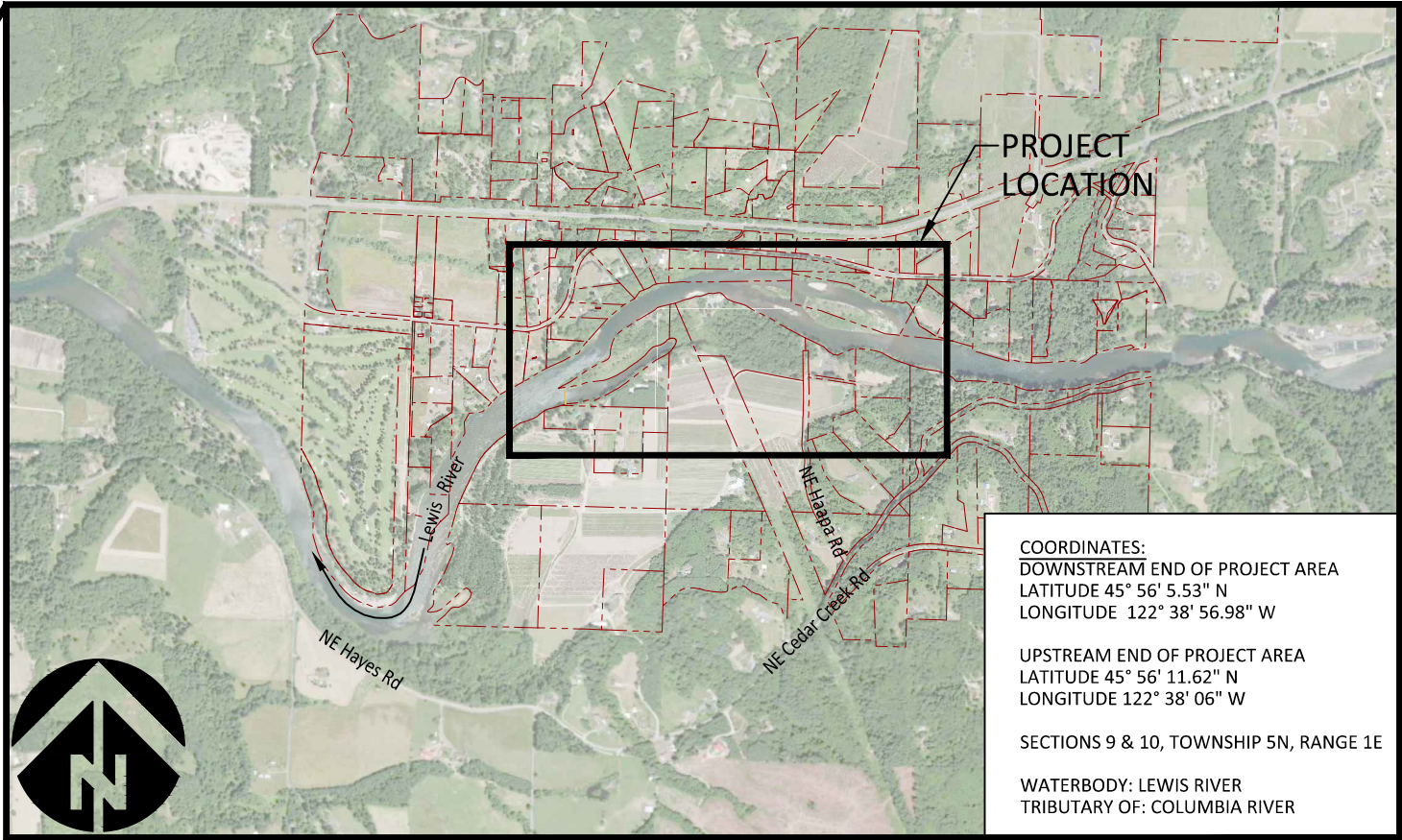
NORTH FORK LEWIS RIVER - HAAPA FISH HABITAT RESTORATION PROJECT

CLARK COUNTY, WASHINGTON

PRELIMINARY DESIGN - JANUARY 8, 2014



LOCATION MAP
STATE OF WASHINGTON



COORDINATES:
DOWNSTREAM END OF PROJECT AREA
LATITUDE 45° 56' 5.53" N
LONGITUDE 122° 38' 56.98" W

UPSTREAM END OF PROJECT AREA
LATITUDE 45° 56' 11.62" N
LONGITUDE 122° 38' 06" W

SECTIONS 9 & 10, TOWNSHIP 5N, RANGE 1E

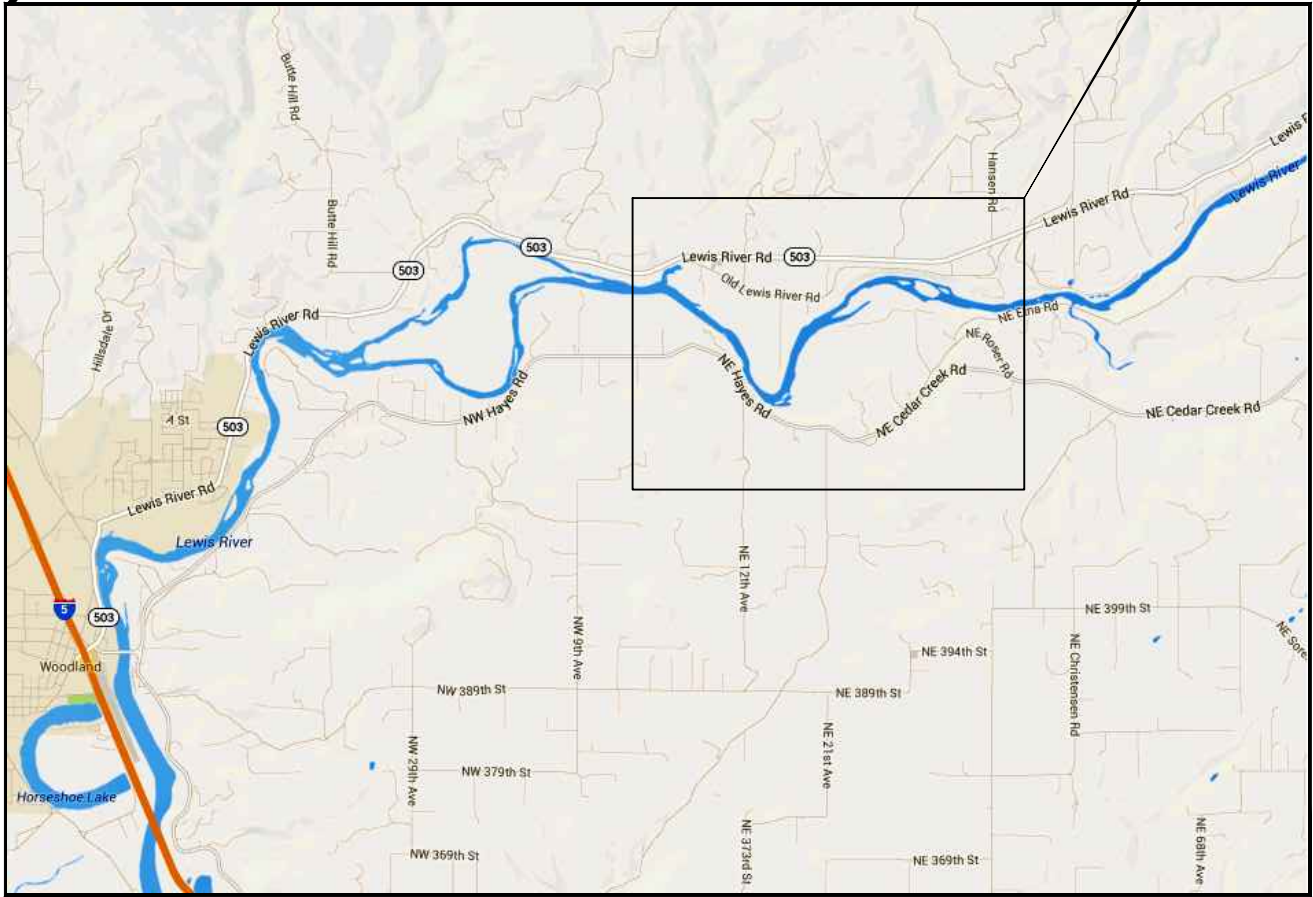
WATERBODY: LEWIS RIVER
TRIBUTARY OF: COLUMBIA RIVER

SITE MAP
NOT TO SCALE

SHEET INDEX

- 1 Cover Sheet, Index and Vicinity Map
- 2 Existing Conditions and Ownership
- 3 Proposed Conditions, Access and Project Components
- 4 Component 1 - Side Channel Construction
- 5 Component 2 - Backwater Channel Enhancement
- 6 Component 3 - Mainstem River Bank Enhancement
- 7 Component 4 - Riparian Enhancement
- 8 Component 5 - Backwater Channel Construction
- 9 Component 6 - Apex Jams and Margin LWD
- 10 Component 7 - Bank Regrading

Preliminary
Not for Construction



VICINITY MAP
NOT TO SCALE

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NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/08/14	13-02-01
APPROVED	DATE	PROJECT

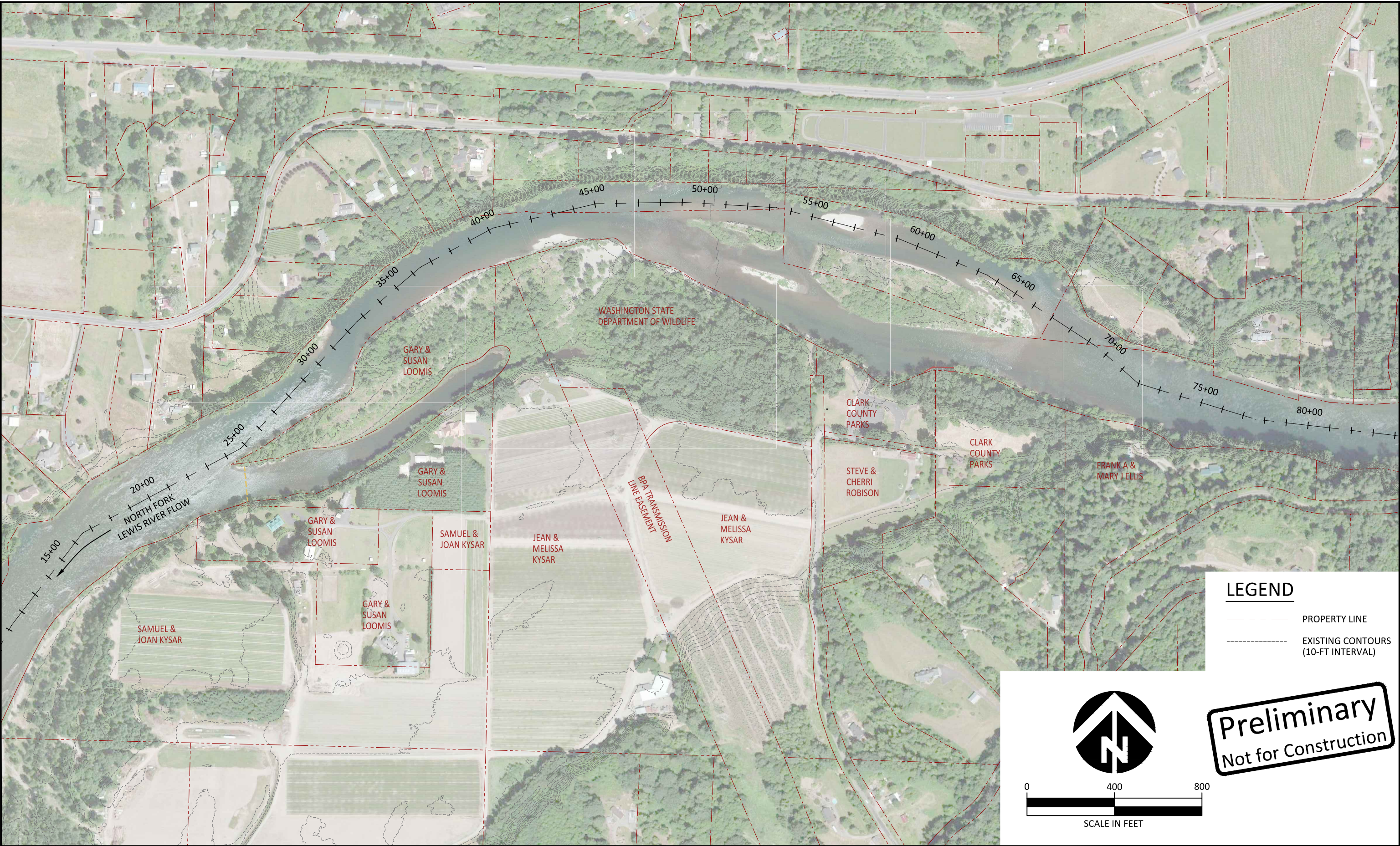
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North Fork Lewis River - Haapa
Fish Habitat Restoration Project



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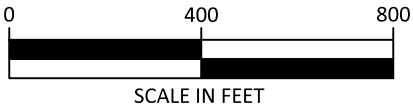
COVER SHEET, INDEX
AND VICINITY MAP

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LEGEND

- PROPERTY LINE
- EXISTING CONTOURS (10-FT INTERVAL)



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APPROVED	DATE	PROJECT

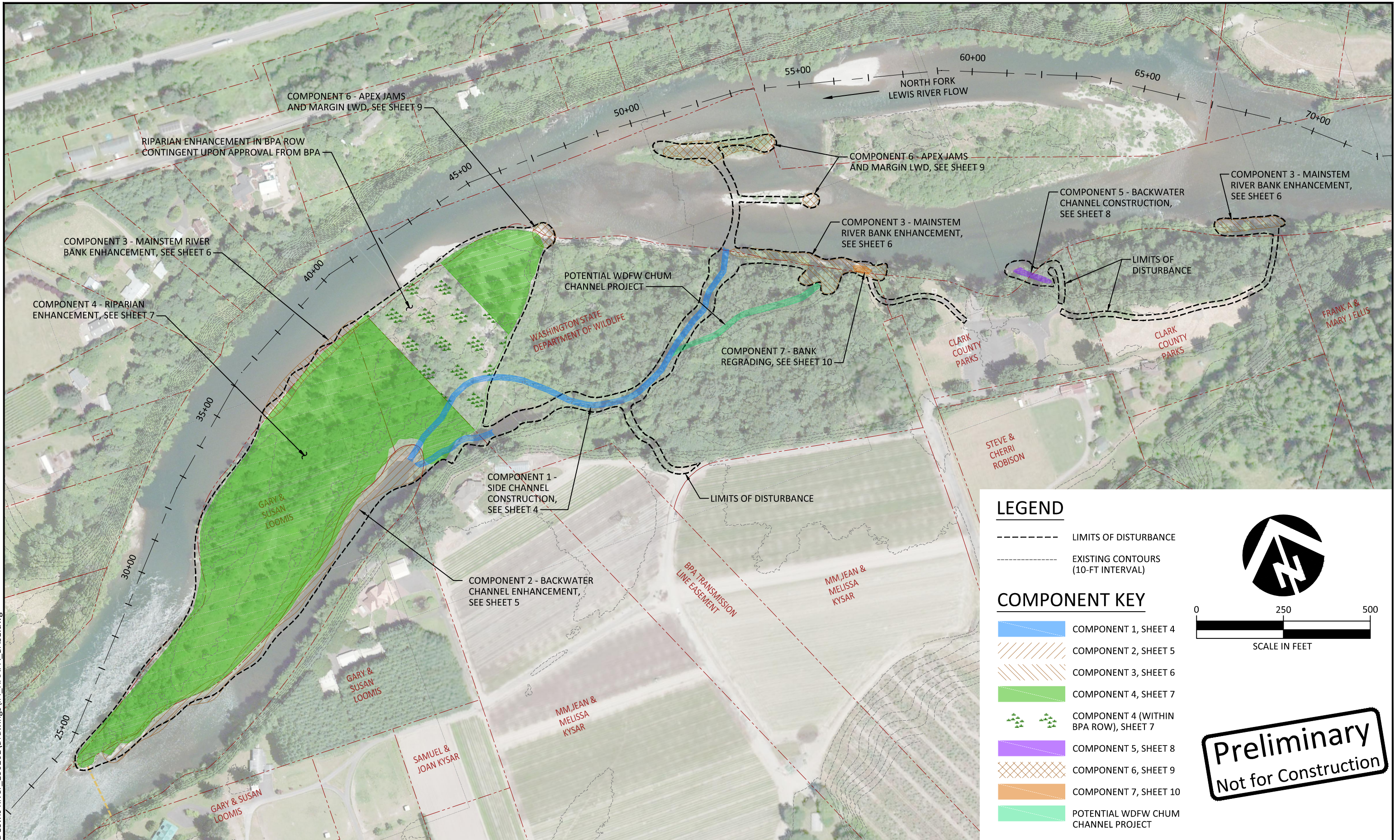
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EXISTING CONDITIONS
AND OWNERSHIP

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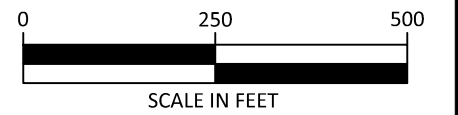


LEGEND

- LIMITS OF DISTURBANCE
- EXISTING CONTOURS (10-FT INTERVAL)

COMPONENT KEY

- COMPONENT 1, SHEET 4
- COMPONENT 2, SHEET 5
- COMPONENT 3, SHEET 6
- COMPONENT 4, SHEET 7
- COMPONENT 4 (WITHIN BPA ROW), SHEET 7
- COMPONENT 5, SHEET 8
- COMPONENT 6, SHEET 9
- COMPONENT 7, SHEET 10
- POTENTIAL WDFW CHUM CHANNEL PROJECT



Preliminary
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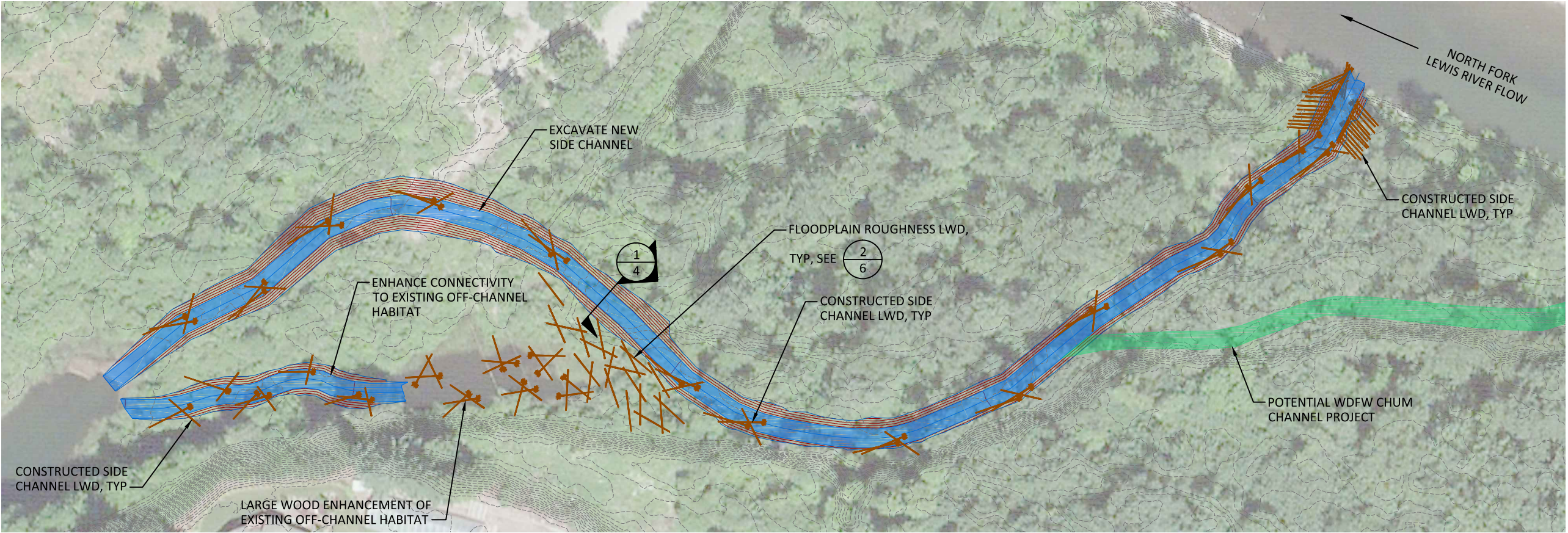
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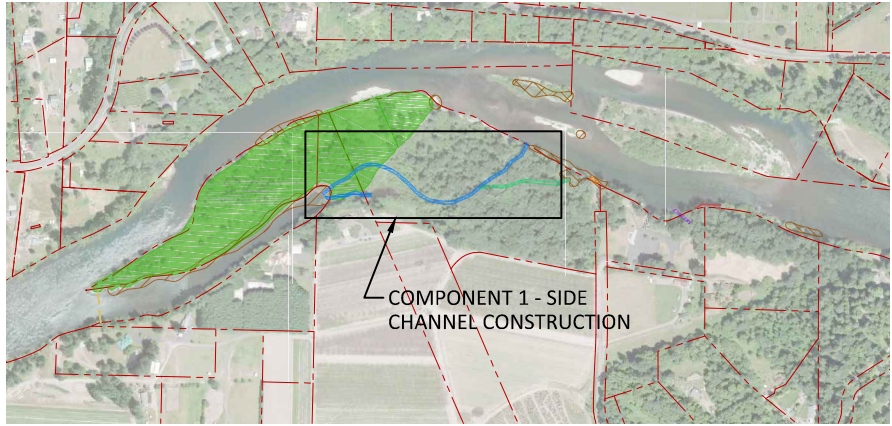
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PROPOSED CONDITIONS, ACCESS
AND PROJECT COMPONENTS

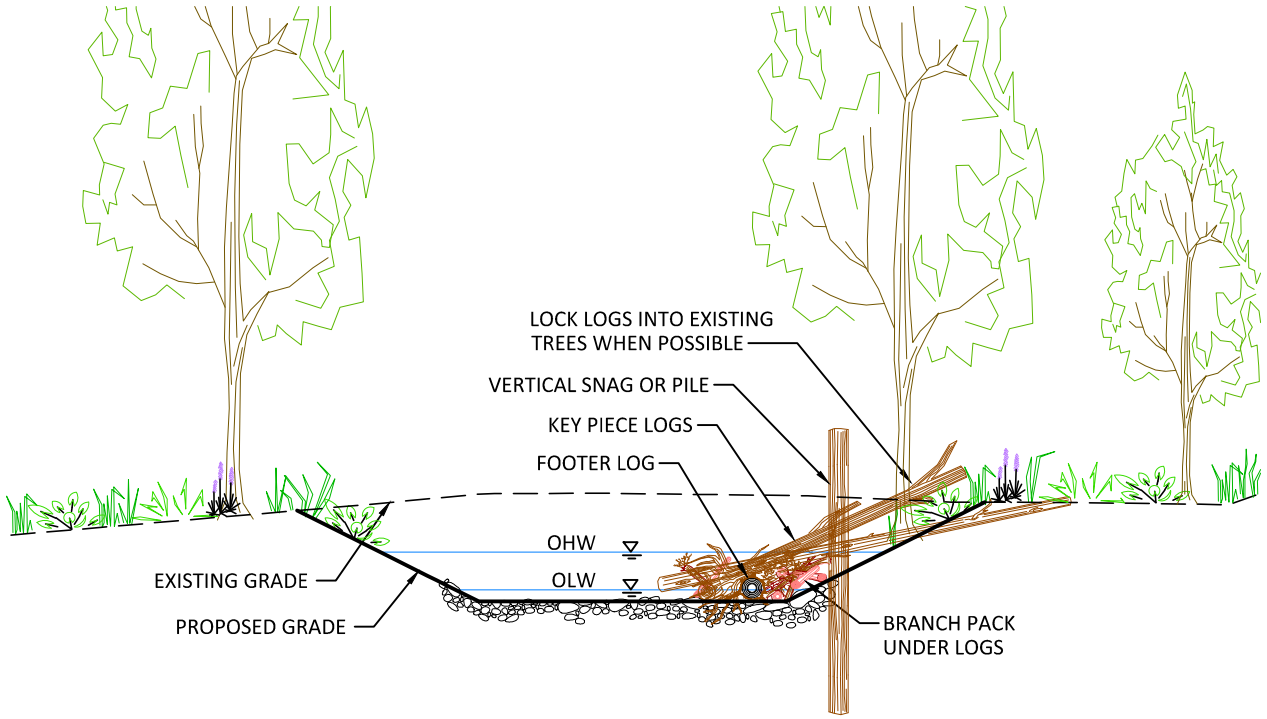
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PLAN



KEY MAP
NOT TO SCALE



1
4

SECTION - CONSTRUCTED SIDE CHANNEL LWD

SCALE: 1" = 10'

LEGEND

- NEW LWD, APPROX. SIZE AND LOCATION
- EXISTING CONTOURS (1-FT INTERVAL)
- COMPONENT 1
- WDFW CHUM CHANNEL
- PROPOSED GRADING (1-FT CONTOURS)

Preliminary
Not for Construction

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MM	1/08/14	13-02-01
APPROVED	DATE	PROJECT

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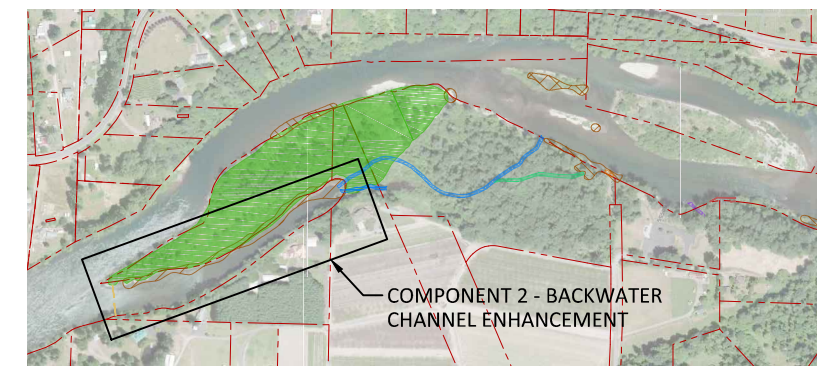
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COMPONENT 1 - SIDE
CHANNEL CONSTRUCTION

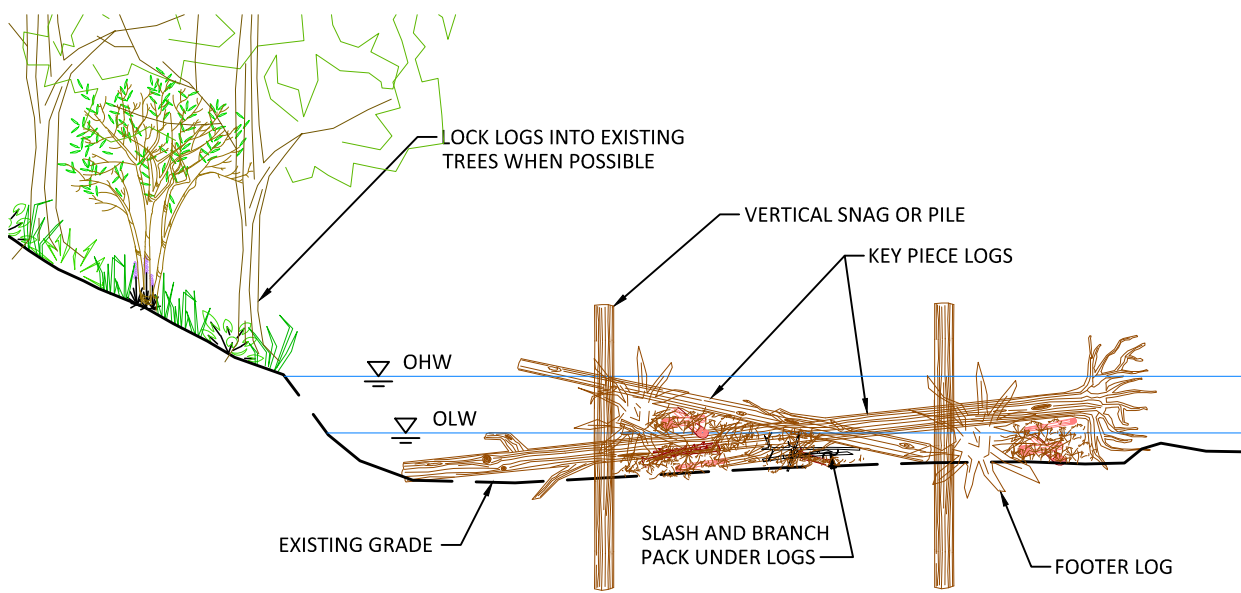
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PLAN



KEY MAP
NOT TO SCALE



1
5 SECTION - BACKWATER ENHANCEMENT LWD
SCALE: 1" = 10'

LEGEND

- COFFER DAM
- NEW LWD, APPROX. SIZE AND LOCATION
- SLASH
- EXISTING CONTOURS (1-FT INTERVAL)
- COMPONENT 1

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/08/14	13-02-01
APPROVED	DATE	PROJECT

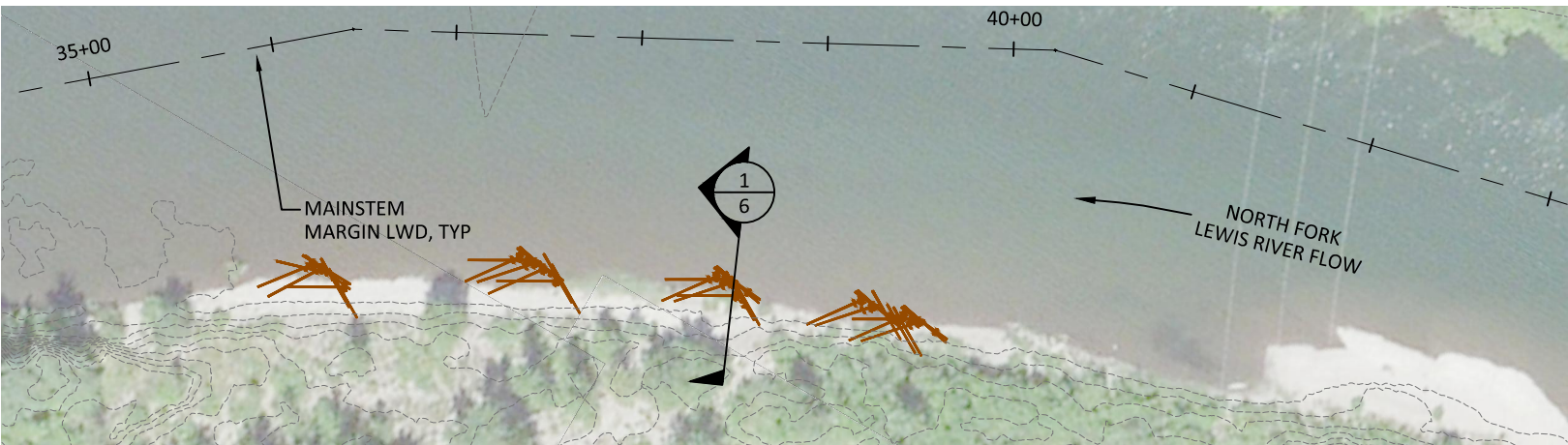
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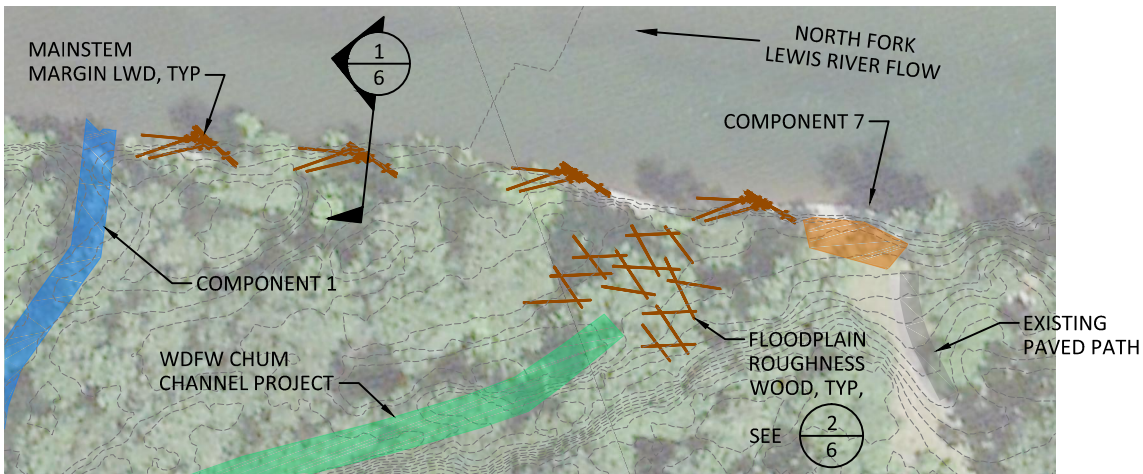
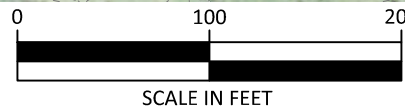
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COMPONENT 2 - BACKWATER
CHANNEL ENHANCEMENT

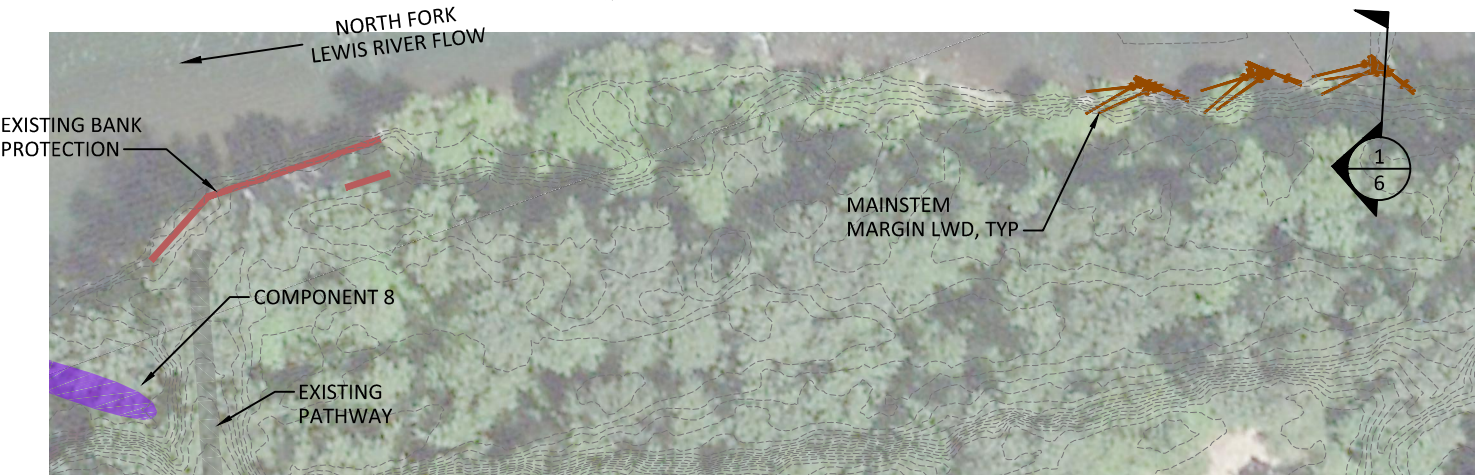
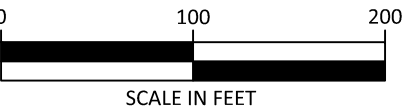
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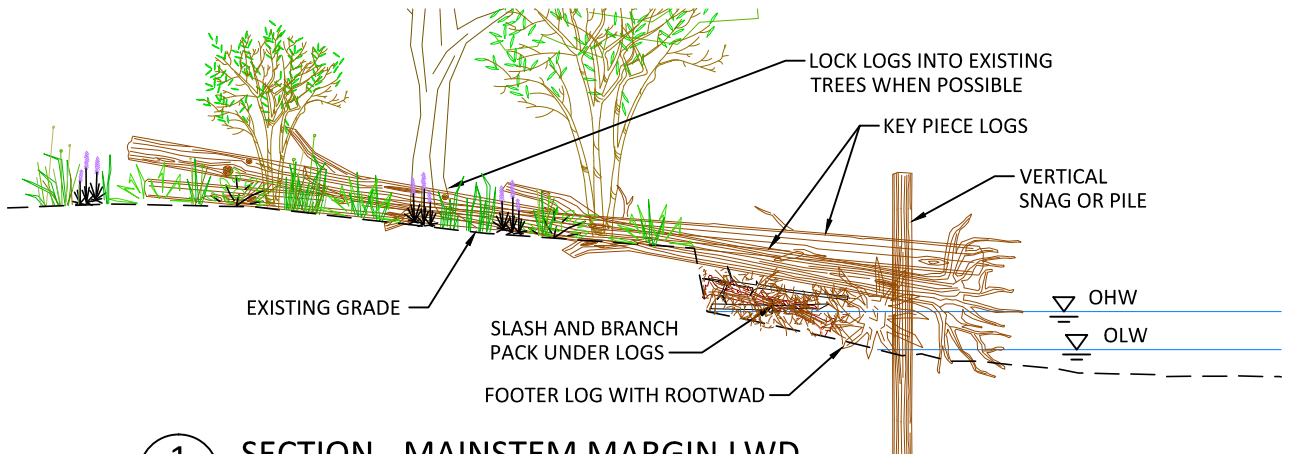
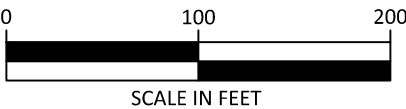
PLAN - VIEW A



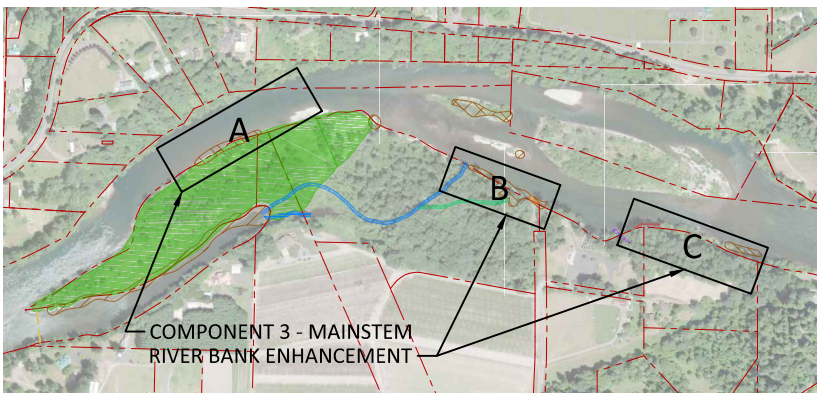
PLAN - VIEW B



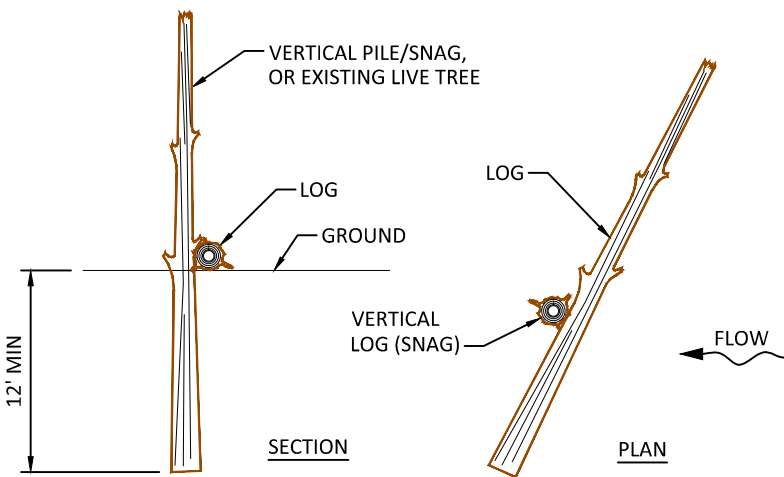
PLAN - VIEW C



SECTION - MAINSTEM MARGIN LWD
SCALE: 1" = 10'



KEY MAP
NOT TO SCALE



TYPICAL FLOODPLAIN ROUGHNESS LWD
NOT TO SCALE

LEGEND

- NEW LWD, APPROX. SIZE AND LOCATION
- EXISTING CONTOURS (1-FT INTERVAL)
- COMPONENT 1
- COMPONENT 8
- WDFW CHUM CHANNEL PROJECT

Preliminary
Not for Construction

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DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/08/14	13-02-01
APPROVED	DATE	PROJECT

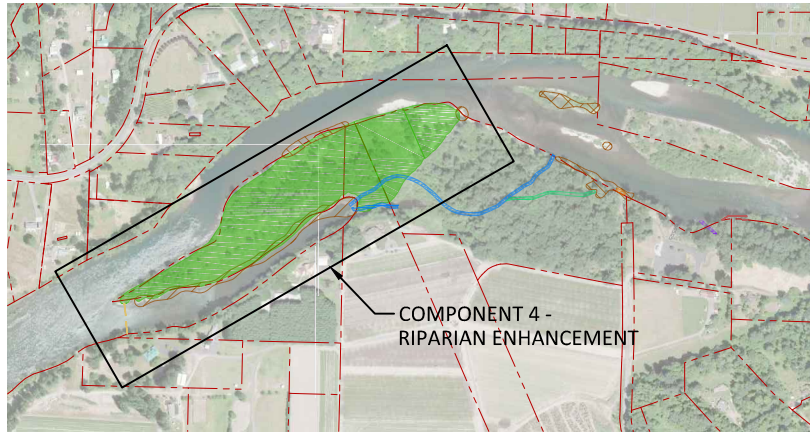
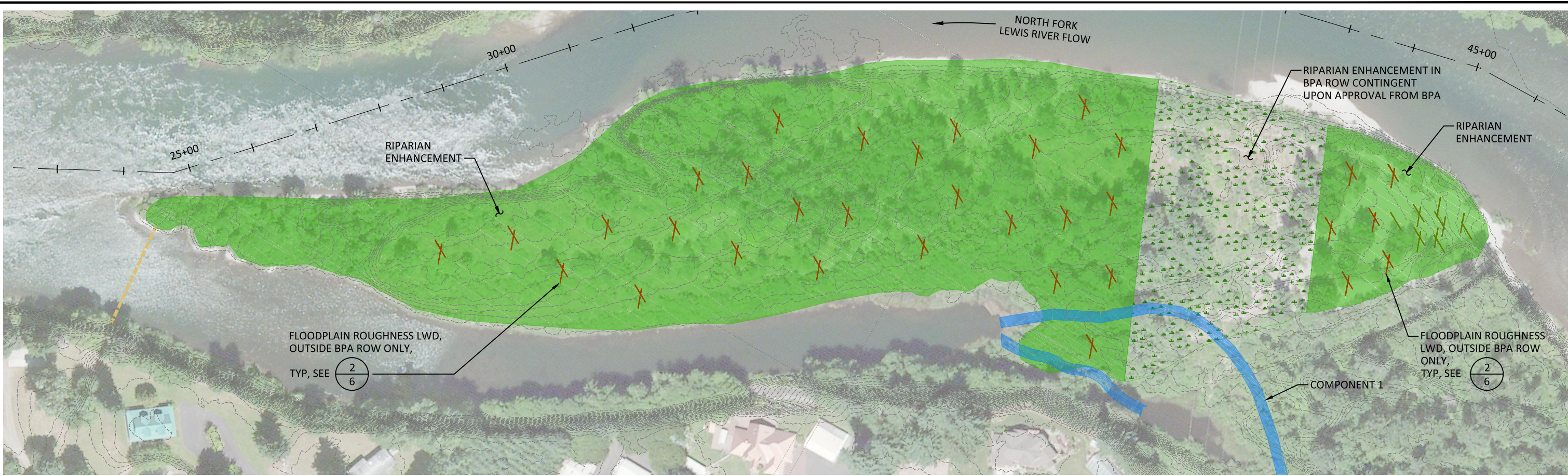
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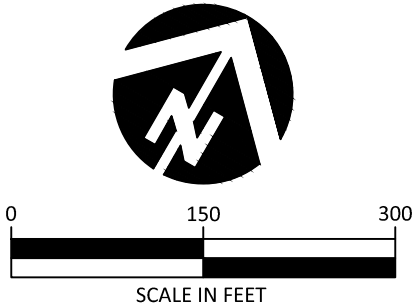
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COMPONENT 3 - MAINSTEM
RIVER BANK ENHANCEMENT

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ZONED PLANTING PLAN
AND SPECIES LISTS TO BE
COMPLETED PENDING
VEGETATION SURVEY



LEGEND

- NEW LWD, APPROX. SIZE AND LOCATION
- EXISTING CONTOURS (1-FT INTERVAL)
- COMPONENT 1
- COMPONENT 4
- COMPONENT 4 (BPA EASEMENT)

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

DF DRAWN	MM,JE DESIGNED	GJ CHECKED
MM APPROVED	1/08/14 DATE	13-02-01 PROJECT

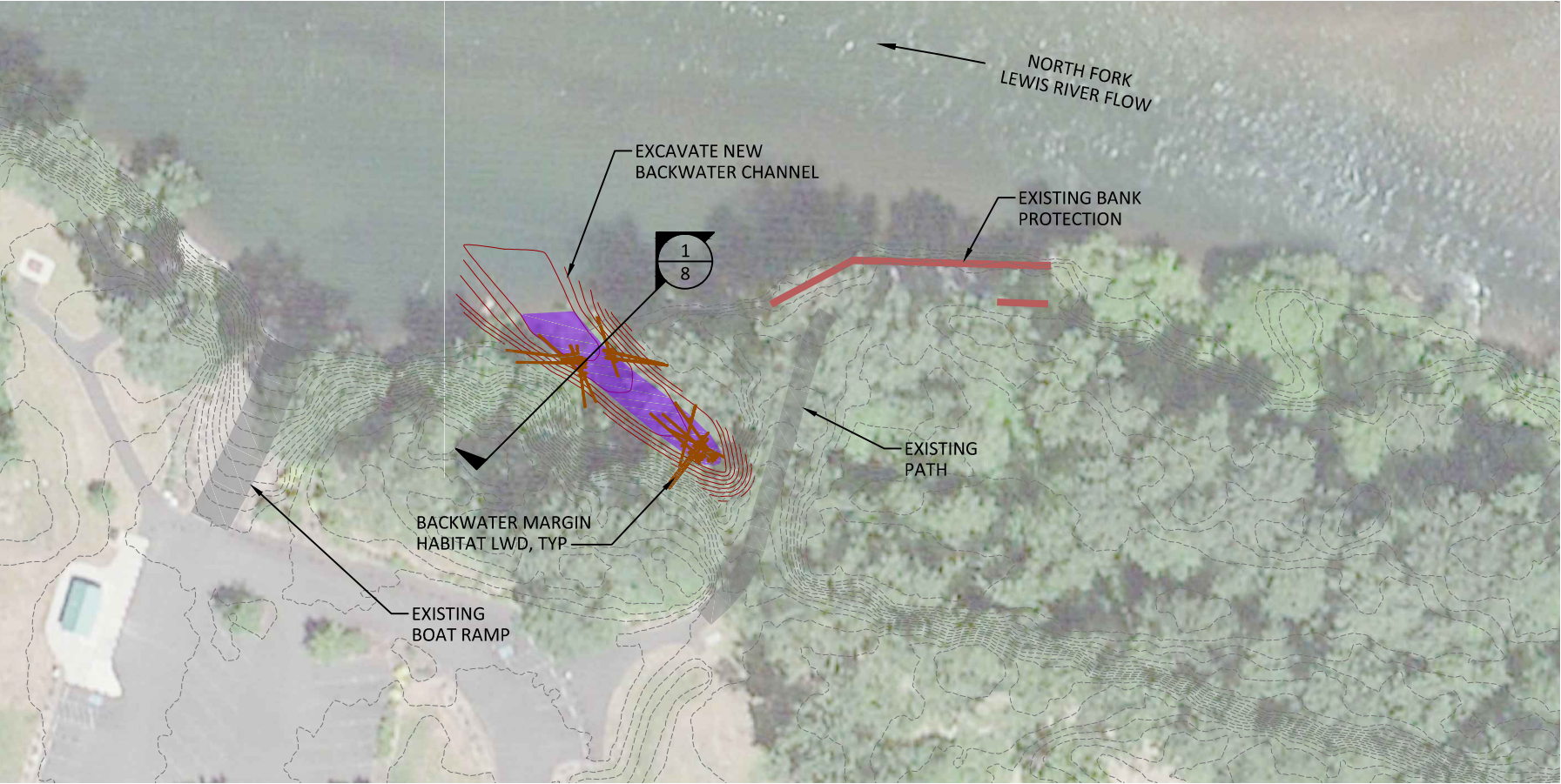
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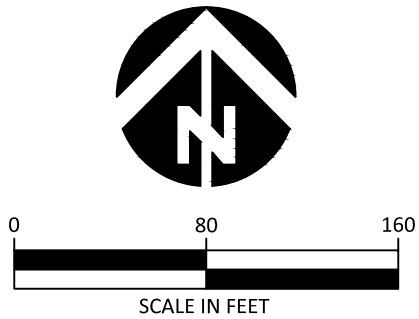
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COMPONENT 4 -
RIPARIAN ENHANCEMENT





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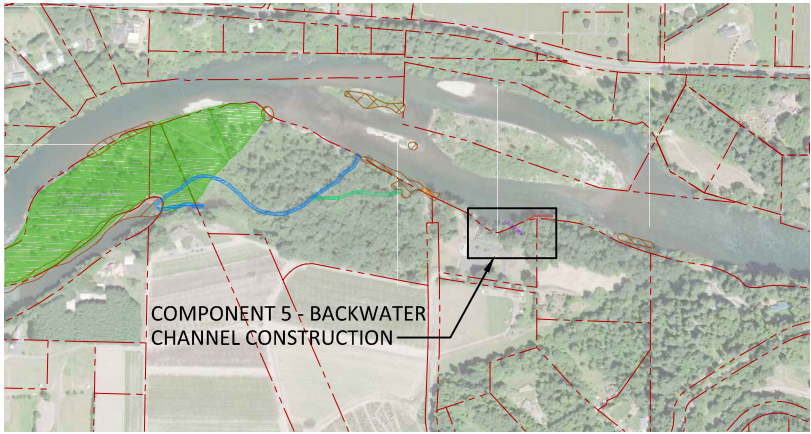


PLAN

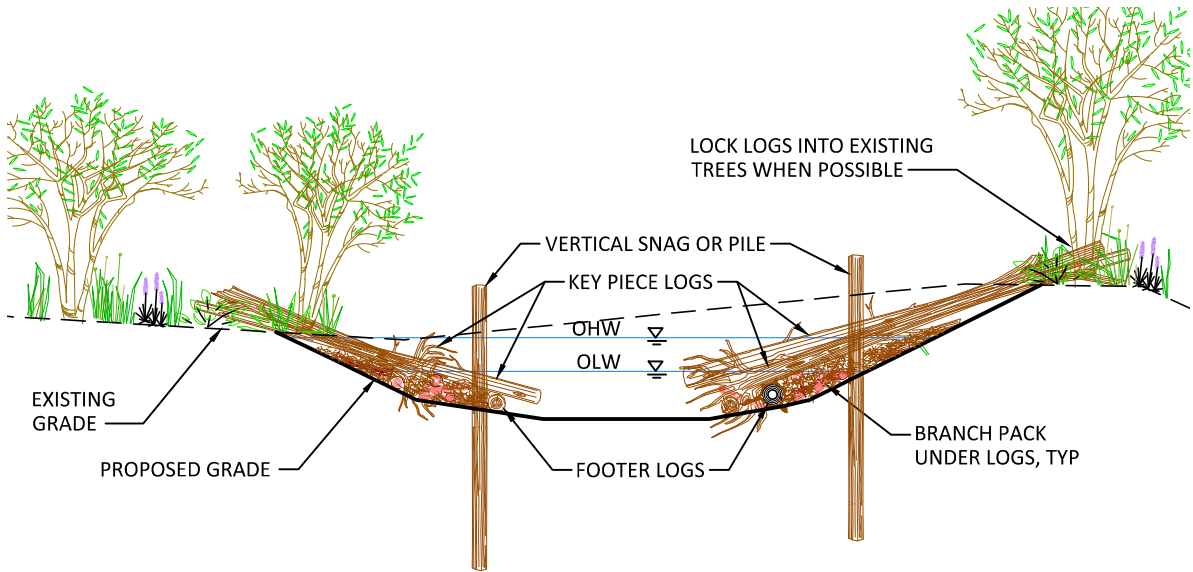


LEGEND

-  NEW LWD, APPROX. SIZE AND LOCATION
-  EXISTING CONTOURS (1-FT INTERVAL)
-  PROPOSED CONTOURS (1-FT INTERVAL)
-  COMPONENT 5



KEY MAP
NOT TO SCALE



1/8 SECTION - BACKWATER CHANNEL CONSTRUCTION
SCALE: 1" = 10'

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/08/14	13-02-01
APPROVED	DATE	PROJECT

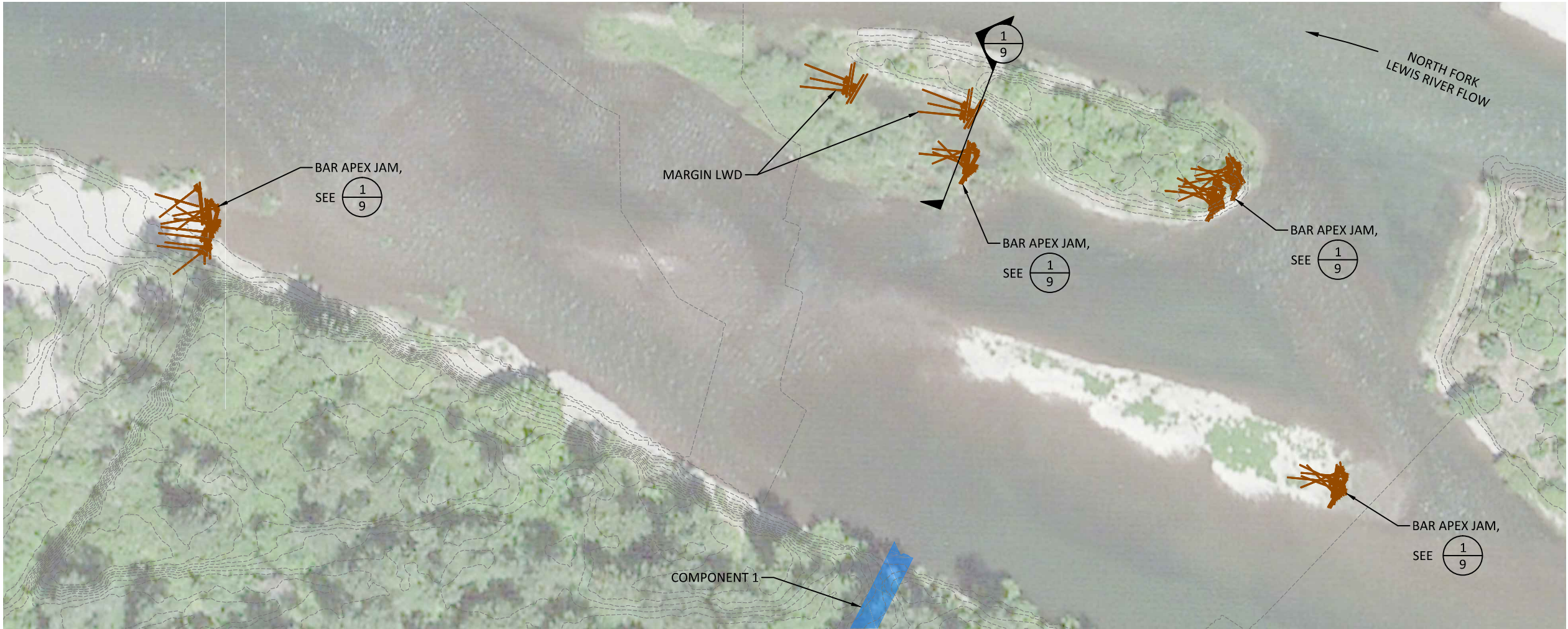
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Fish Habitat Restoration Project



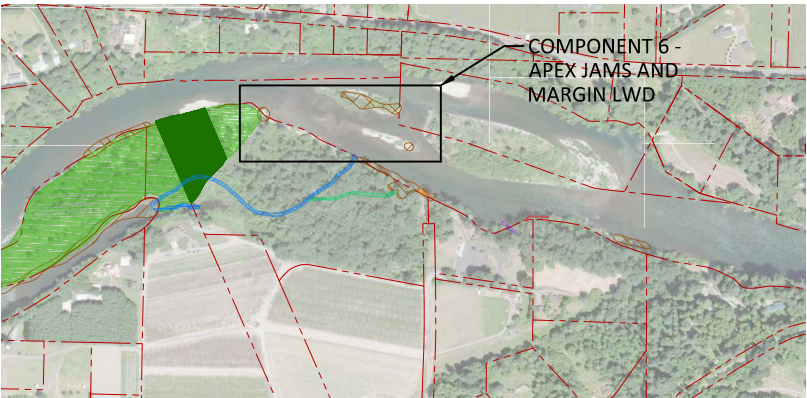
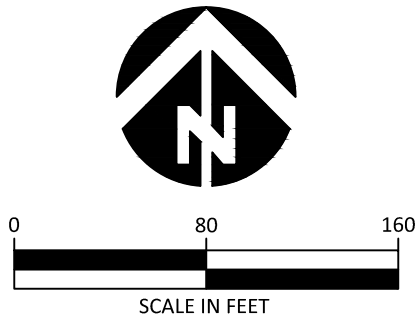
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COMPONENT 5 - BACKWATER
CHANNEL CONSTRUCTION

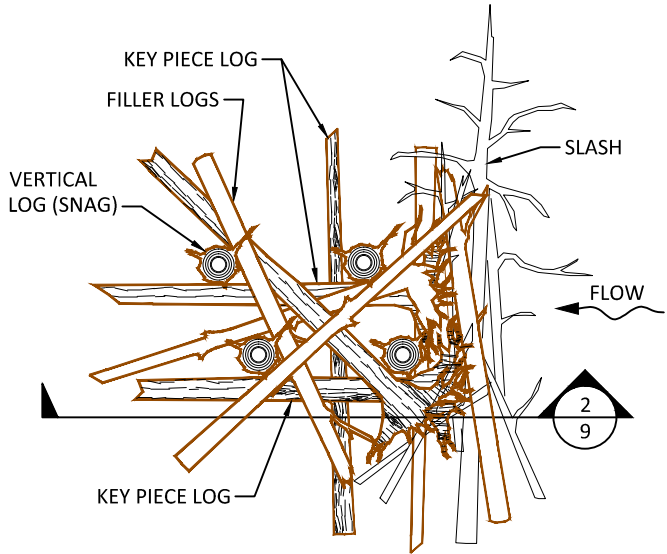
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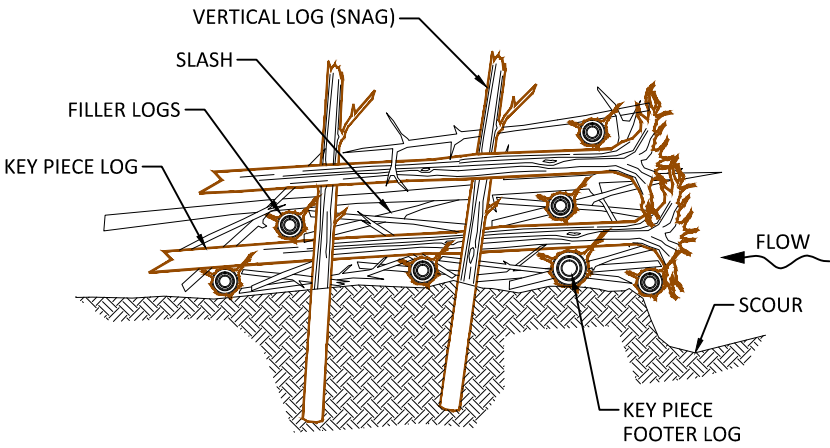
PLAN



KEY MAP
NOT TO SCALE



1/9 PLAN - TYPICAL BAR APEX LOG JAM
NOT TO SCALE



NOTE: ANCHORING AND BALLASTING TECHNIQUES TO BE DETERMINED.

2/9 SECTION - TYPICAL BAR APEX LOG JAM
NOT TO SCALE

LEGEND

- NEW LWD, APPROX. SIZE AND LOCATION
- EXISTING CONTOURS (1-FT INTERVAL)
- COMPONENT 1

Preliminary
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APPROVED	DATE	PROJECT

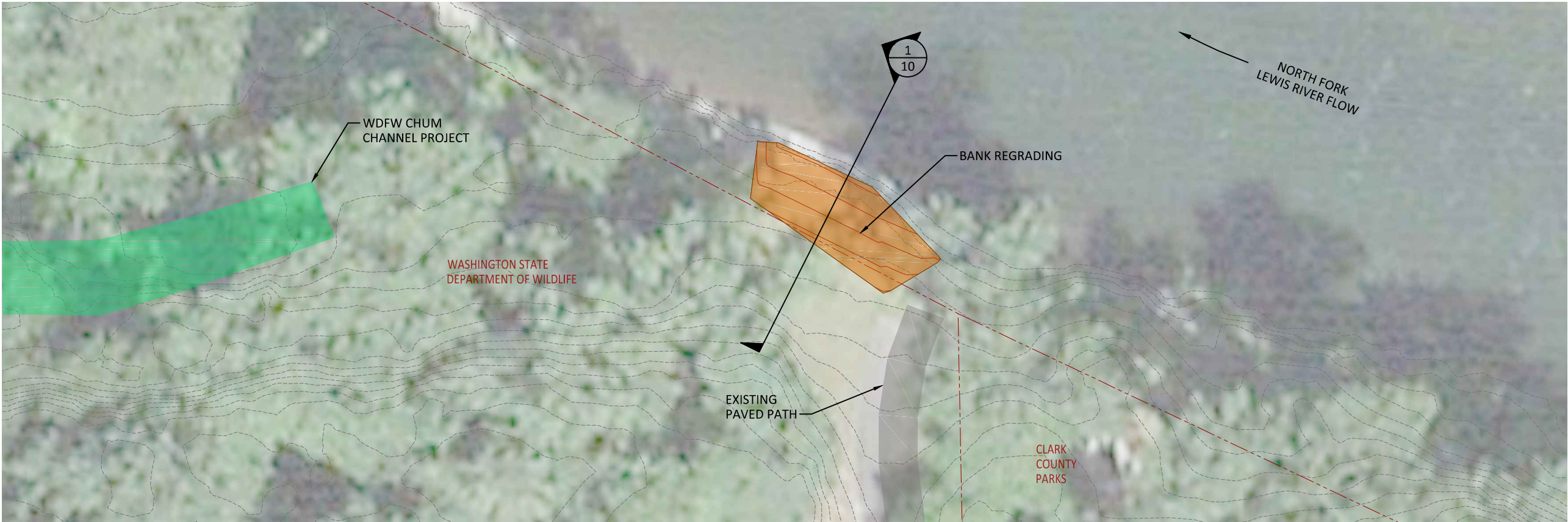
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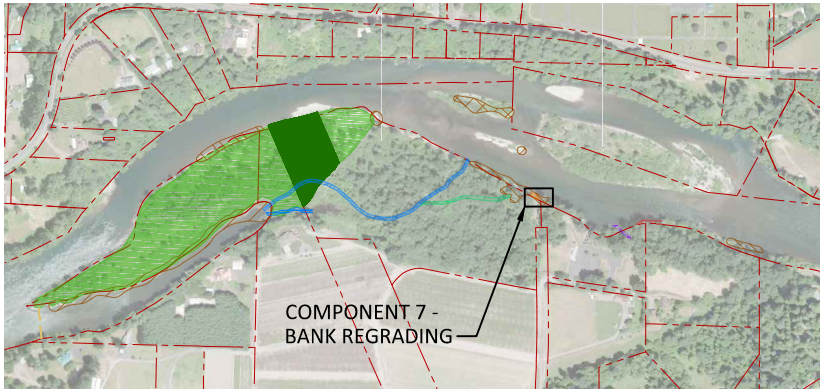
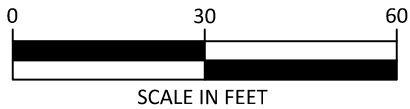
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COMPONENT 6 - APEX
JAMS AND MARGIN LWD

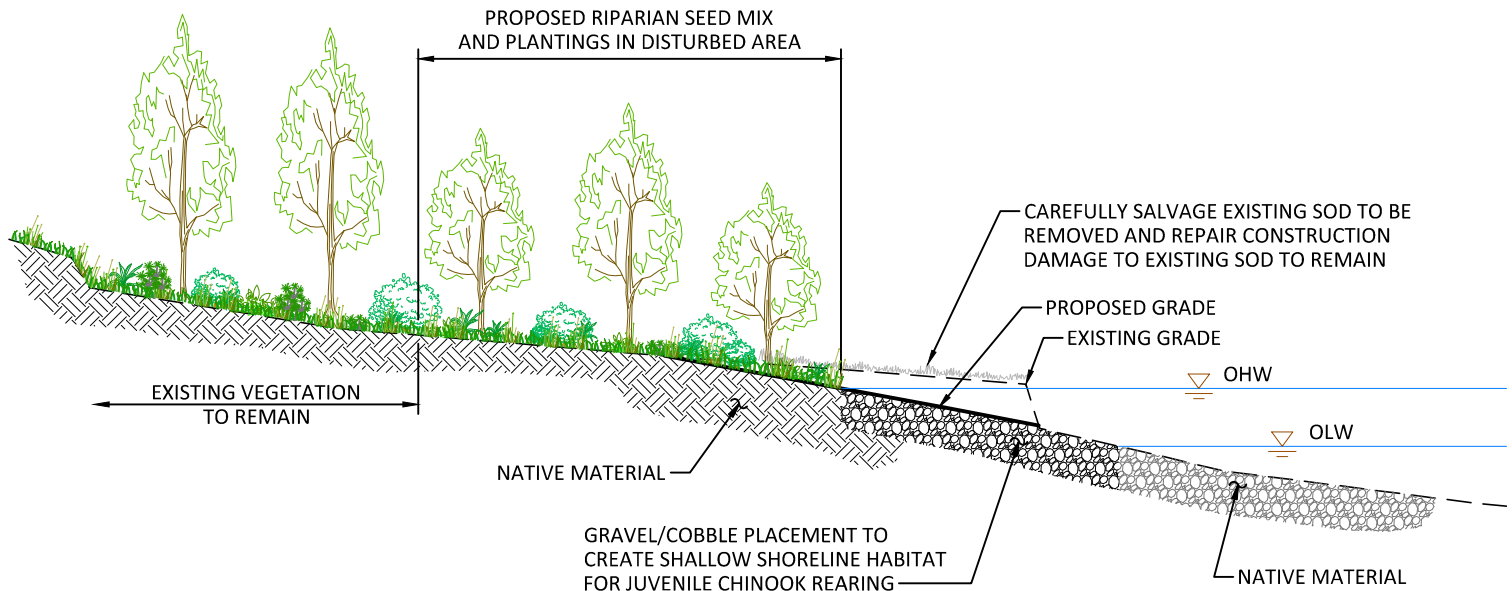
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PLAN



KEY MAP
NOT TO SCALE



1
10

SECTION - MAINSTEM BANK REGRADING

SCALE: 1" = 10'

LEGEND

- PROPOSED CONTOURS (1-FT INTERVAL)
- EXISTING CONTOURS (1-FT INTERVAL)
- PROPERTY LINES
- WDFW CHUM CHANNEL PROJECT

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APPROVED	DATE	PROJECT

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COMPONENT 7 - BANK
REGRADING

SHEET
10 OF 10