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 ft^2 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 ft^2 new complex rearing habitat
4) Floodplain roughness and riparian enhancement = 172,240 ft^2
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 aquistion
- 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 <u>to avoid</u> 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

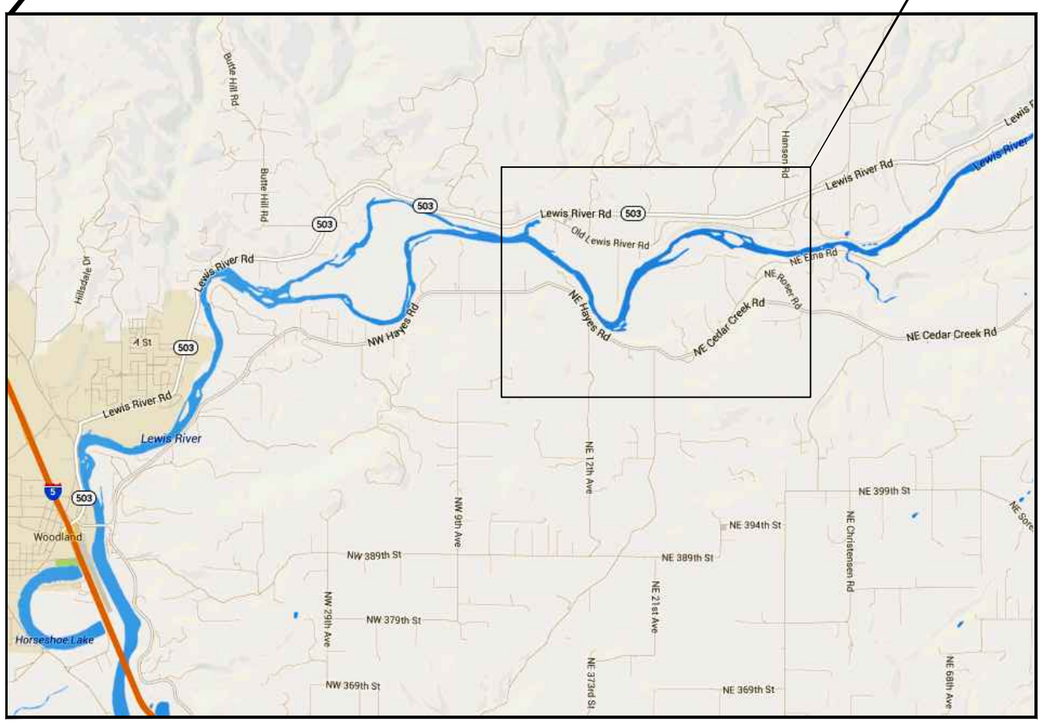
ACC Funds - Expanded Budget

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	$ 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	$ 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 construct	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/Dogwoo	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 Mgmnt.	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**				

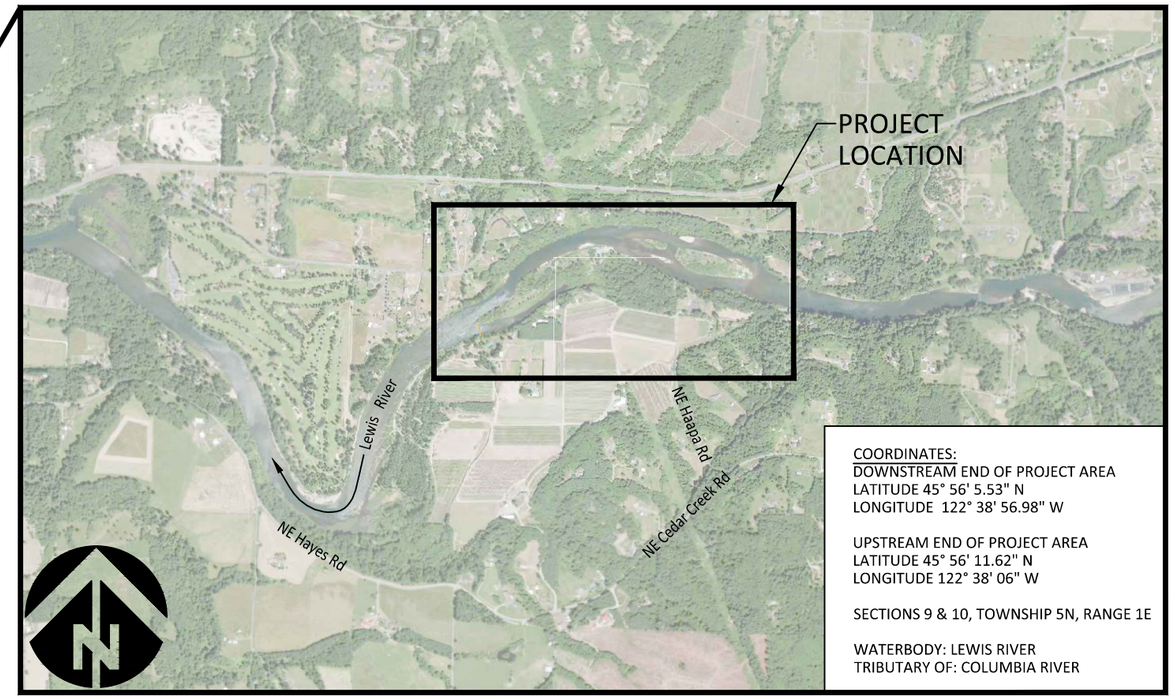
Key
LS = Lump sum
CY = Cubic yard
LF = Lineal foot
SF = Square foot
AC = Acre
EA = Each
HR = Hours

NORTH FORK LEWIS RIVER - HAAPA FISH HABITAT RESTORATION PROJECT
CLARK COUNTY, WASHINGTON
PRELIMINARY DESIGN - JANUARY 28, 2014

LOCATION MAP
STATE OF WASHINGTON



VICINITY MAP
NOT TO SCALE



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

Preliminary
Not for Construction

G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg

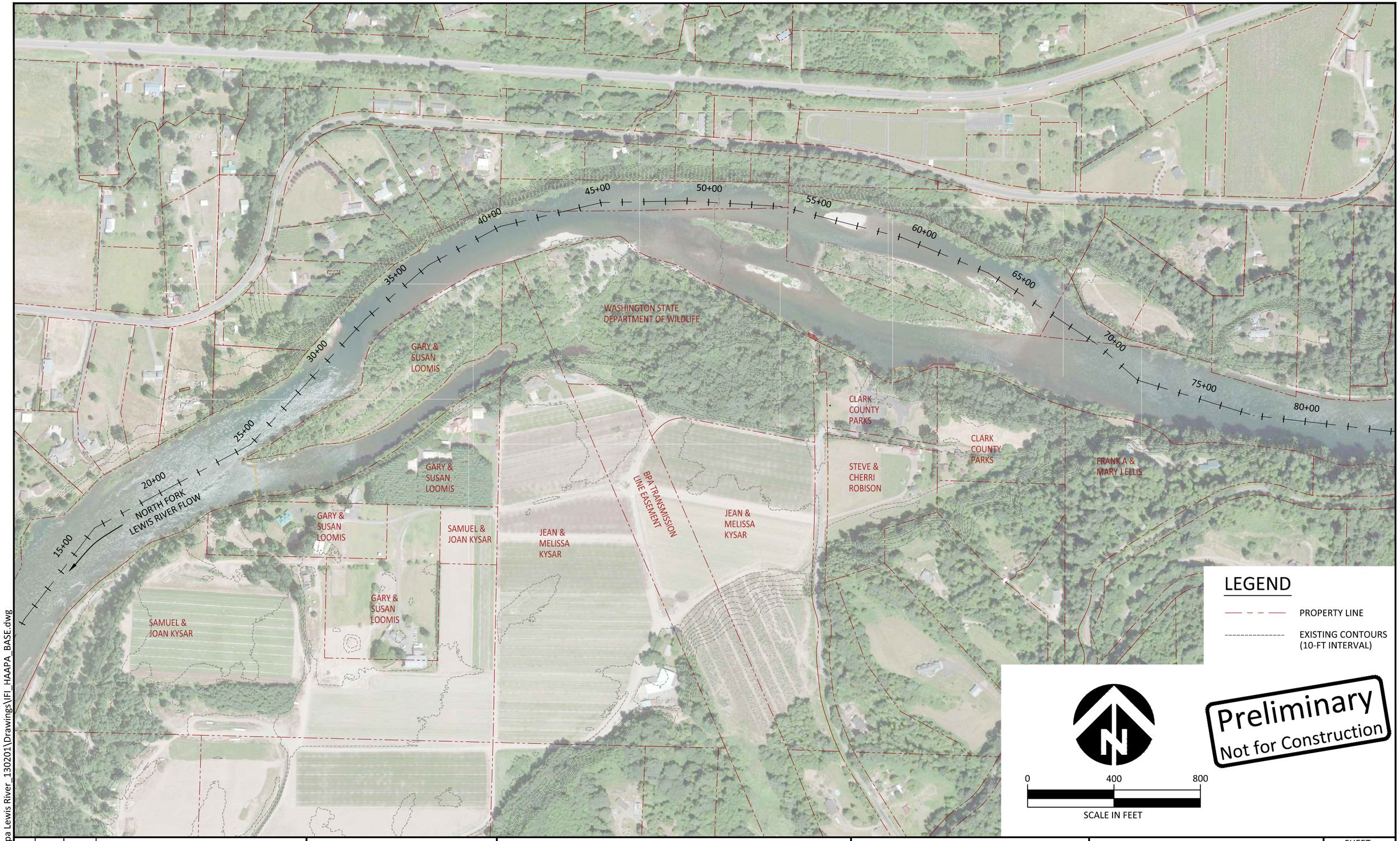
NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

COVER SHEET, INDEX
AND VICINITY MAP



G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg

NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

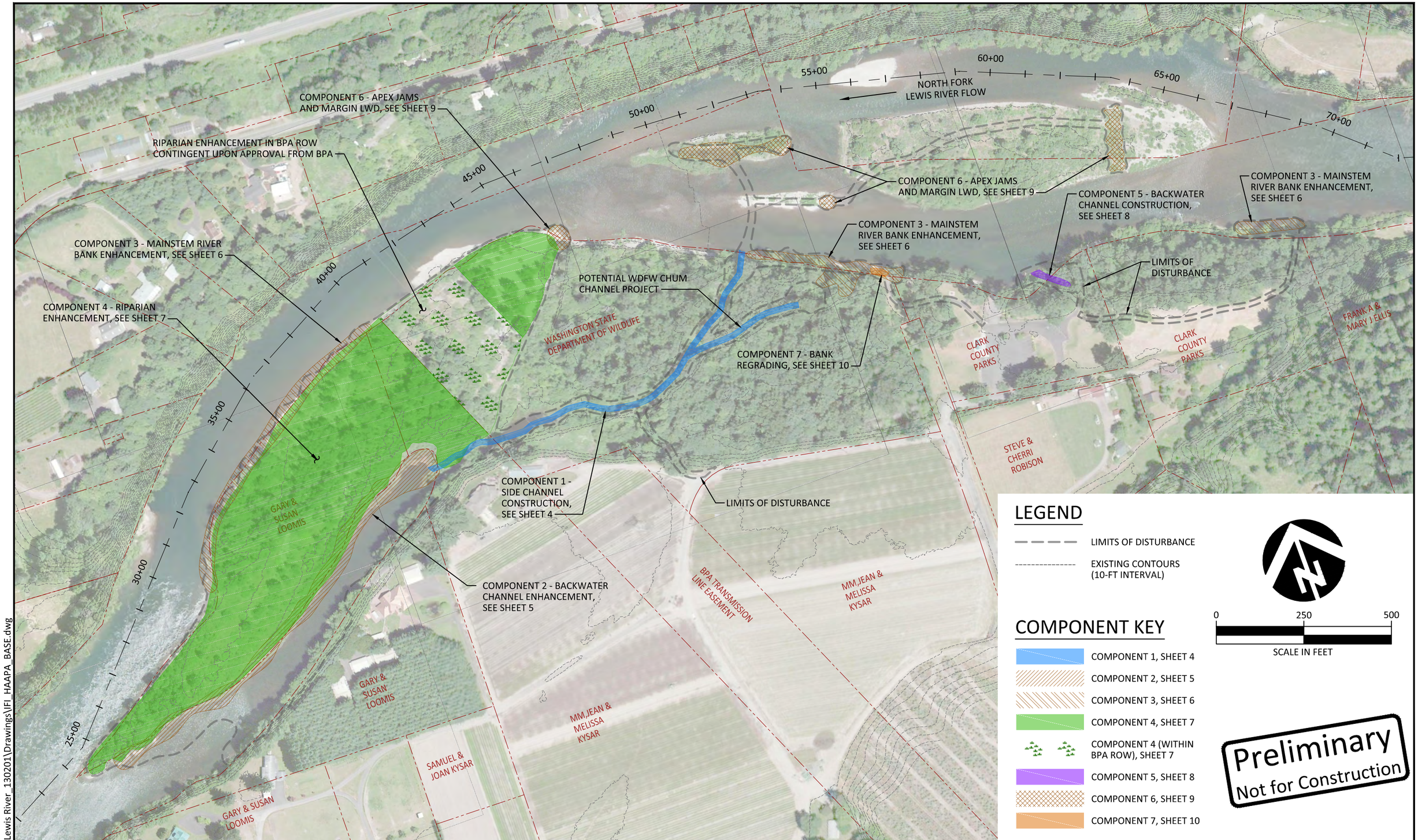
Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve

501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

EXISTING CONDITIONS
AND OWNERSHIP

SHEET
2 OF 10



G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg

NO.	BY	DATE	REVISION DESCRIPTION

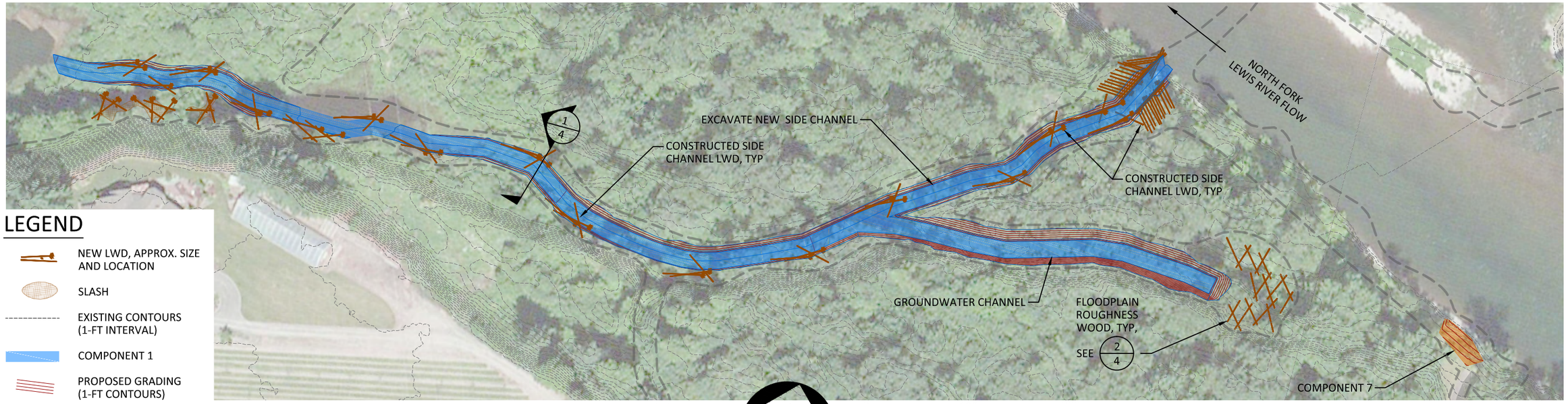
DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

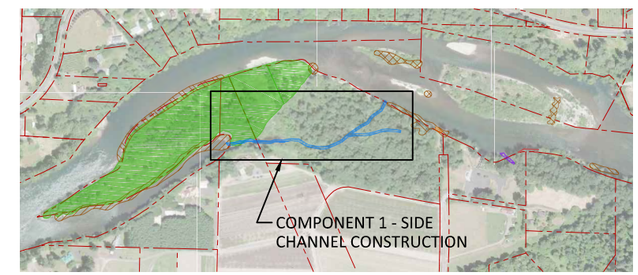
PROPOSED CONDITIONS, ACCESS AND PROJECT COMPONENTS

SHEET 3 OF 10

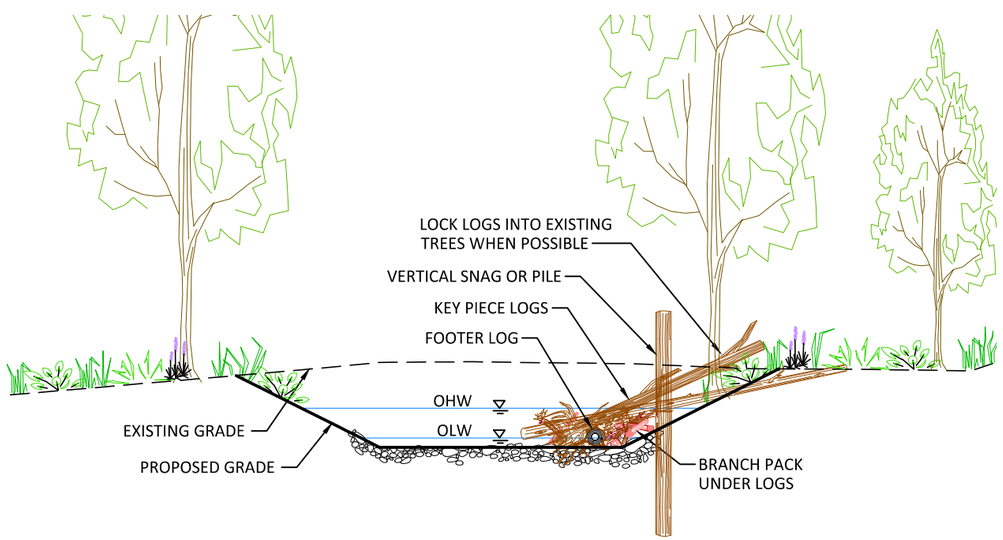


PLAN

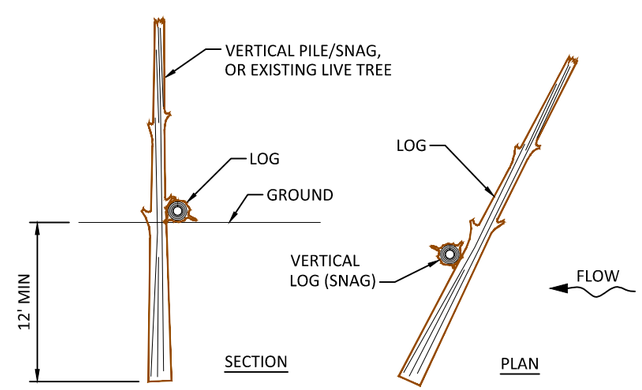
0 100 200
SCALE IN FEET



KEY MAP
NOT TO SCALE



1/4 SECTION - CONSTRUCTED SIDE CHANNEL LWD
SCALE: 1" = 10'



2/4 TYPICAL FLOODPLAIN ROUGHNESS LWD
NOT TO SCALE

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

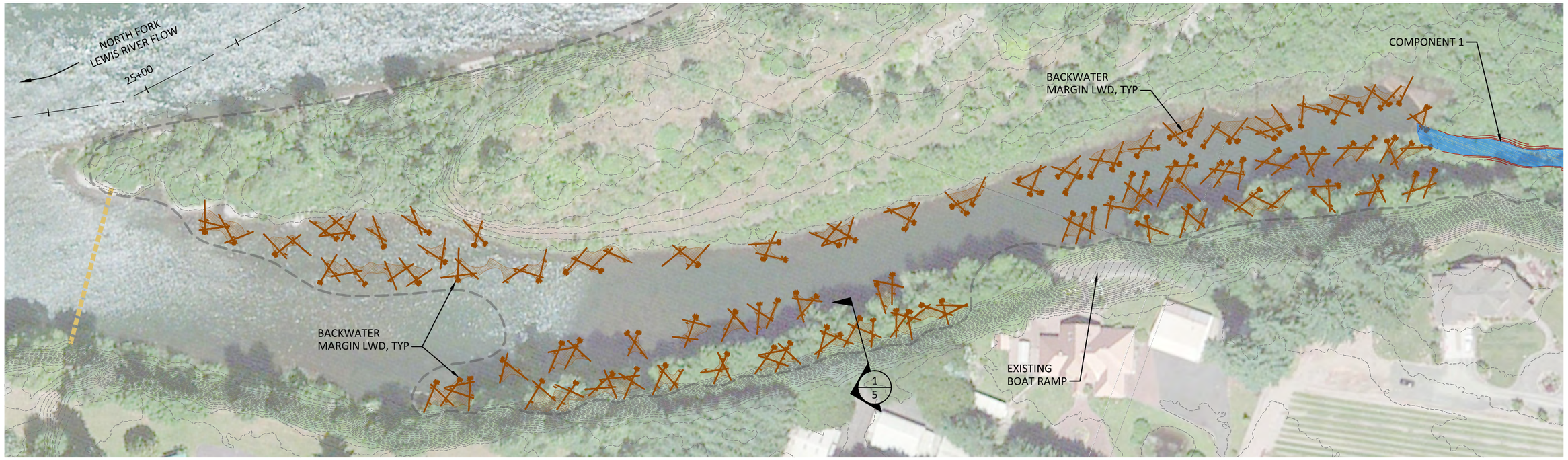
Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

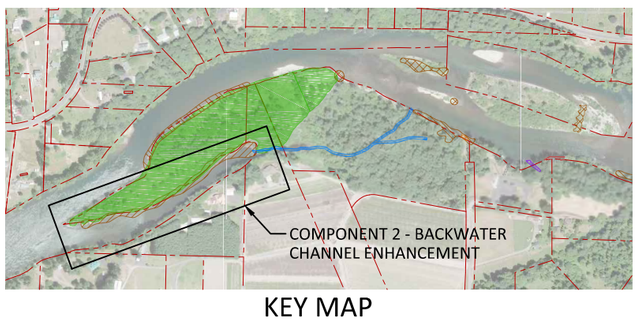
COMPONENT 1 - SIDE CHANNEL CONSTRUCTION

SHEET 4 OF 10

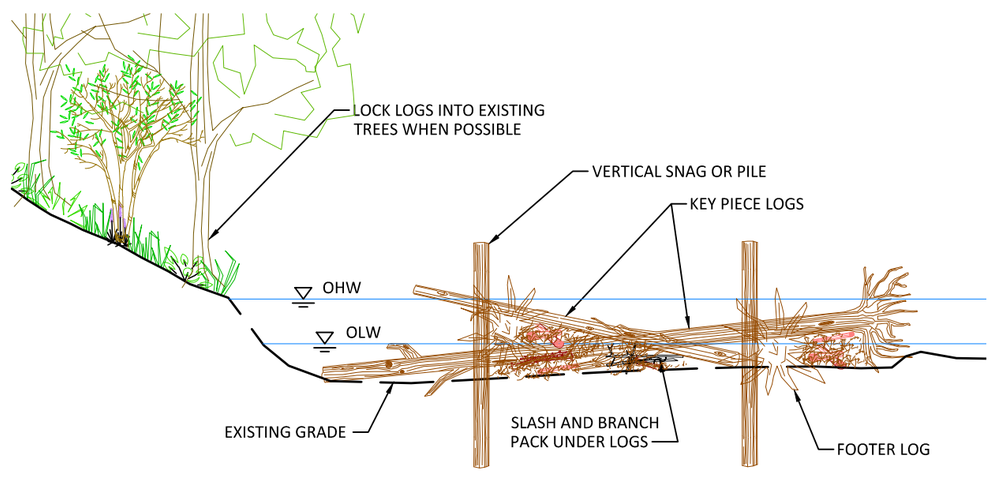
G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg



PLAN



KEY MAP
NOT TO SCALE



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

0 100 200
SCALE IN FEET

LEGEND

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

Preliminary
Not for Construction

G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg

NO.	BY	DATE	REVISION DESCRIPTION

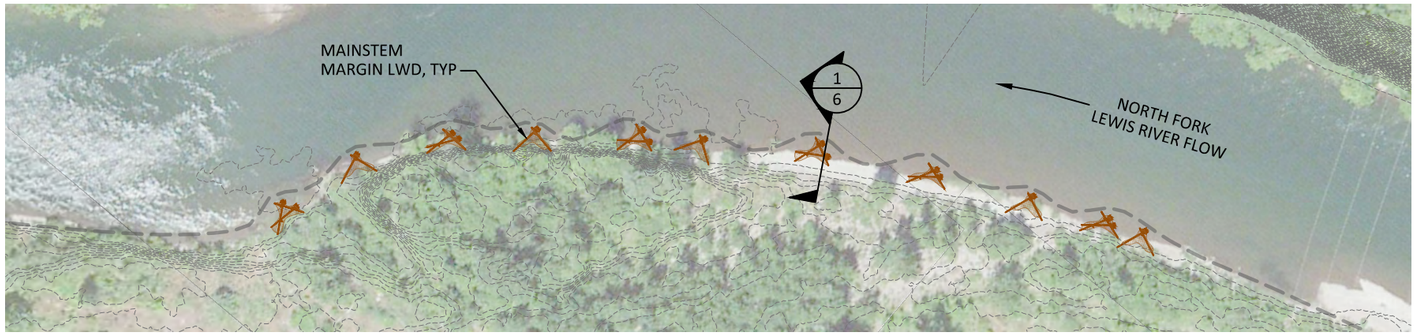
DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

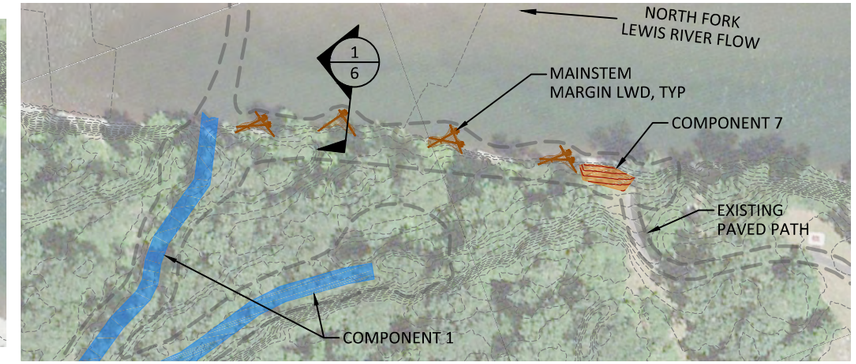
COMPONENT 2 - BACKWATER CHANNEL ENHANCEMENT

SHEET 5 OF 10



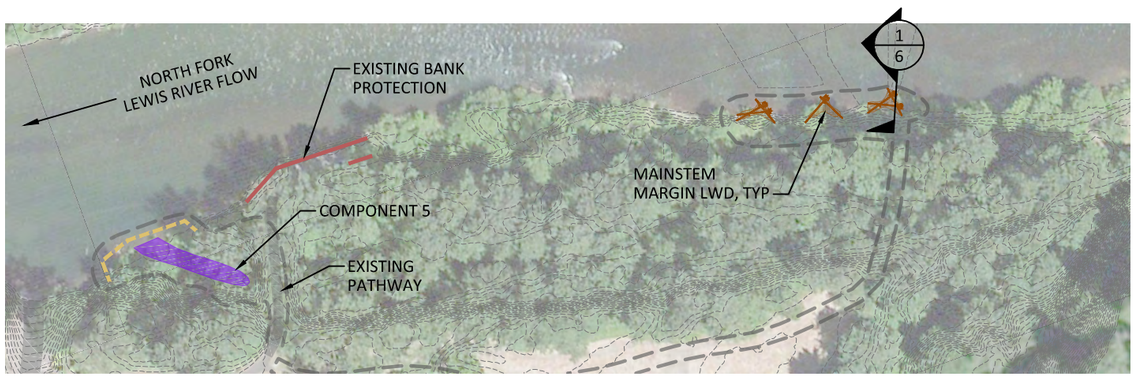
PLAN - VIEW A

0 150 300
SCALE IN FEET



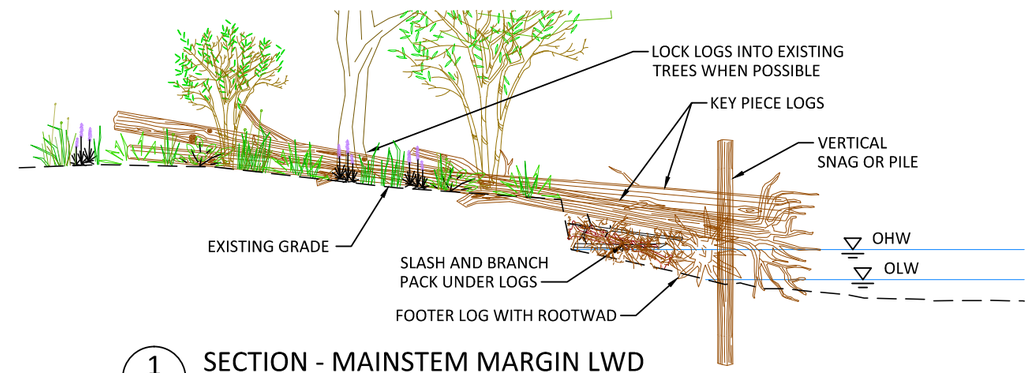
PLAN - VIEW B

0 100 200
SCALE IN FEET

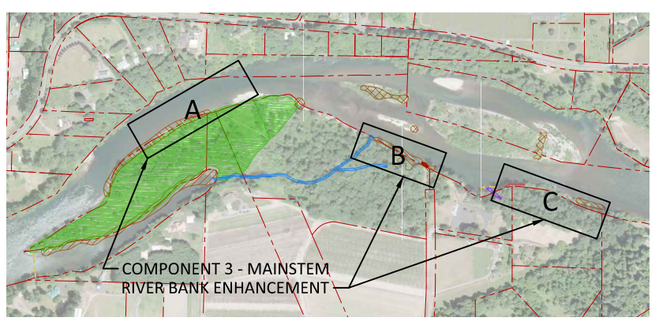


PLAN - VIEW C

0 100 200
SCALE IN FEET



1/6 SECTION - MAINSTEM MARGIN LWD
SCALE: 1" = 10'



KEY MAP
NOT TO SCALE

LEGEND

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

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

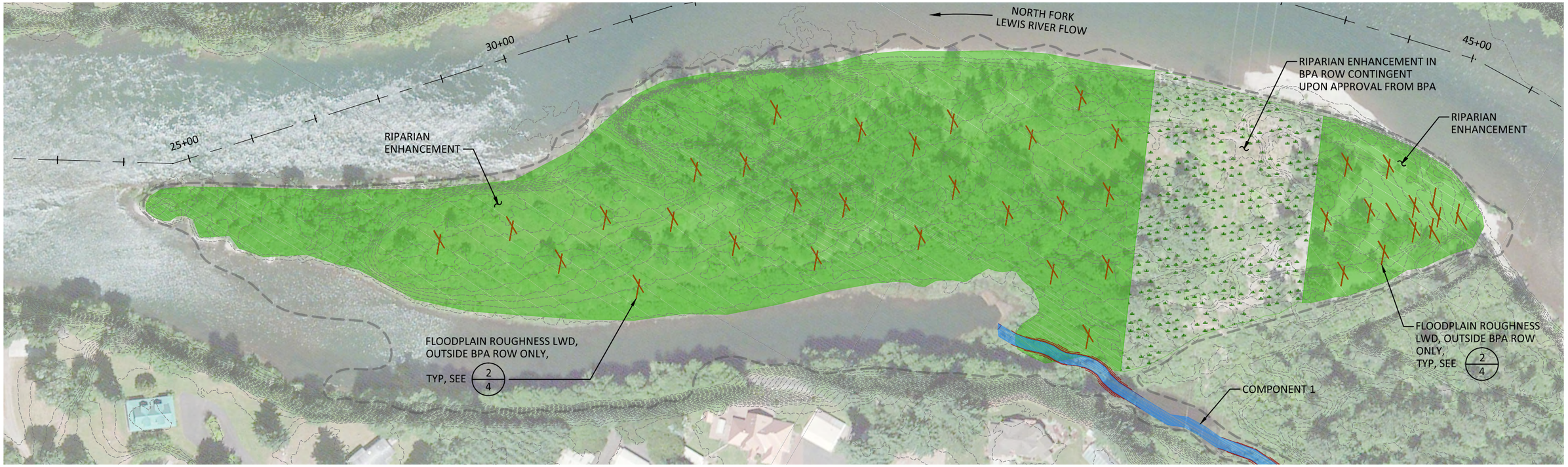
Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

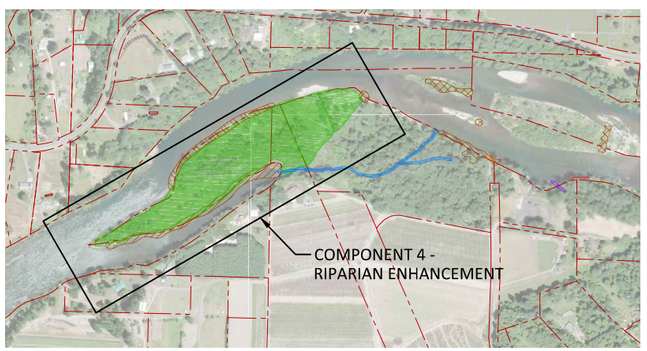
COMPONENT 3 - MAINSTEM
RIVER BANK ENHANCEMENT

SHEET 6 OF 10

G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg



PLAN



KEY MAP

NOT TO SCALE

0 150 300

SCALE IN FEET

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

G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg

NO.	BY	DATE	REVISION DESCRIPTION

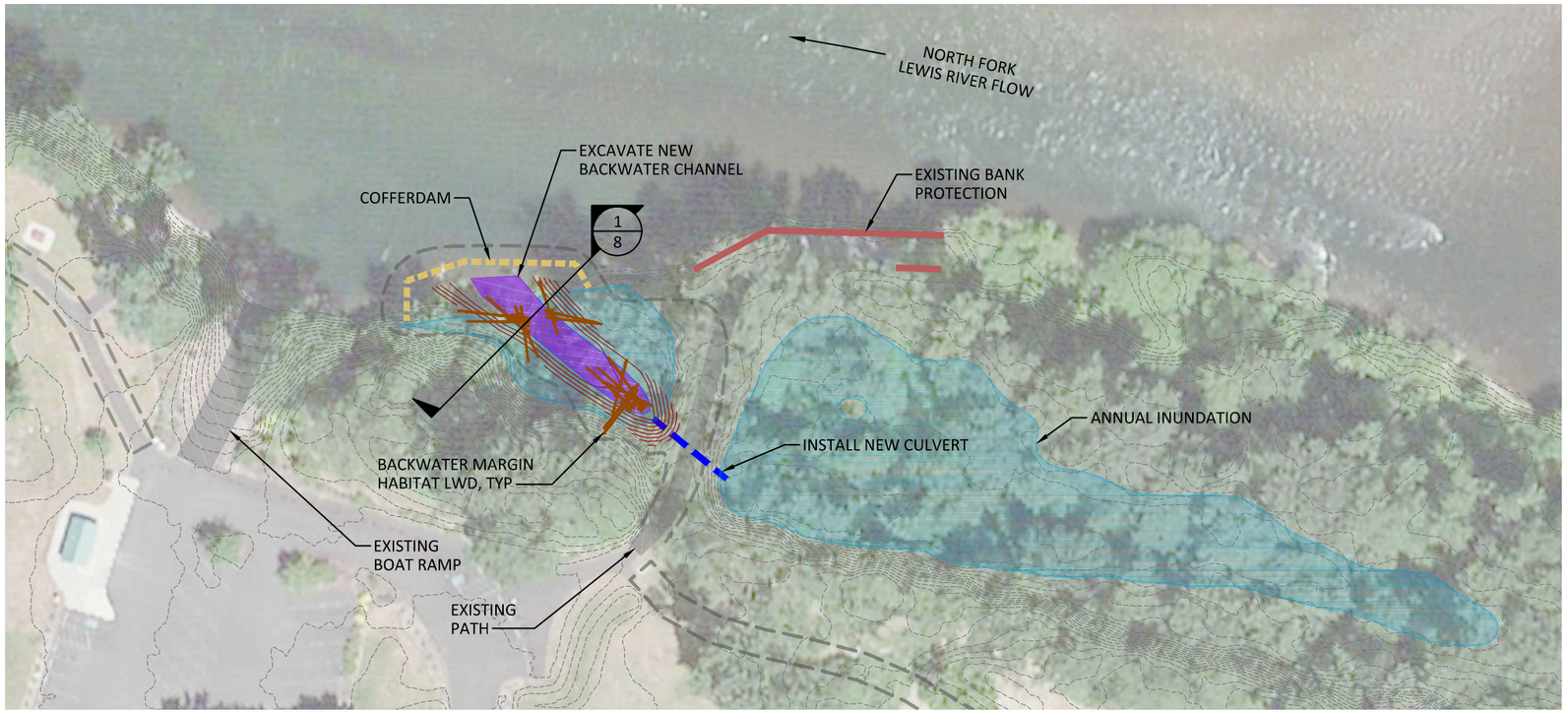
DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

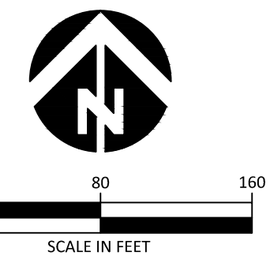
inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

COMPONENT 4 -
RIPARIAN ENHANCEMENT

SHEET 7 OF 10

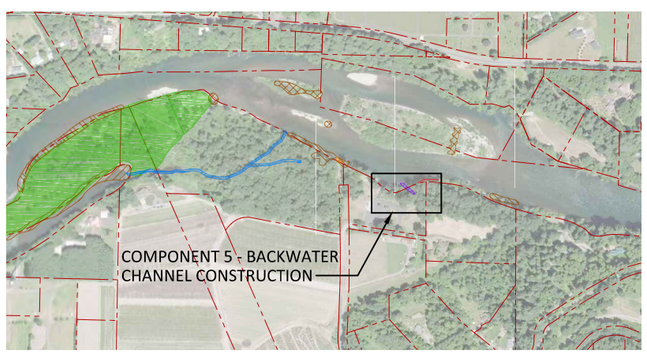


PLAN

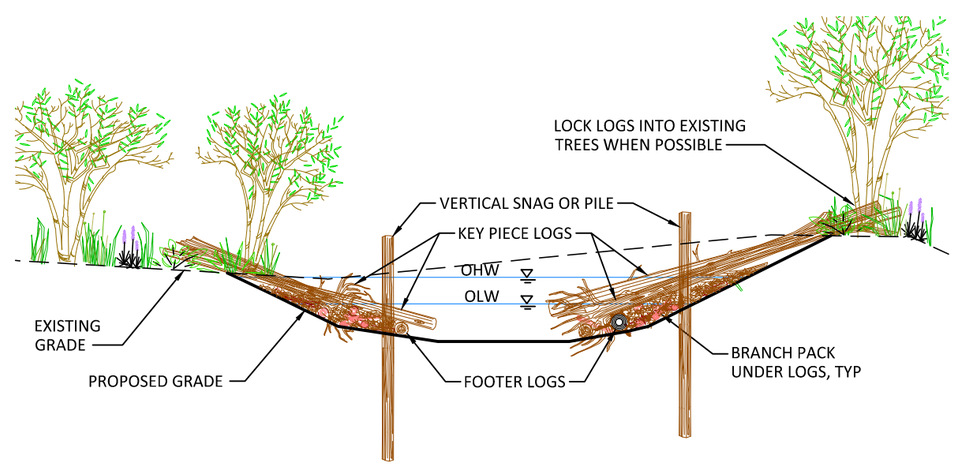


LEGEND

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



KEY MAP
NOT TO SCALE



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

Preliminary
Not for Construction

G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg

NO.	BY	DATE	REVISION DESCRIPTION

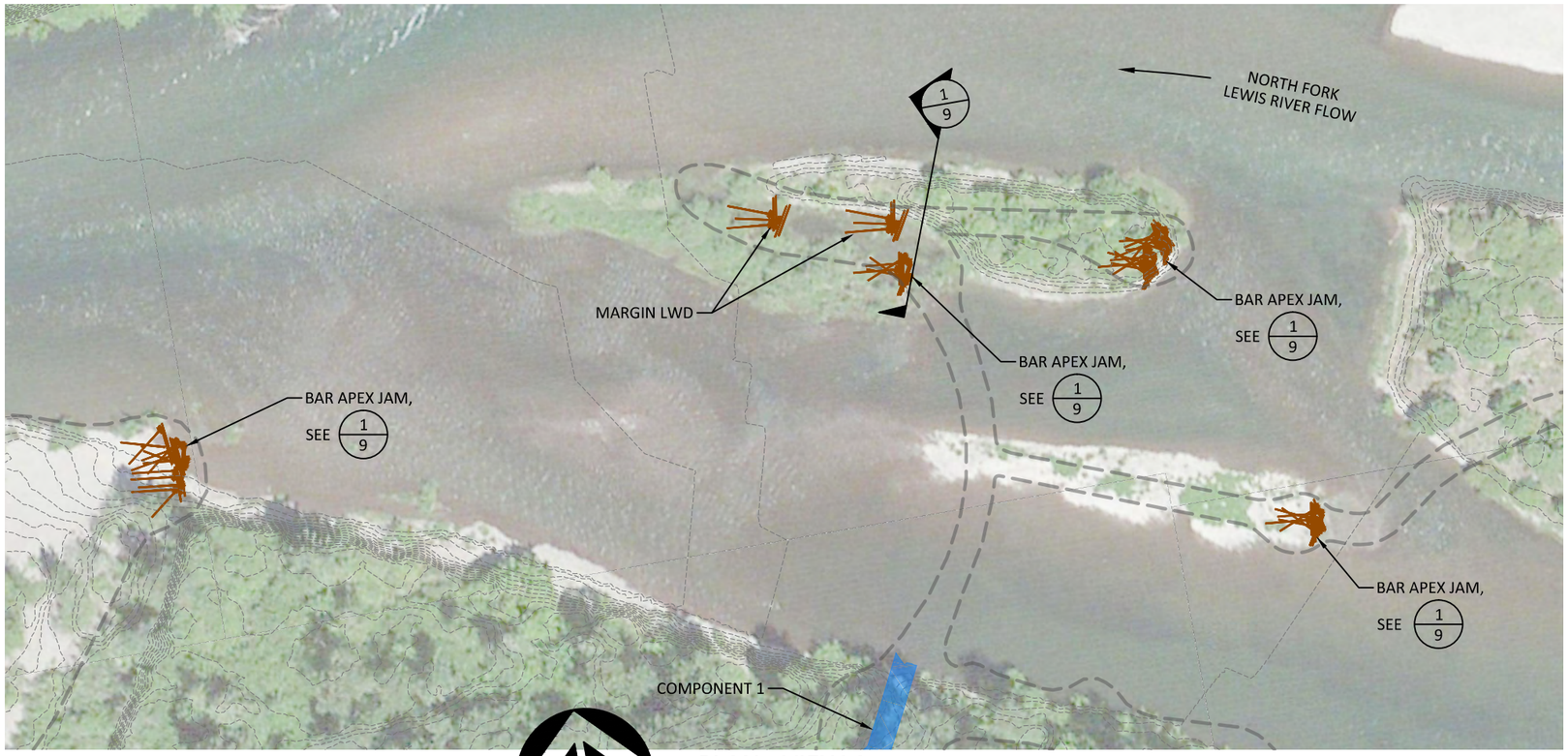
DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

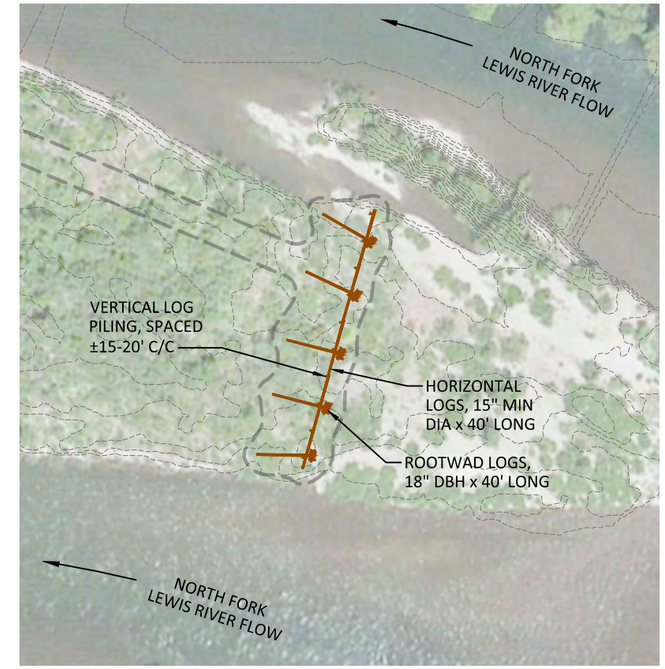
COMPONENT 5 - BACKWATER CHANNEL CONSTRUCTION

SHEET 8 OF 10



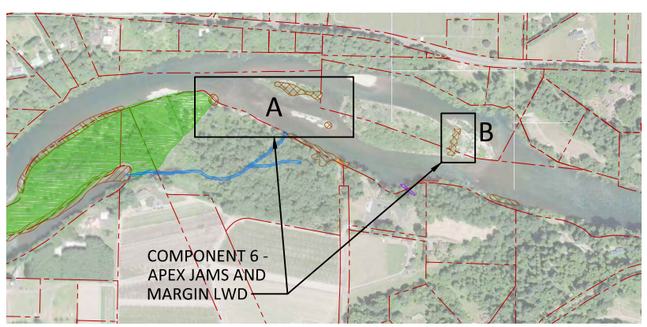
PLAN - VIEW A

0 80 160
SCALE IN FEET

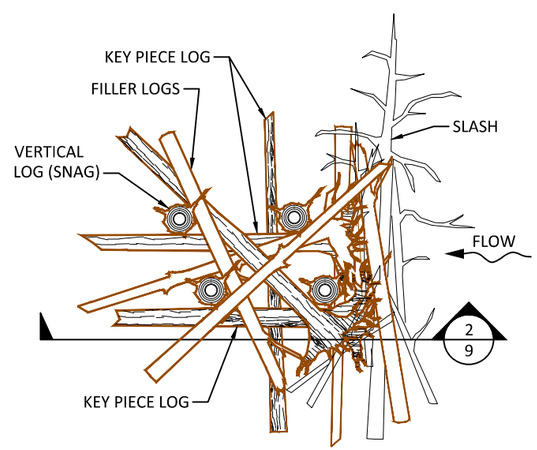


PLAN - VIEW B

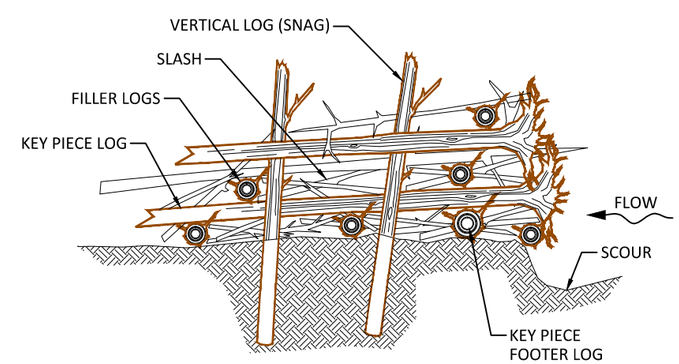
0 80 160
SCALE IN FEET



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
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

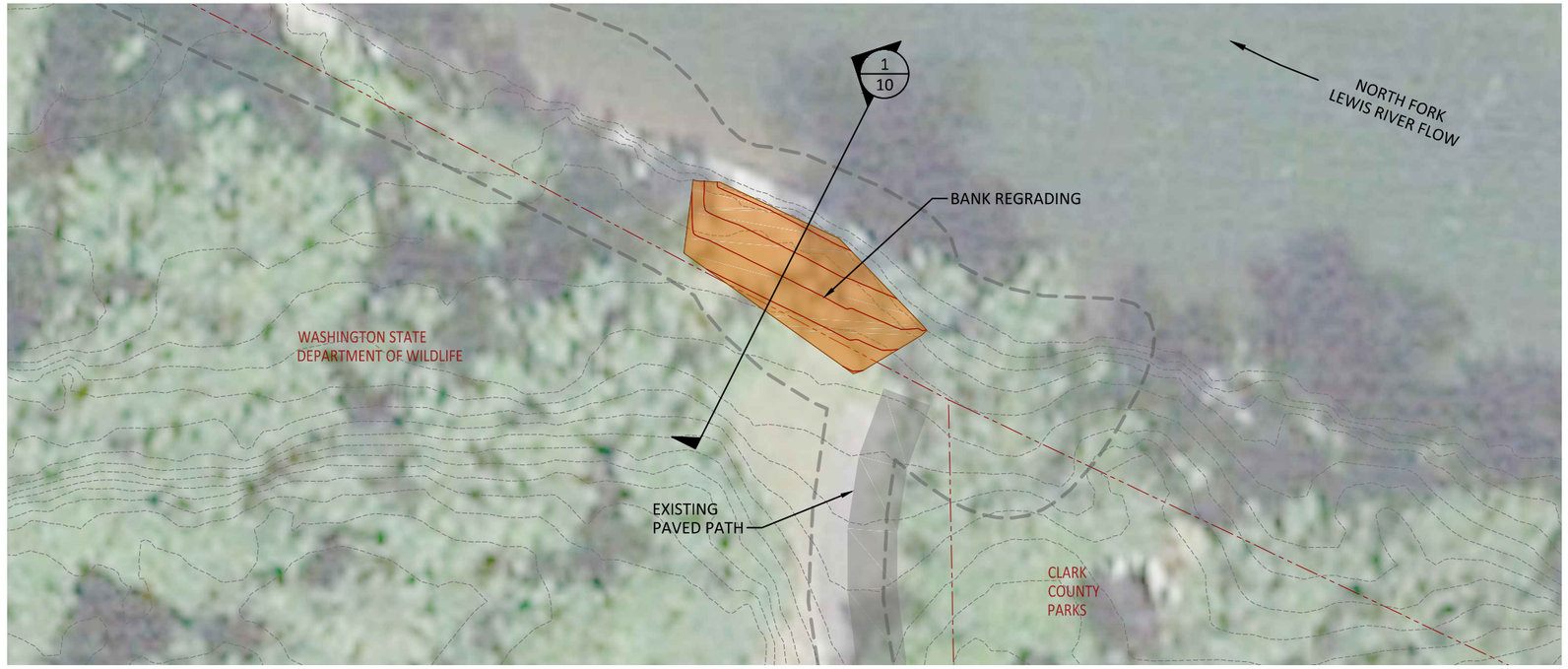
Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

COMPONENT 6 - APEX JAMS AND MARGIN LWD

SHEET 9 OF 10

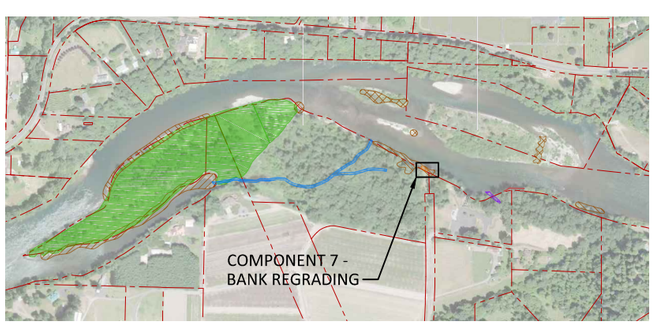
G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg



PLAN

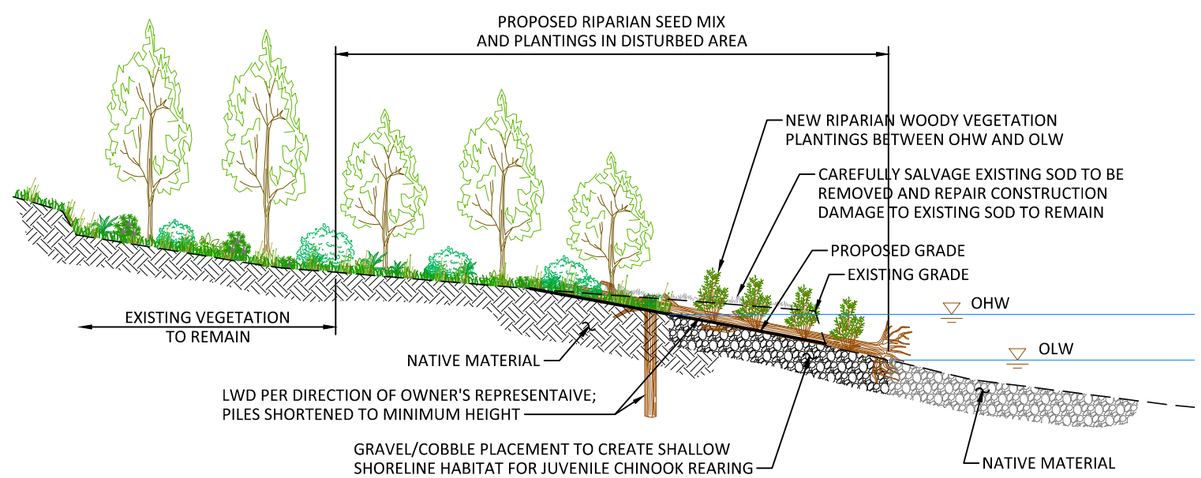
0 30 60

SCALE IN FEET



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
- LIMITS OF DISTURBANCE

Preliminary
Not for Construction

G:\E-H\Haapa Lewis River_130201\Drawings\IFI_HAAPA_BASE.dwg

NO.	BY	DATE	REVISION DESCRIPTION

DF	MM,JE	GJ
DRAWN	DESIGNED	CHECKED
MM	1/28/14	13-02-01
APPROVED	DATE	PROJECT

Lower Columbia Fish Enhancement Group
North Fork Lewis River - Haapa
Fish Habitat Restoration Project

inter·fluve
501 Portway Ave, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

COMPONENT 7 - BANK REGRADING

SHEET 10 OF 10