

## **1. Project Title**

### **Lewis River Side Channel Near Muddy River Instream Habitat Restoration**

## **2. Project Manager**

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## **3. Identification of problem or opportunity to be addressed**

An opportunity to enhance approximately 1000 feet of quality side channel habitat in the Upper Lewis River with large woody material (LWM) exists.

Approximately 160 piece of LWM are being proposed under this project to be used to create 16 structures at strategic locations in the side channel to maximize natural channel characteristics while providing structure stability. Woody Material would come from a nearby timber sale unit which would provide long pieces of wood with attached rootwads.

This side channel is located on private property and is approximately ¼ mile downstream of the Pepper Lewis Side channel.

Rearing habitat for coho has been identified to be limited in the Upper Lewis System.

## **4. Background**

Reconnaissance surveys conducted for this project occurred during July, August September, October and November of 2010. Water flows into the side channel from the river year round, the amount is controlled by a large log jam at the head of the channel, and an outlet to the river is always present, providing easy access into and out of the side channel. The side channel varies between 30 and 20 feet in width, and is well protected by a stable island. In November 1956 Chambers (WDFW) found coho redds in this side channel. This island and side channel have been a stable feature of the Lewis River for over 50 years.

The Lower Columbia Salmon Recovery Plan 2009 Six Year Habitat Work Schedule identifies this as a Tier 1 reach. For coho salmon it has an Overall Preservation rank of 2 of 100, and Overall Restoration rank of 31 of 103, this means it is highly valued and should respond very well to restoration efforts. EDT analyses concludes habitat diversity and side channel habitat is one of the highest concerns in this reach and should respond well to restoration activities. Concerns include high habitat diversity, moderate hatchery fish competition, food availability, and sediment concerns. The ACC Synthesis Matrix rated this section of the river as having medium restoration potential and as a Primary coho population area.

## 5. Project Objective(s)

### GOAL:

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

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

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 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 completed during the summer and fall of 2011. The final document should be crafted and signed by March 2012, and the project would be implemented July 2012.
- 2) Instream restoration activities are covered within the WDFW-MOU.

### Task 2: Project Design.

- 1) Finalize project design and project preparation details. Preliminary designs have been planned during reconnaissance visits in 2010. We will use a laser level to run a longitudinal profile and collect cross-sectional information as we finalize designs.

- 2) Secure materials. We will layout a timber sale unit for thinning operations and prepare for harvest operations. Additional material may be acquired from PacifiCorp Swift Reservoir Cleaning operations.

### **Task 3: Project Implementation**

- 1) Develop 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. MSHI will provide two interns, ten volunteer youth from the youth stream team, and a supervisor to perform monitoring work. They will perform all aspects of the monitoring with supervision and training from 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 ten 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, the Forest Service will provide analysis of data and report.

## **7. Methods:**

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

Approximately 160 pieces of large wood material 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 down a spur road through private land to a staging area at the confluence of the Muddy River and Lewis River. From there, the wood will be moved to the project site via a skidder and excavator. This project would create and improve rearing opportunities for coho salmon. Wood for this project would primarily come from USFS lands, however if an opportunity exists to acquire large wood from Swift Reservoir cleaning operations, we may pursue that avenue as well.

Approximately 10 to 15 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 bury the wood. Other pieces of LWM will be interwoven into these key pieces and riparian vegetation.

## **8. Specific Work Products**

Deliverable 1: Completed project.

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

Deliverable 3: Monitoring Report.

## **9. Project Duration**

Monitoring for this project would begin during the summer of 2012, Project implementation would occur July 15<sup>th</sup> 2012 and is expected to take two weeks to complete. As built documents will be completed by December 31<sup>st</sup>, 2012. An initial report documenting fish response to the structures will be completed by December 31<sup>st</sup>, 2013. The first monitoring report with pre and post project data will be available December 31, 2013. 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 of 2011, NEPA document will be completed January 2012.

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.

Land ownership in this section of the Lewis River is comprised of private lands. The project is wholly on private lands, however the access route is through both Forest and private lands. We have received permission from the landowners to use the private spur road to access this project area.

## 11. Matching Funds and In-kind Contributions

Partner	Contribution	Funds
Forest Service	Project development, Contracting, Permitting, Monitoring	\$14,000 In-kind
Materials from USFS	Trees	\$16,000 In-kind
Mt. St. Helens Institute	Monitoring	\$2,000 In-kind
Swift Community Action Team (SCAT)	Machine Time	\$1000
Fish First	Machine Transport	\$1000
Equipment Rental Services	Machine Time	\$1000

## 12. Professional Review of Proposed Project

This project proposal was reviewed by Gifford Pinchot National Forest (GPNF) Hydrology program manager, Ruth Tracy and GPNF Fisheries program manager Dave Hu.

## 13. Budget

	NEPA	Final designs	Project Mgmt	Construction	Monitoring/Labor /Reporting/Coord.
<b>Personnel Costs</b>					
FS - Zone Team or Contract	\$8,000 (ACC)				
FS -Fish Bio and Hydrologist		\$4,000 (IK) \$1,000 (ACC)			
FS - Fish Bio and Hydrologist			\$5,000 (IK) \$3,000 (ACC)		\$1,000 (ACC)
FS - Contract administrator -				\$3,000 (IK) \$4,000 (ACC)	
FS - Contract Specialist				\$2,000 (IK)	
Mt St. Helens Institute					\$2,000 (IK)
Mt. St. Helens Institute Community Education					\$2,000 (ACC)
<b>Materials</b>					
Forest Service 160 Pieces of LWM with rootwads				\$16,000 (IK)	
<b>Contract Payables</b>					
Excavator and Skidder Contract				\$12,000 (ACC) \$3,000 Fish First, SCAT, ERS)	
Logging and hauling of trees				\$10,000 (ACC)	
Materials and Supplies			\$ 1,000(ACC)		
<b>Total ACC Funds</b>	<b>\$42,000</b>	<b>\$8,000</b>	<b>\$1,000</b>	<b>\$4,000</b>	<b>\$26,000</b>
<i>Total FS Funds</i>	<i>\$30,000</i>	<i>\$4,000</i>	<i>\$5,000</i>	<i>\$21,000</i>	<i>\$3,000</i>
<i>Total Partner Funds</i>	<i>\$5,000</i>			<i>\$3,000</i>	<i>\$2,000</i>
<b>Project Total</b>	<b>\$77,000</b>				
FS personnel estimated as \$300/day.					



## Lewis Side Channel expanded budget 2010

<b>Item</b>	<b>Personnel</b>	<b>Estimated Days/units*</b>	<b>Cost Per Unit</b>	<b>Total*</b>
NEPA Environmental Assessment required by Federal Law	Fish Biologist Wildlife Biologist Hydrologist Botanist Archeologist Soil Scientist Recreation Forester NEPA Coordinator	5 2 5 5 5 1 0.5 0.5 3	\$300 per day per person	\$8,000 (ACC)
Final Designs	Fish Biologist Hydrologist Fish Technician	5 3 9	\$300 per day per person	\$4,000 (IK) \$1,000 (ACC)
Project Management	Fish Biologist Fish Technician Mileage	12 11 2000 miles	\$300 per day per person \$0.50	\$4,000 (IK) \$3,000 (ACC) \$1,000 (IK)
Construction	Contract Administration/Prep Transportation  Logging Equipment	28  1,000 miles	\$300 per day per person \$0.50	\$4,500 (IK) \$4,000 (ACC) \$500 (IK) \$10,000 (ACC) \$16,000 (ACC)
Materials & Supplies	Field Equipment, Notebooks, Misc Supplies			\$1,000 (ACC)
Trees with rootwads		160		\$16,000 (IK)
Monitoring <i>MSHI</i>  <i>USFS</i>	Supervisor Assistant Fish Biologist  Volunteers  Transportation	10  25  1,000	\$300 per day per person  \$20  \$0.50	\$1,500 (IK) \$2,500 (ACC)  \$500 (IK)  \$500 (ACC)
<b>Total</b>				<b>\$77,000</b>

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

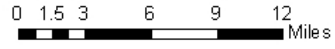
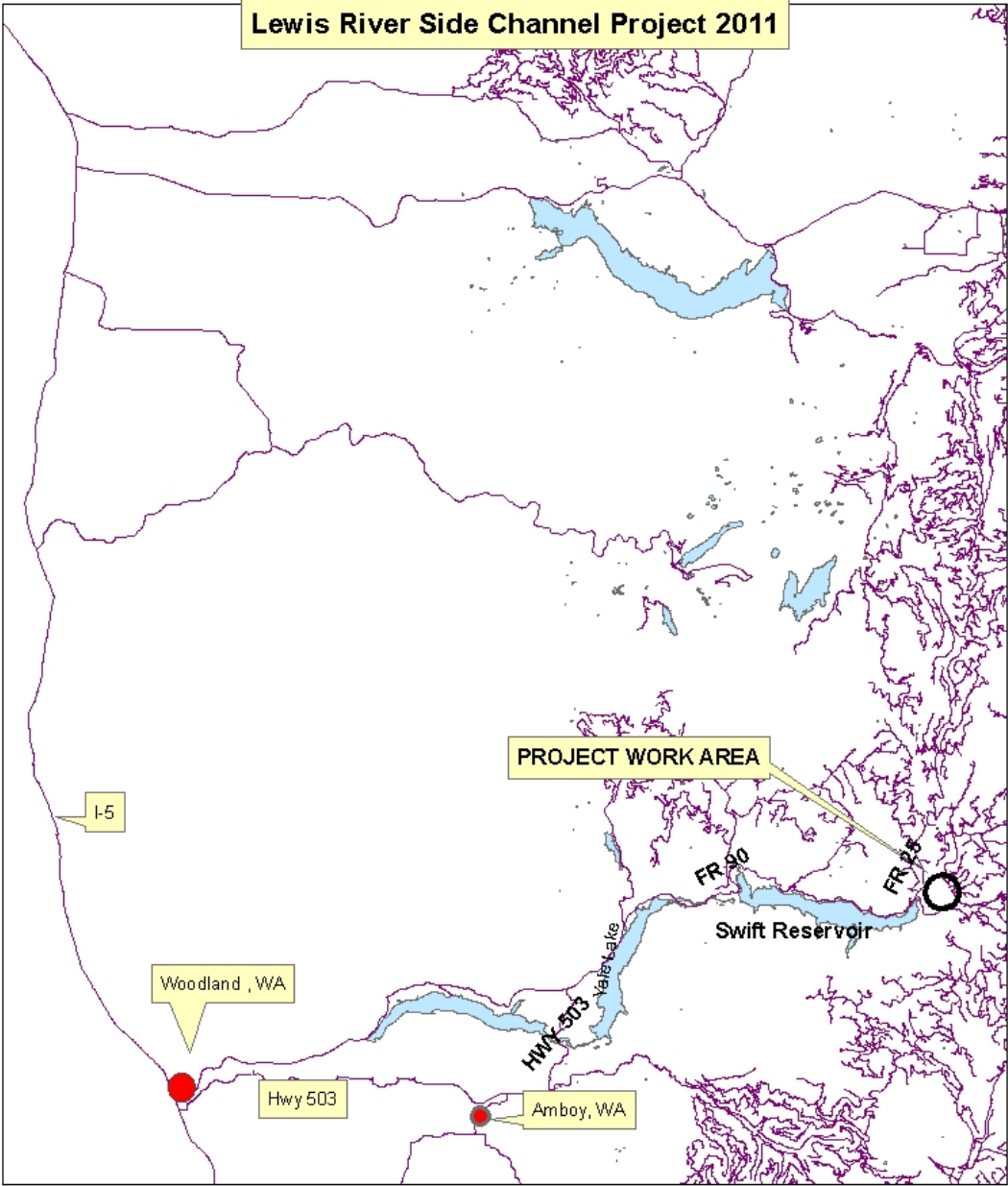
## Lewis Side Channel Equipment Budget 2010

Item	Cost per unit	Number of units	ACC cost	Total Cost
Excavator Operator/Fuel/Supplies, misc	\$100 hour	50	\$5,000	\$5,000
Excavator Machine	\$ Donated (\$2,000)	50		\$2,000
Excavator Move in/out	\$ Donated (\$1,000)	1		\$1,000
Skidder	\$150/Hour	40	\$6,000	\$6,000
Skidder Move in/out	\$1,000	1	\$1,000	\$1,000
Logging and Hauling cost: Estimate from Logging Contractor*	\$10,000	1	\$10,000	\$10,000
<b>Total</b>	<b>Donated \$3,000</b>		<b>\$22,000</b>	<b>\$25,000</b>

\*From Logging Contractor  
Ball Park Estimate Received on January 6, 2010

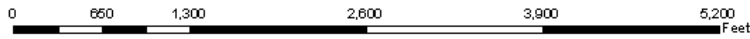
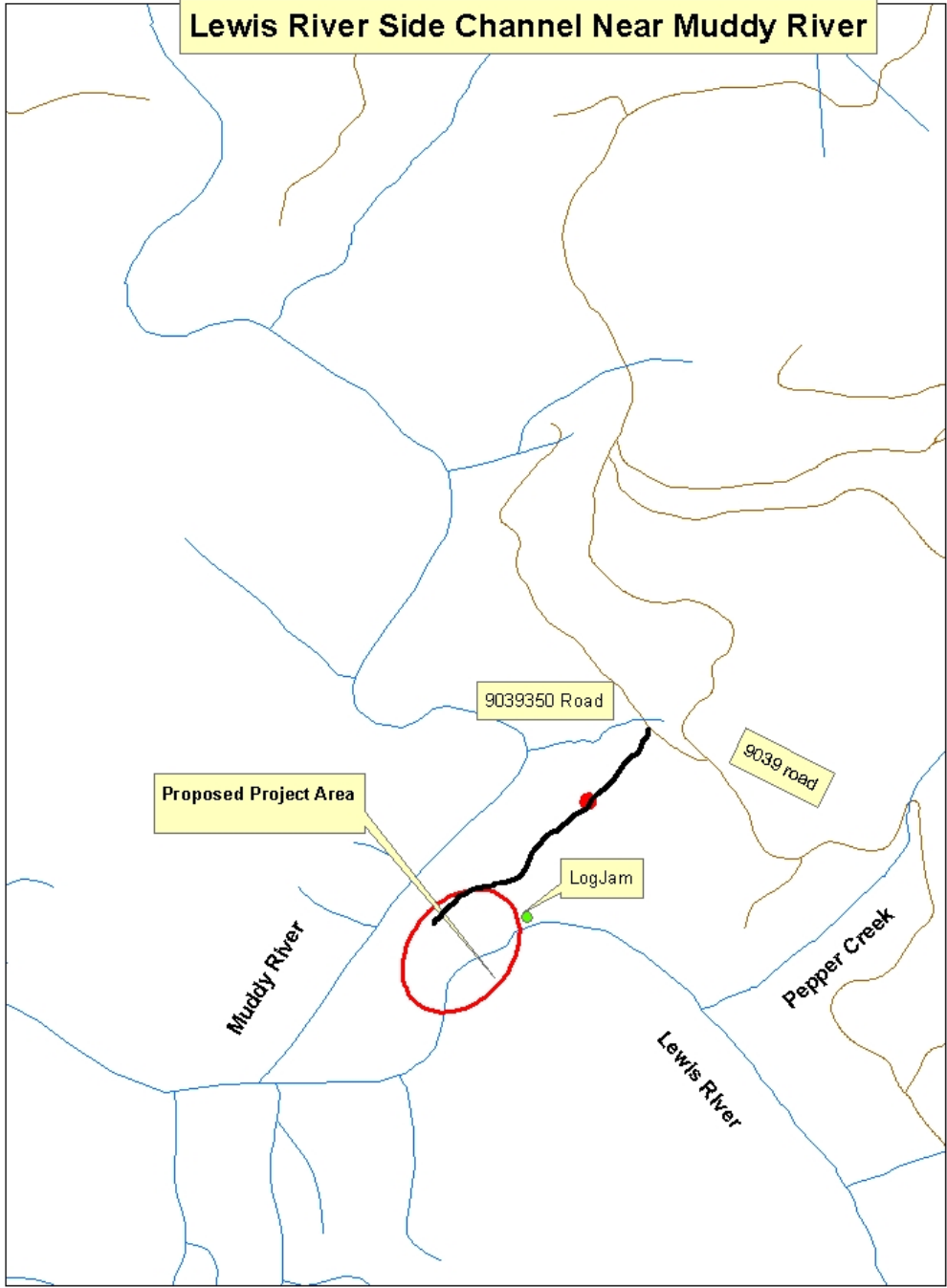


**Lewis River Side Channel Project 2011**

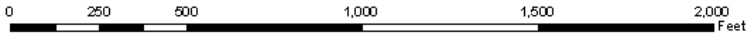
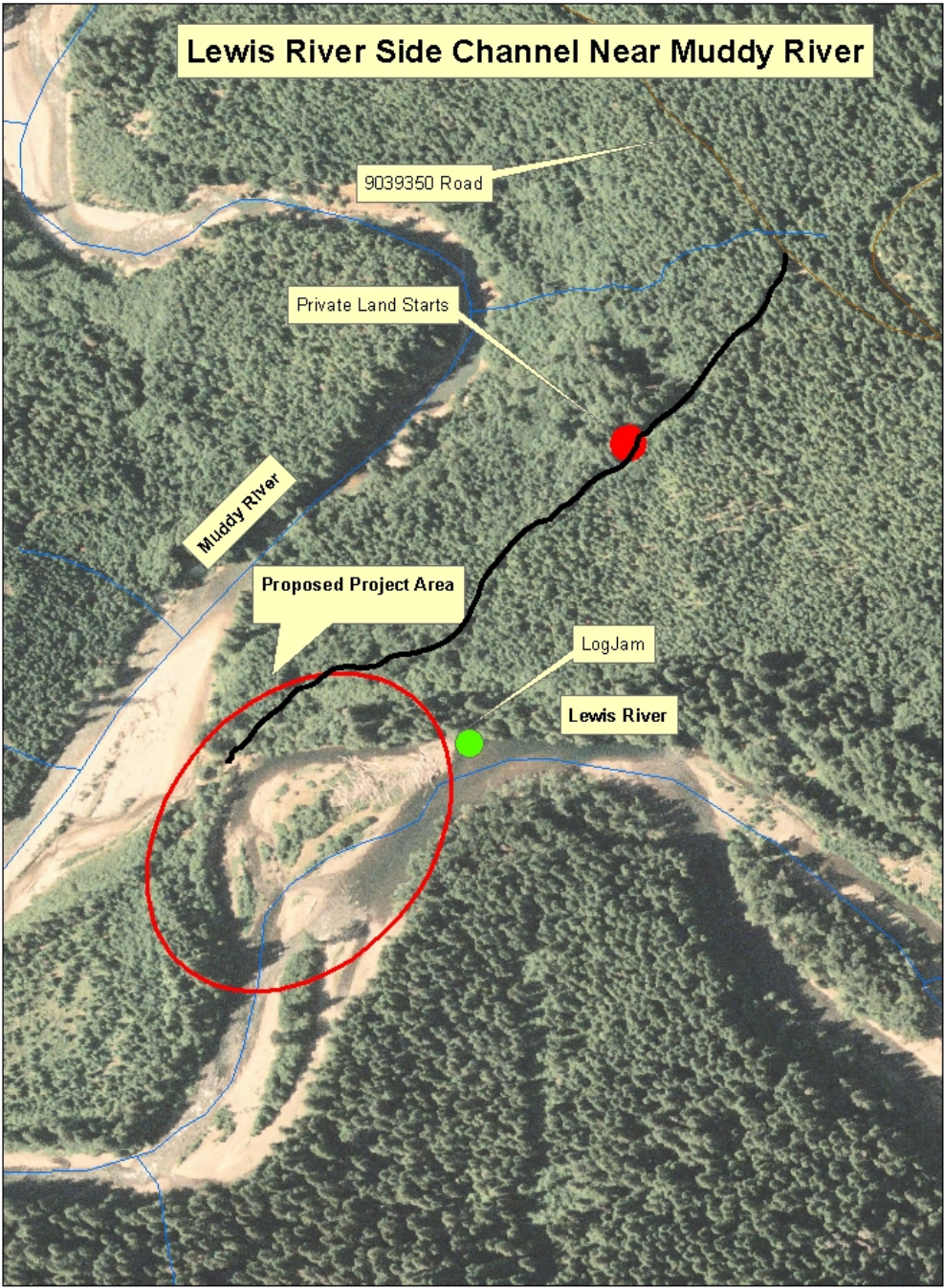


**Lewis River Side Channel  
Project Location Map**

Lewis River Side Channel Near Muddy River



# Lewis River Side Channel Near Muddy River



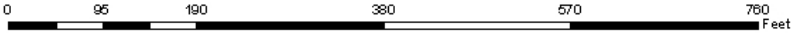
Lewis River Side Channel Near Muddy River  
Close-Up view



Side Channel

LogJam

Lewis River



## Typical Margin Structure

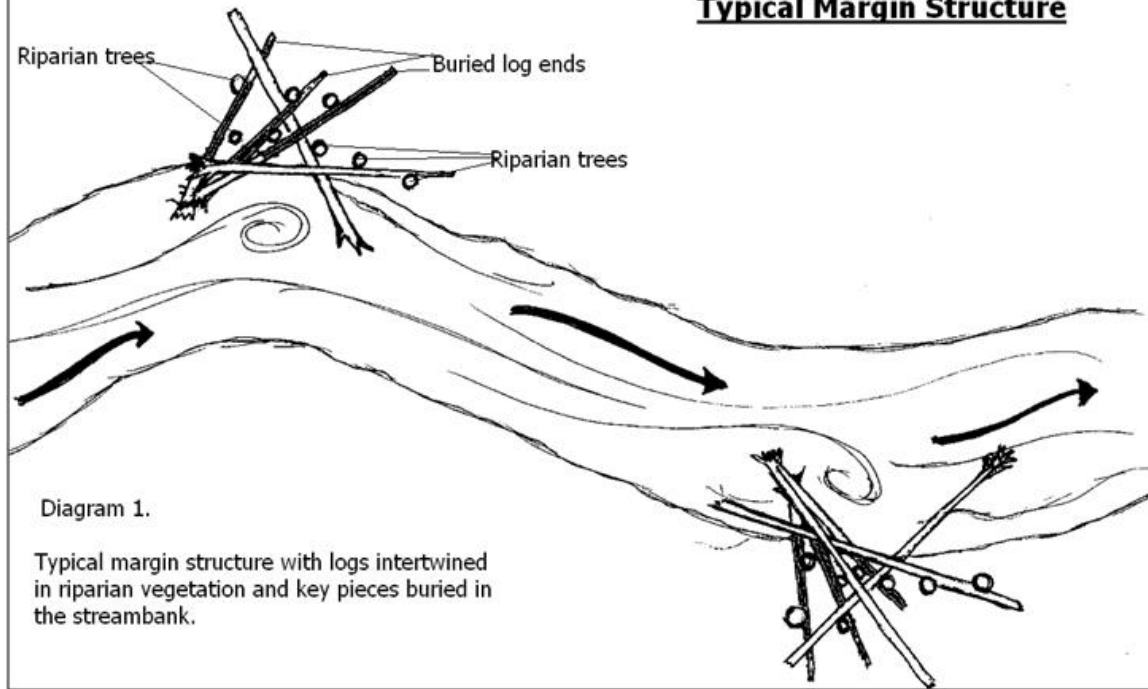


Diagram 1.

Typical margin structure with logs intertwined in riparian vegetation and key pieces buried in the streambank.