Imnaha River/Marr Habitat Improvement

Completion Report

Bonneville Power Administration Project Number 1992-026-01
Contract #53925
Performance Period August 2011 – February 2012

By R. Coby Menton, Grande Ronde Model Watershed

February 2012

Photo 1: Looking downstream at completed habitat improvement project. Photo by R. Coby Menton.

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Abstract

The primary land use at the project site is livestock management including winter feeding operation and grazing. Riparian vegetation consists of annual grasses and herbaceous species with shrub and over story vegetation absent. The absence of bank stabilizing shrub and over story vegetation has lead to an unstable stream bank and subsequent erosion. Over the past 10 years 100 lateral feet of the riverbank has eroded threatening to wash out the access road to neighboring property downstream. With the cooperation of the Marr Family Trust, this project provides the opportunity to improve fish habitat, riparian and water quality condition while protecting property and road infrastructure.

Federally listed fish species in the Imnaha River in the project area include Snake River fall run and Snake River spring/summer run Chinook salmon, Snake River steelhead and Columbia River bull trout. This reach of the Imnaha River is designated critical habitat for Chinook, steelhead and bull trout. The Imnaha is a designated National Wild and Scenic River. It is not anticipated that the project will adversely affect the river's wild and scenic character, water quality, or other outstanding characteristics. This project will not affect the hydrologic regime of the river nor is change in profile and flood levels expected.

The Imnaha Subbasin Plan supports the activities proposed in this project. The Imnaha Subbasin Plan Supplement does not rank restoration strategies and actions in order of importance rather a listing of activities by topic is given.

1. Page #1, C) Top 3 Strategies Limiting Fish Populations. Perform in stream or other enhancements.
2. Pages 6 & 7, 5.3.2.1 Natural Production Objectives and Strategies:
    - **Education and outreach for improving riparian and floodplain protection.** Education of local individuals and groups to improve their knowledge of proper riparian and floodplain function will result in an increased sense of ownership in the individual stream reaches, as well as longer term, more sustained results.
    - **Place large woody debris and large boulders.** Where opportunities exist, work on public, federal, state, tribal and private lands will be conducted to improve instream habitat. Placing large woody debris and large boulders directly increases habitat complexity and can improve habitat quantity by increasing the number of pools.
    - **Fence and plant riparian zones/Develop offsite watering facilities.** Where opportunities exist, work on public, federal, state, tribal and private lands will be conducted to improve riparian habitat. Fencing and/or offsite water development is utilized to manage use of the riparian zone by livestock and planting of native vegetation is done to speed the recovery process once grazing or other land uses have been modified. Riparian habitat improvements can directly impact stream temperatures and sediment inputs (through stabilizing stream banks and filtering runoff).

- **Modify detrimental land use activities**. Change land use activities leading to degradation of habitat, thereby allowing stream attributes impacted by these activities to recover without intervention. A common example of this kind of work is riparian buffers where streamside areas are protected from uses such as livestock grazing, timber harvest or agricultural crops (mainstem Imnaha and Big Sheep Creek).

This project compliments other restoration efforts in the Imnaha Subbasin. Livestock management, riparian planting, erosion control, habitat complexity improvement and weed control are all efforts ongoing in the area that this project will compliment.

Introduction

The purpose of this project is to improve fish habitat, reduce erosion and improve water quality in the Lower Imnaha River. The GRMW proposed to stop 340 feet of severe bank erosion on the Imnaha River on property owned by the Marr Family Trust. Several methods were utilized including the installation of an engineered log jam, one woody habitat feature, 3 woody debris structures, approximately 300 feet of bank stabilizing toe logs with rock ballast, native vegetation planting and livestock exclusion fence. Project results will be improved backwater and off of main river channel habitat, habitat complexity, water quality and riparian vegetation conditions. Construction took place in the late summer and fall of 2011. Project partners include GRMW (sponsor), Anderson Perry & Associates (design and engineering), Marr Family Trust (landowner), and ODFW (technical assistance).

Project Objectives

1. Reduce erosion on the Marr property and sediment contribution to the Imnaha River to improve habitat conditions for aquatic species.
2. Stop Imnaha River channel widening on the Marr property to maintain or improve existing channel width to depth ratio.
3. Improve riparian vegetation condition on the Marr property adjacent to the Imnaha River by planting riparian vegetation and installing livestock exclusion fence in the project area.
4. Increase available fish habitat in the Imnaha River by constructing habitat features that will improve habitat complexity and diversity.

Methods & Materials

Proposed Actions

Coordination: The GRMW will coordinate all aspects of this project including the following items:

- Landowner and agency involvement.
- Funding acquisition and contracting.
- Engineering contractor direction and coordination of project objectives.

Environmental Compliance: All environmental compliance documentation will be completed by July 2011. Deliverables include:

- Complete ESA Section 7 Consultation with US Fish & Wildlife Service and National Marine Fisheries Service.
- Removal/fill permits from Army Corps' of Engineers and Oregon Department of State Lands.
- Cultural resources clearance with Oregon State Historic Preservation Office.

Contracting: The GRMW will be responsible for all funding and construction contracting. Construction will start in the late summer of 2011 and in water work activities will be done during the 2011 work window. The in water work window is from July 1st to October 15th. Construction will be complete in the fall of 2011. Contracting actions include:

- Contract with BPA to fund project construction.
- Advertise for, bid and award to construct project.

Monitoring: A project completion report and three monitoring reports will be required for this project. The completion report will written according to GRMW/BPA standard reporting guidelines and the monitoring reports will access project objectives for five years following project completion.

Construction: To implement the necessary improvements at the project location, work isolation barriers will be installed (if necessary) and fish salvage will occur. Following construction, restoration activities, including seeding, planting and fencing will minimize construction impacts and promote improved riparian conditions. All work will occur within the ODFW preferred in-water work period. Project components include:

- Install work area isolation barriers around the work area and perform fish salvage.
- Reshape riverbanks, install toe-of-slope stabilization, install coir matting and brush layers, and replant riverbanks.
- Install woody debris structures.
- Install wood habitat structure.
- Install engineered logjam.
- Remove work area isolation barriers.
- Reseed disturbed upland areas.
- Fence project area and preclude from cattle use for a minimum of 10 years.

Implemented Actions

This project was implemented as proposed, on time and to engineered specification. Steve Lindley Contracting, LLC of Union, Oregon was awarded the construction contract as lowest qualified bidder. Lindley Contracting started work on September 15, 2011 and demobilized from the project area on October 13, 2011. All work was completed during

the in-stream work window for this section of the Imnaha River. No time extensions were necessary nor were change orders issued. This restoration project was implemented 100% according to plan. The following table indicates what was accomplished compared to what was proposed:

Deliverable Table

Action	Proposed	Contracted	Delivered	Difference
Pre-Implementation activities including design, permitting, consultation and coordination	100 hours of GRMW staff time and contractual agreements.	As proposed	Landowner coordination, removal/fill permits, Section 7 consultation and cultural resource clearance.	None
Project management including GRMW staff time, inspection engineering and agency administration	65 hours of GRMW staff time and inspection engineer support	As proposed	As proposed	None
In house personnel including fiscal management and office assistant	30 hours of in-kind support	As proposed	As proposed	None
Contracted Services	$113,000	$76,750	As specified	-$36,250
Mobilization	$5,600	$3,750	As specified	-$1,850
Clearing and grubbing	$3,000	$2,000	As specified	-$1,000
Bank stabilization	$25,000	$11,000	As specified	-$14,000
Woody debris structure	$13,200	$11,000	As specified	-$2,200
Wood habitat structure	$8,700	$16,000	As specified	+$7,300
Sediment bar woody debris	Added after proposal	$7,500	As specified	+$7,500
Engineered log jam	$40,000	$18,000	As specified	-$22,000
Water break	$2,800	$2,500	As specified	-$300
Seeding and planting	$1,500	$1,000	As specified	-$500
Water control	$10,000	$4,000	As specified	-$6,000
Fencing	$6,000	Landowner in-kind	As specified	None
10 year conservation easement	Use Partners programmatic to achieve 10-years of non-use in the project area.	As proposed	10-year agreement that keeps domestic livestock out of the project area.	None

Discussion

Lessons Learned

Initial conversations and inception of this project began in the summer of 2010. Between September of 2010 and early summer of 2011 coordination, survey and design, environmental compliance activities, funding acquisition and securing a construction contractor were all accomplished. Construction started on September 15, 2011 and ended on October 13, 2011. This project was not extremely complex in its construction and in-

water work and fish salvage requirements were minimal. This in large part helped the fast paced implementation timeline and project completion in approximately 14 months. However, the following statements pertain to this project as from past projects implemented by the GRMW:

1. Due to overlapping jurisdictions and permitting requirements, it is essential to have a lead agency well versed in the laws, regulations and permitting processes required for river restoration, particularly in the presence of threatened and/or endangered species. Private landowners cannot be expected to pursue this process without guidance, support and leadership from an experienced and skilled lead agency. The GRMW with contract assistance from AP and technical support from ODFW served this purpose.

2. To the extent possible, flexibility for on-site design modifications should be built into the regulatory review and permitting process. This process remains rigid and risk-averse and may result in missed opportunities to improve end results.

3. Due to the active restoration and dynamic nature of rivers, funding agencies should be prepared to support maintenance and modification of these projects in response to lessons learned from continued monitoring and from short-term disturbances (i.e. spring flooding) that might occur before the newly implemented project has stabilized.

Project site dewatering was not necessary for this project. At the time of construction the Imnaha River flow had declined enough to naturally dewater the work area. The fish salvage effort consisted of one ODFW employee operating the shocker and one GRMW employee netting and transporting captured fish. A block net was installed at the lower end of the project site to preclude fish swimming into the work area and no barrier was necessary at the top end due to non-connectivity with the river.

- Data of Fish Salvage Operation: September 21, 2011.
- Supervisory Fish Biologist
    1. Name: Bill Knox, Oregon Department of Fish and Wildlife.
    2. Address: ODFW Enterprise, OR. 97828
    3. Telephone Number: 541.426.3279.
- Number of fish captured: 31 steelhead and 3 Chinook.
- Release site: The release site was the live flowing undisturbed Imnaha River channel adjacent to the project.
- Condition at release: Clear, continuous non-turbid water.
- Number injured: Not recorded
- Number killed by species: 1 steelhead killed

Of particular interest was of the 34 Chinook and steelhead captured all but 3 were captured in pools not connected to the Imnaha River. These fish were surviving in isolated pools 2 to 5 inches deep, up to 5 feet wide by 20 feet long, and watered by subsurface flow. Both species had survived the hottest and lowest flow time of the year and presumably would have existed until higher flow would have liberated them.

Objectives Assessment

The as-built dimension, structure and vegetation restoration efforts in the project area suggest that project objectives will be met. The river bank that had been eroding for several years has now been stabilized with one engineered log jam, one small woody debris feature, 3 root wad revetment structures, 340 feet of erosion control geo textile and 300 feet of toe logs.

Photo 2: Photo taken on September 10, 2010. This photo shows the eroding bank and high flow side channel in the project area. Through stabilizing this bank with habitat forming structures we hope to provide high flow refuge off the Imnaha main channel.

Photo 3: Photo taken on January 20, 2012. Bank has been shaped and covered with geo textile. Large woody debris features have been installed to provide aquatic habitat and maintain a stable stream bank. This side channel will be connected to the Imnaha main channel during the high flow months.

Photo 4: Photo taken on Spetember 10, 2010. Due to extensive erosion the riparian area of the project site lacks shrub and hardwood components existing in the area above and below the project.

Photo 5: Photo taken on January 20, 2012. Project area has been reseeded with a native grass seed mix. Willow has been extensively planted along the riverbank. Each live whip was planted to ground water depth to help promote survival. The fence will keep livestock out of the area.

Photo 6: At the time of this pre-project photo the side channel has very little habitat complexity and diversity.

Photo 7: Post project photo looking downstream from the top of project. 5 wood features were installed that will significantly increase habitat conditions. Over time the riparian area will mature and over story vegetation will develop.

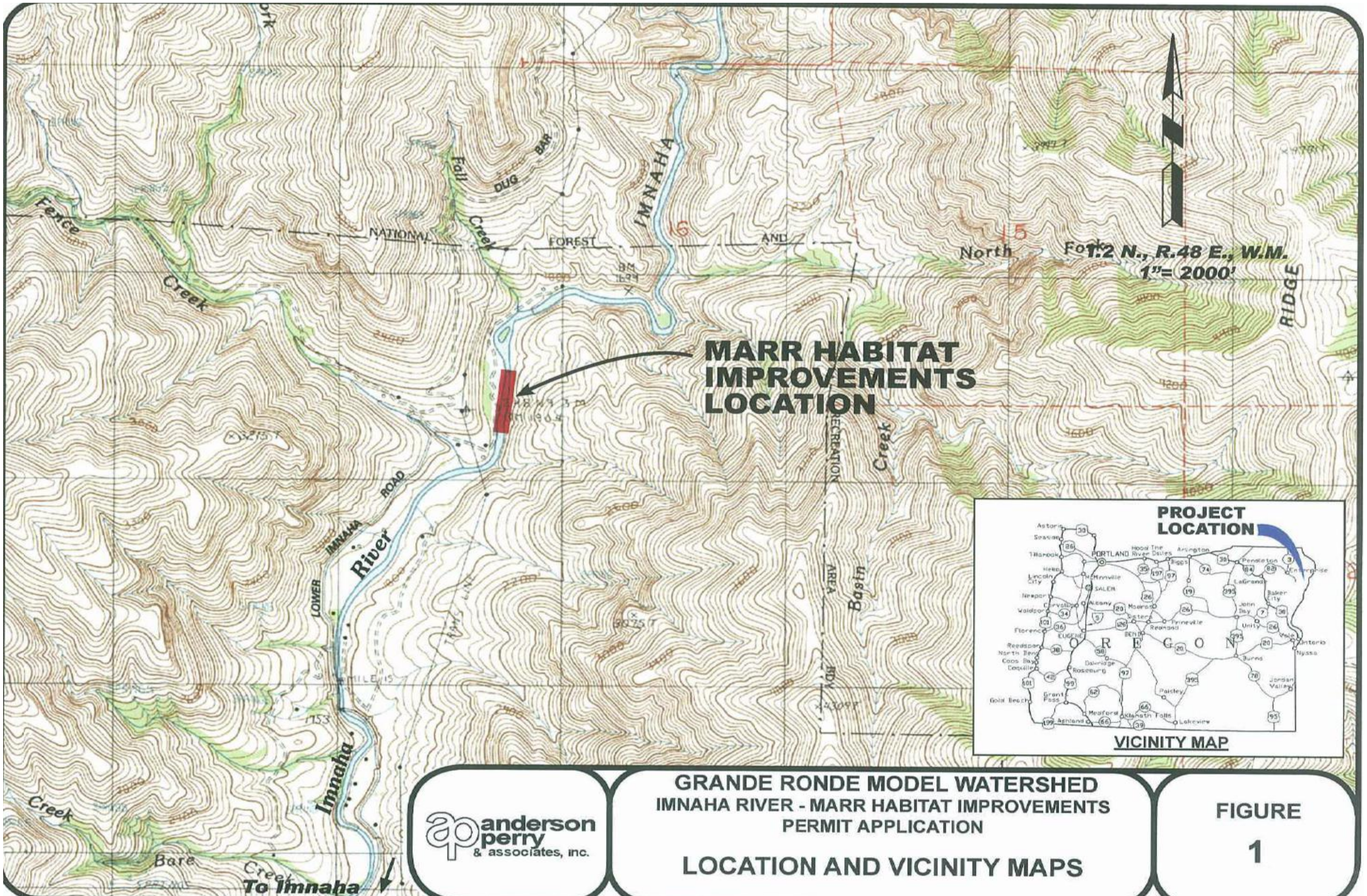
Acknowledgment

The Grande Ronde Model Watershed would like to take this opportunity to thank all of those organizations that made the Imnaha River/Marr Habitat Improvement project possible. Without the generous funding support of BPA and the Marr Family, the dedicated technical team at Anderson Perry & Associates, the willing landowners the Marr Family, technical assistance from ODFW this project would not have been possible.

Final Budget

Vendor: Grande Ronde Model Watershed Foundation, 1114 "J" Ave., La Grande OR 97850
Contract Title: 199202601 Imnaha River/Marr Habitat Improvement
Contract Number: 53925
Performance Period: August 1, 2011 - December 31, 2012
Performance Period Covered for this Invoice: September 20, 2011 - October 13, 2011
Invoice Number: 5392501 Final - Prepared: October 31, 2011 BY: Mary Estes

	Approved Budget	Total of Previous Invoices	Total for This Invoice	Total Invoices to Date	Total Remaining
Contracted Services:					
Mobilization - Steve Lindley	$5,600.00	$0.00	$3,750.00	$3,750.00	$1,850.00
Clearing & Grubbing- Steve Lindley	$3,000.00	$0.00	$2,000.00	$2,000.00	$1,000.00
Bank Stabilization-Steve Lindley	$25,000.00	$0.00	$11,000.00	$11,000.00	$14,000.00
Woody Debris Structure - Lindley	$13,200.00	$0.00	$11,000.00	$11,000.00	$2,200.00
Wood Habitat Structure - Lindley	$8,700.00	$0.00	$16,000.00	$16,000.00	-$7,300.00
Engineered Log Jam -Steve Lindley	$40,000.00	$0.00	$25,500.00	$25,500.00	$14,500.00
Water Break - Steve Lindley	$2,800.00	$0.00	$2,500.00	$2,500.00	$300.00
Seeding of Disturbed Areas - Lindley	$1,500.00	$0.00	$1,000.00	$1,000.00	$500.00
Planting	$3,200.00	$0.00	$0.00	$0.00	$3,200.00
Water Control - Steve Lindley	$10,000.00	$0.00	$4,000.00	$4,000.00	$6,000.00
Total	**$113,000.00**	**$0.00**	**$76,750.00**	**$76,750.00**	**$36,250.00**



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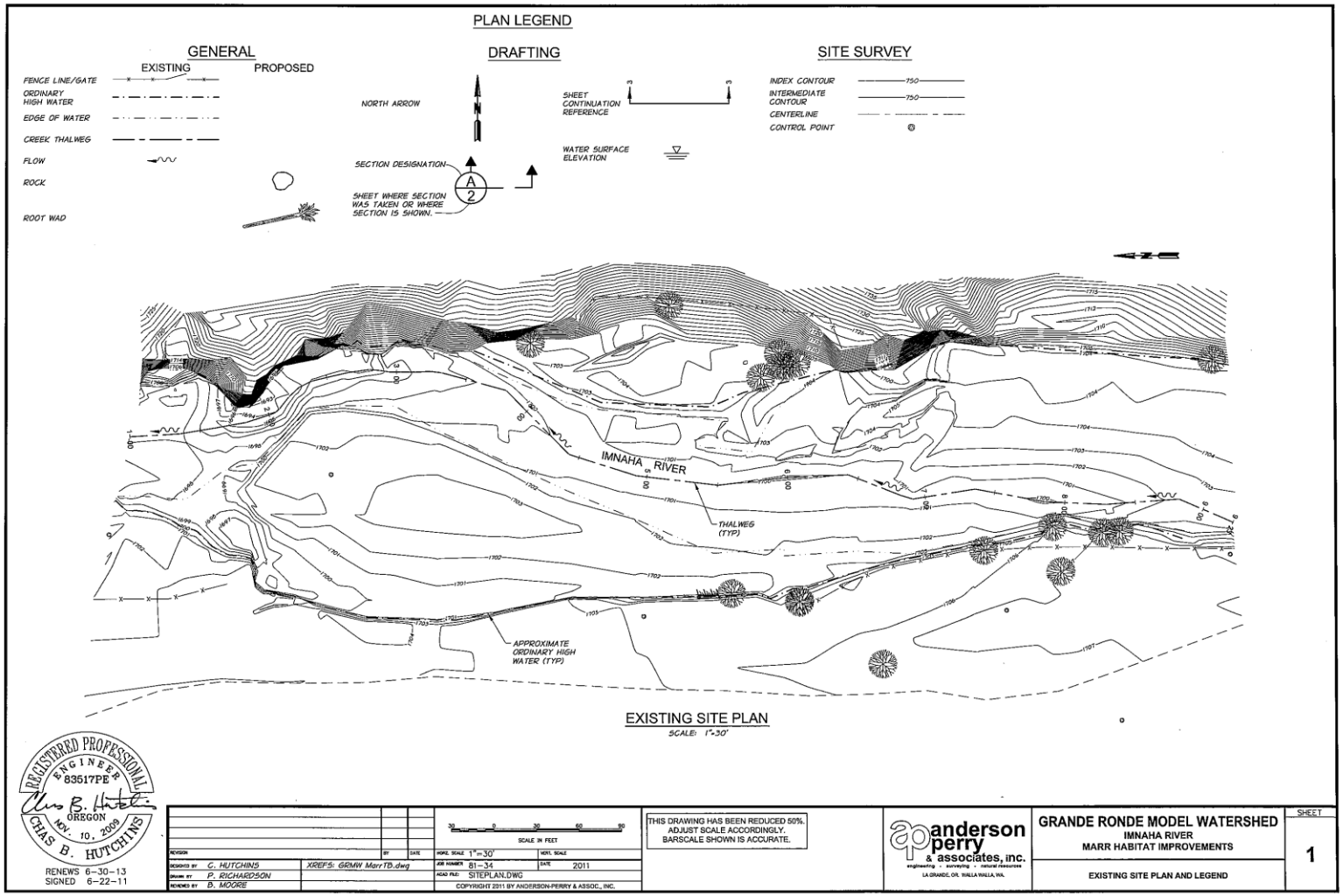
GRANDE RONDE MODEL WATERSHED
IMNAHA RIVER - MARR HABITAT IMPROVEMENTS
PERMIT APPLICATION

LOCATION AND VICINITY MAPS

FIGURE 1

Final/As-Built Design



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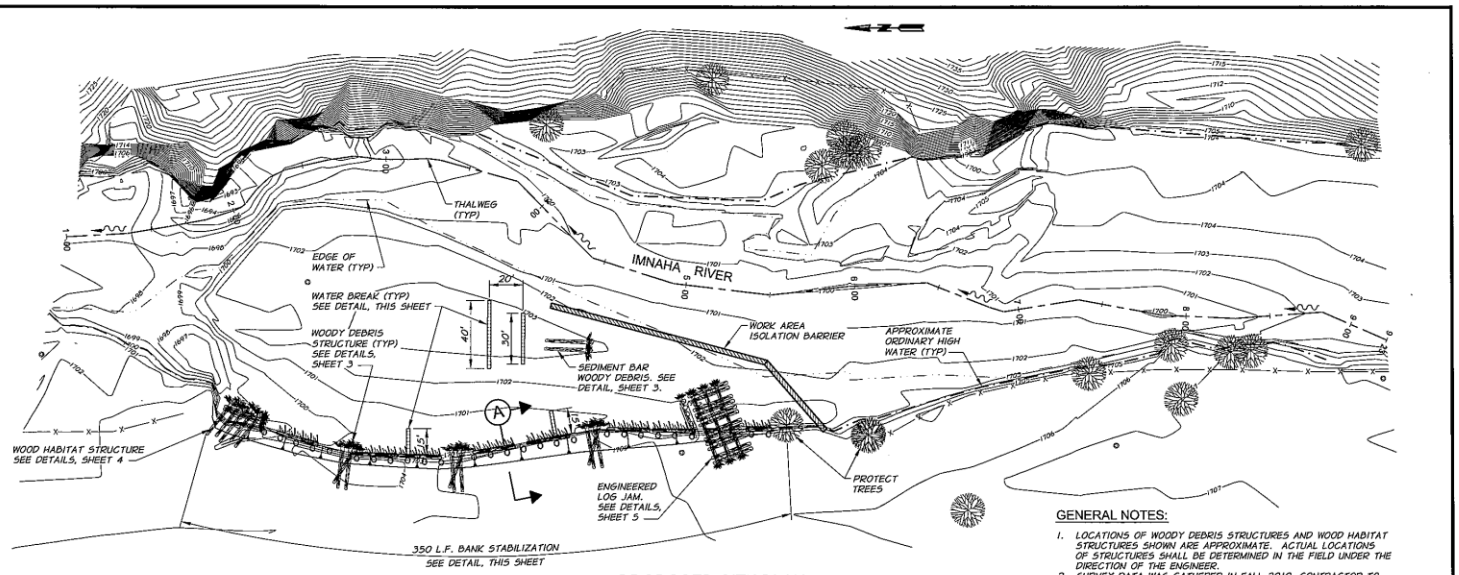
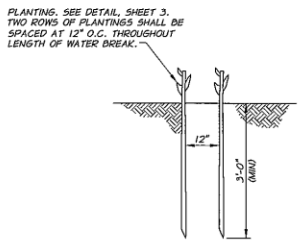


PROPOSED SITE PLAN

SCALE: 1"=30'

GENERAL NOTES:

1. LOCATIONS OF WOODY DEBRIS STRUCTURES AND WOOD HABITAT STRUCTURES SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS OF STRUCTURES SHALL BE DETERMINED IN THE FIELD UNDER THE DIRECTION OF THE ENGINEER.
2. SURVEY DATA WAS GATHERED IN FALL 2010. CONTRACTOR TO VERIFY ACTUAL TOPOGRAPHY AT THE TIME OF CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.



WATER BREAK DETAIL

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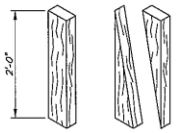

NOTE: SAW A 2"X4" DIAGONALLY TO PRODUCE 2 STAKES.

TYPICAL STAKE DETAIL

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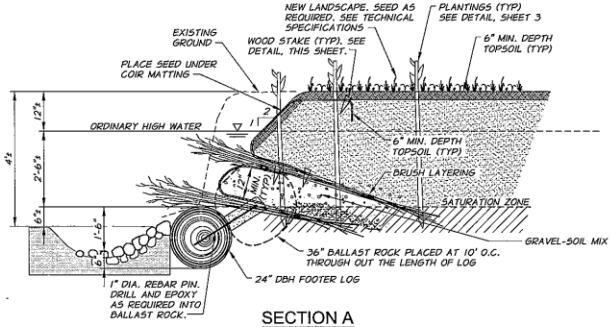

SECTION A

BANK STABILIZATION

N.T.S.

REGISTERED PROFESSIONAL ENGINEER
83517PE
OREGON
NOV. 10, 2009
CHAS B. HUTCHINS
RENEWS 6-30-13
SIGNED 6-22-11

REVISION	BY	DATE	
DESIGNED BY	C. HUTCHINS	XREFS: GRMW MarrTB.dwg	
DRAWN BY	P. RICHARDSON		
REVIEWED BY	B. MOORE		

SCALE IN FEET: 30 0 30 60 90

HORZ. SCALE 1"=30' VERT. SCALE

JOB NUMBER 81-34 DATE 2011

ROAD FILE: SITEPLAN.DWG

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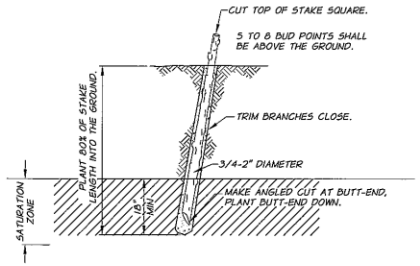
GRANDE RONDE MODEL WATERSHED
IMNAHA RIVER
· MARR HABITAT IMPROVEMENTS

SITE PLAN IMPROVEMENTS

SHEET 2



NOTES:

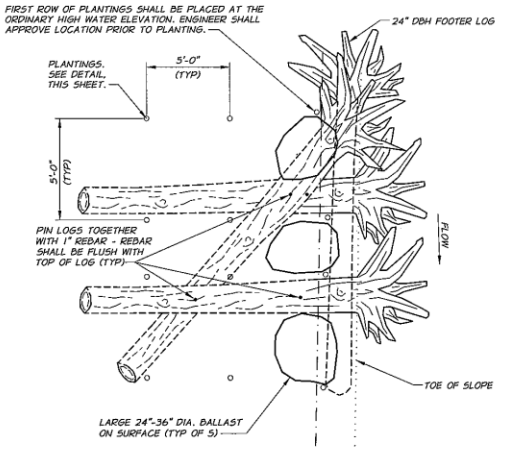
1. HARVEST AND PLANT STAKES DURING THE DORMANT SEASON.
2. USE HEALTHY, STRAIGHT AND LIVE WOOD AT LEAST 1 YEAR OLD.
3. MAKE CLEAN CUTS AND DO NOT DAMAGE STAKES OR SPLIT ENDS DURING INSTALLATION, USE A PILOT BAR IN FIRM SOILS.
4. CUTTINGS HARVESTED FRESH AT THE TIME OF INSTALLATION SHALL BE SOAKED FOR A MINIMUM OF 24 HOURS PRIOR TO INSTALLATION PLANTING. CUTTINGS HARVESTED AND STORED SHALL BE SOAKED FOR A MINIMUM OF 10 DAYS PRIOR TO PLANTING.
5. TAMP THE SOIL AROUND THE STAKE.
6. EXTEND STAKES IN TO WATER SATURATION ZONE.
7. SEE APPROVED SPECIES, THIS SHEET.

TYPICAL PLANTING DETAIL

N.T.S.

APPROVED BRUSH SPECIES AND PLANTINGS:

- SALIX EXIGUA (COYOTE WILLOW)
- SALIX LASIOLEPSIS (ARROYO WILLOW)
- CORNUS SERICEA (REDOSIER DOGWOOD)



WOODY DEBRIS PLAN

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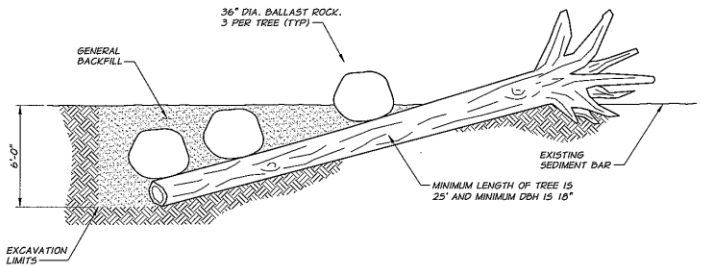

SEDIMENT BAR WOODY DEBRIS DETAIL

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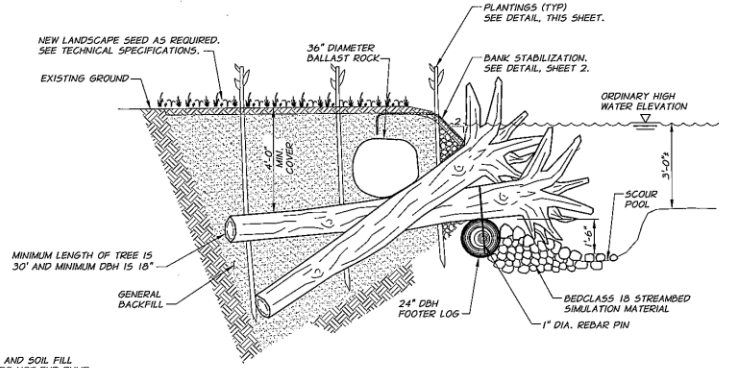

NOTES:

1. PLACE ROCK AND SOIL FILL CAREFULLY, DO NOT END DUMP.
2. FINAL INSTALLATION OF WOOD DEBRIS SUBJECT TO THE APPROVAL OF ENGINEER.

WOODY DEBRIS SECTION

N.T.S.

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83517PE
OREGON
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CHAS B. HUTCHINS
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REVISION	BY	DATE

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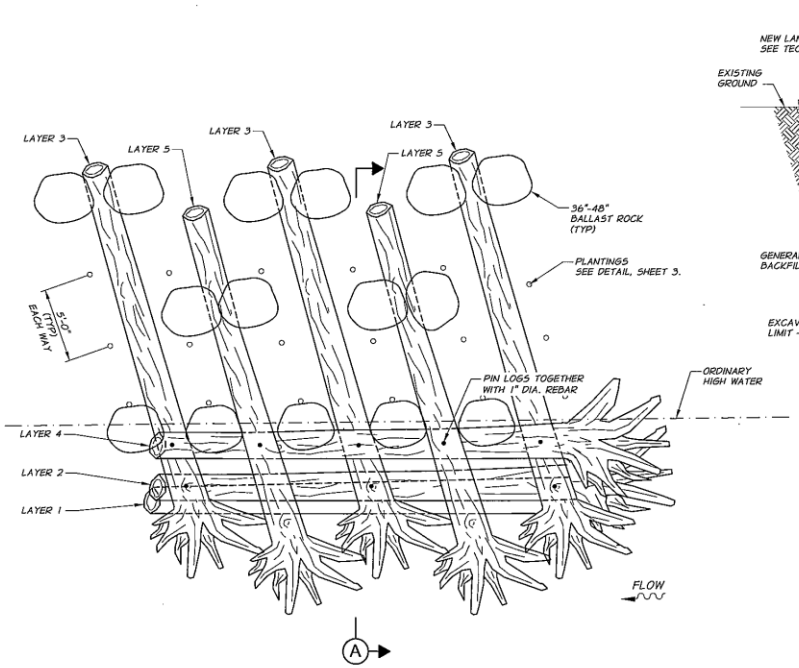
WOODY DEBRIS AND PLANTING DETAILS

SHEET 3



WOOD HABITAT STRUCTURE DETAIL
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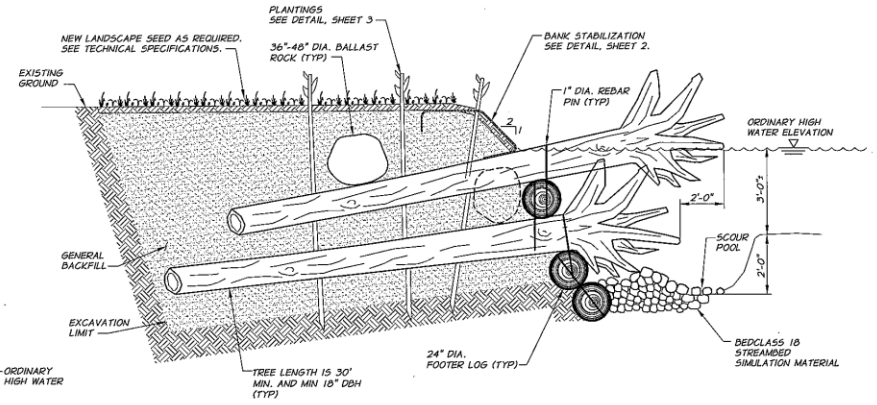

SECTION A
N.T.S.

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WOOD HABITAT STRUCTURE DETAILS

SHEET 4

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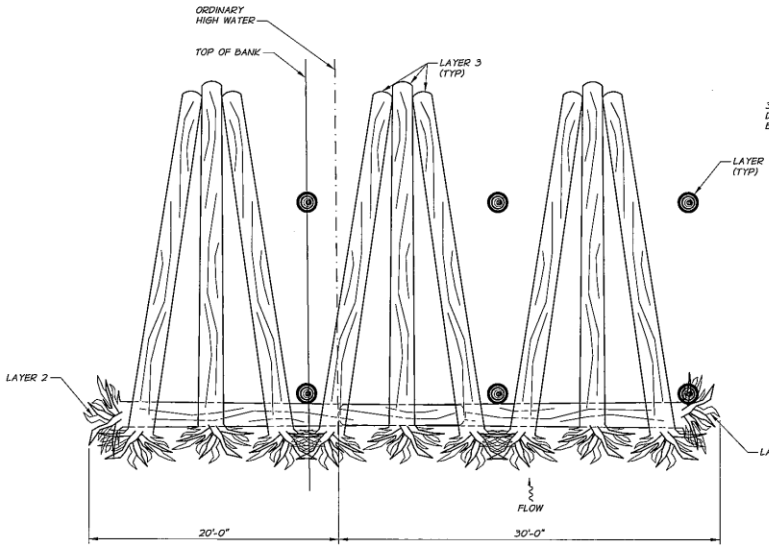

ENGINEERED LOG JAM PLAN
FIRST LEVEL
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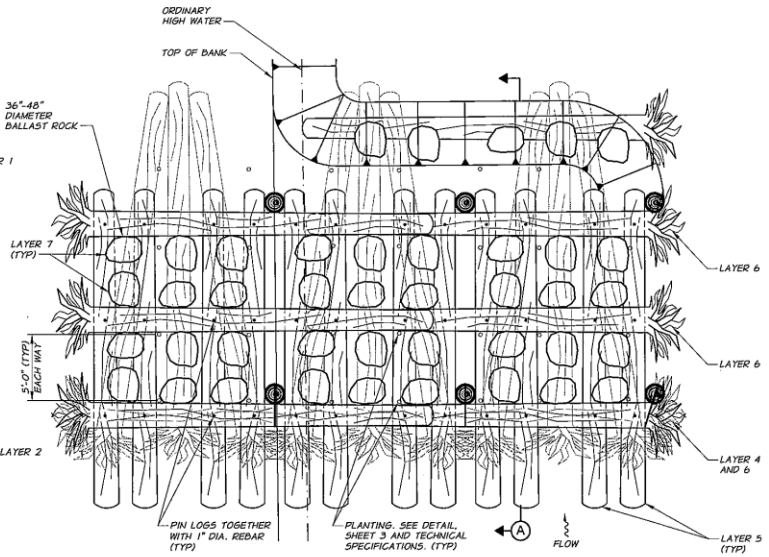
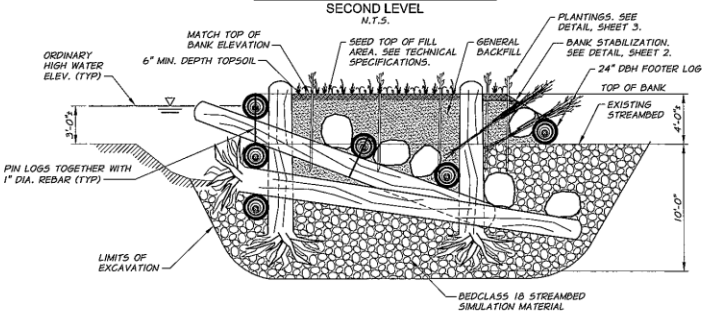


ENGINEERED LOG JAM PLAN
SECOND LEVEL
N.T.S.

LOG JAM NOTES:

1. ALL TREES USED SHALL BE 30' IN LENGTH AND 18" DBH.
2. SEE TECHNICAL SPECIFICATIONS FOR TREE SPECIES.
3. ENGINEER SHALL BE ON SITE DURING ENGINEERED LOG JAM CONSTRUCTION.
4. CONTRACTOR SHALL NOT BACKFILL BURIED TREES WITHOUT ENGINEER APPROVAL.



SECTION A
N.T.S.

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VERT. SCALE
DATE 2011

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MARR HABITAT IMPROVEMENTS

ENGINEERED LOG JAM DETAILS

SHEET 5

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