Project Completion Report
Kelley Creek Confluence Restoration

1a Background

In 1997, Bureau of Environmental Services (BES) initiated the Johnson Creek Restoration Plan to develop projects based on previous planning documents including the Johnson Creek Resources Management Plan (RMP). The Restoration Plan incorporated new hydraulic analysis and fish habitat data and developed project specific recommendations to comprehensively address flooding, fish and wildlife habitat and water quality.

The Restoration plan identified the Alsop-Brownwood project as one of the highest priorities for implementation. The Alsop-Brownwood Site contains the Kelley Creek Confluence Restoration Project. The Alsop-Brownwood area encompasses approximately 57 acres of open-space land at the confluence of Johnson and Kelley Creeks. Numerous residential properties were purchased in this area through BES' Willing Seller Land Acquisition Program. Metro and Portland Parks and Recreation provided cost sharing and assistance with some of the acquisitions. Once the properties were acquired the existing structures were removed and the sites were stabilized and land banked for future restoration.

The Kelley Creek Confluence Restoration Project is the first phase of restoration within the larger Alsop-Brownwood area and is the first project to be funded out of the Johnson Creek Restoration Plan. The Kelley Creek project is located at the confluence of Kelley and Johnson Creek. The reach of Kelley Creek immediately upstream of the confluence and below the SE 159th Ave bridge is the main focus of the project and was armored with stone walls constructed by the works progress administration during the 1920's and 30's. In-stream conditions in this reach included a lack of large woody debris and channel complexity, channel incision, and a substrate with a fairly even distribution of particle sizes. Upstream of the restoration area is a channel naturally constrained by alternating terraces and hill slopes with a more intact riparian zone. This section of the creek has more channel complexity and electro-fishing surveys here have produced an array of salmonid and resident species including steelhead, rainbow, cutthroat trout and lamprey ammocetes.

The primary goal of the Kelley Creek Confluence Restoration project is to provide habitat for salmonid recovery consistent with the City's ESA strategy. Other goals include the provision of flood storage consistent with the City's nuisance flood management strategy and improvement in water quality to meet the City's NPDES benchmarks.

This project relocated lower Kelley Creek between the SE 159th Dr. bridge and the confluence of Kelley Creek into a new meandering channel with pool and riffle habitat. Approximately 24,000 cubic yards of soil were excavated from the floodplains of

Kelley and Johnson Creeks to construct 2 backwater channels and the new meandering channel for Kelley Creek. 13.6 acre-feet of additional floodwater storage was created.

The creation of the two backwater channels along Johnson Creek provides immediate beneficial wetland habitat, floodwater storage, and high-flow refuge for fish. In addition, planted riparian and upland vegetation in the backwater areas and the new channel and floodplain provide habitat for wildlife. Re-meandering of Kelley Creek will provide immediate beneficial cold water spawning and rearing habitat for fish (including steelhead/rainbow trout, cutthroat trout and coho salmon), as well as capacity for flood storage. The former channel of Kelley Creek was 368 feet long. The new meandering channel is 573 feet long. The project created an additional 205 feet of cold water spawning and rearing habitat and reduced the slope of the creek from about 1.5% to less than 1% to provide ideal spawning habitat.

Due to funding restrictions, the project was divided into several separate projects. We obtained a grant from NOAA for revegetation, a grant from OWEB and a loan from DEQ for work around the Kelley Creek/Johnson Creek Confluence. With funding secure for the Kelley Creek Confluence project, BES moved forward with completing the design. Construction was completed in September 2004 and planting was completed in February 2005.

1b. Changes to original proposal

Changes to the stone gradation were made do to unavailability of the stone gradation specified. City staff will monitor the streambed to evaluate long-term performance and potential need for adaptive management measures due to change.

During a site visit from the Oregon Department of Fish and Wildlife they asked that the proposed backwater channels be hydraulically connected to the creeks through June 1. Based on statistical data obtained from Stream/Gage Johnson Creek Sycamore Gage and Kelley Creek SE 159th Drive Gage, the grading for the lower portion of the left backwater channel was revised to provide hydraulic connection.

During construction, several performance tests of the earth anchor and cable installations (used to secure large woody debris) were conducted by the contractor. All tested earth anchor installations failed before withstanding the specified applied tensile load. Additional earth anchors were installed to compensate. City staff continues monitoring the earth anchor installations to evaluate long term performance and potential need for adaptive management measures.

1c Lessons Learned
1d Recommendations for more effective implementation of Similar Projects

This was the first project that we grew our own rooted plant cuttings. For past projects we have been unable to find enough cuttings to meet our needs. Providing our own cuttings worked very well. We had more than enough cuttings and the quality was better.

To improve on past performance some investigations prior to awarding the construction contract are recommended, such as locating a source of appropriate rock gradations and performing anchor tests.

To improve on project understanding in the field and construction efficiency additional cross- sections in the plans are recommended.

There was some confusion with the survey crew and efficiency issues with staking the grade for the contractor. We are recommending that survey crew be involved earlier in the project and that they are provided polylines for top of bank, toe of bank, and centerlines. We then recommend that the creek and backwater channels and xyz coordinates are labeled at 50 ft intervals along the polylines.

2. Documentation that the project complies with the Oregon Aquatic Habitat Restoration and Enhancement Guide

The project complies with the Oregon Aquatic habitat Restoration and Enhancement Guide in all applicable activity guidelines. The required permits were obtained for all the necessary activities and the required organizations were contacted throughout the process. The following guidelines were applicable to the Kelley Creek Confluence Restoration:

Riparian/Wetland Watershed Function
Riparian Vegetation Planting and/or Fencing
Whole Channel Alterations
Habitat Construction Project
Large Wood Placement
Instream Boulder Placement

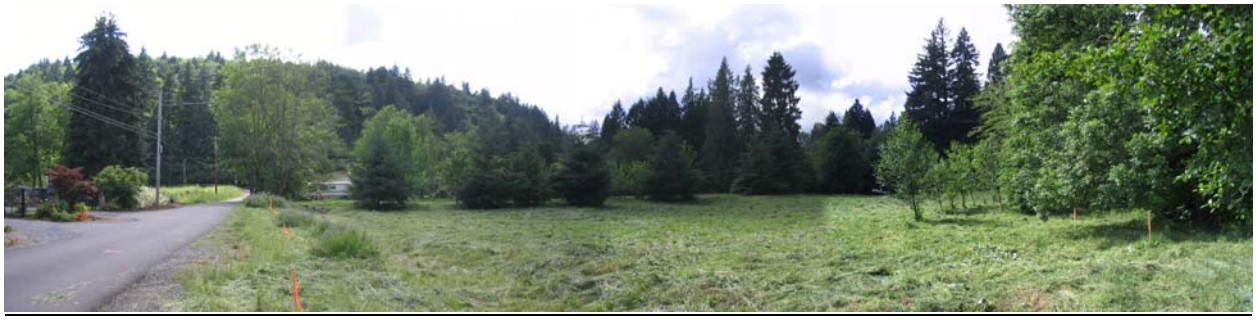
Kelley Phase 2 Before, During and After Construction pictures

By Helena Abernathy for Holly Walla

Preconstruction

Kelley Main Channel, looking NW Holly Walla 5-30-02

Right Backwater Channel, Holly Walla 2-18-04



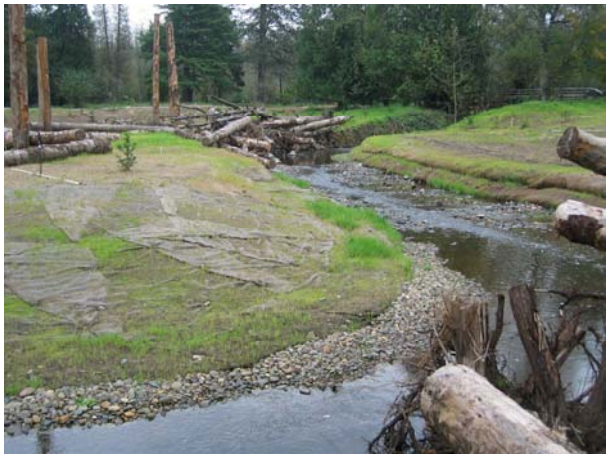
Project site, looking West, Holly Walla 2-18-04

Floodplain Logjam # 1

Looking N, Holly Walla, 7-6-04

Looking NE, Nadine Bole 7-26-04

Looking SE, Nadine Bole, 8-10-04



Looking SE, James Allison 10-16-04

Looking E, Helena Abernathy, 7-25-05

Looking NE from 159th Ave , Nadine Bole 9-14-05

Floodplain Logjam # 2

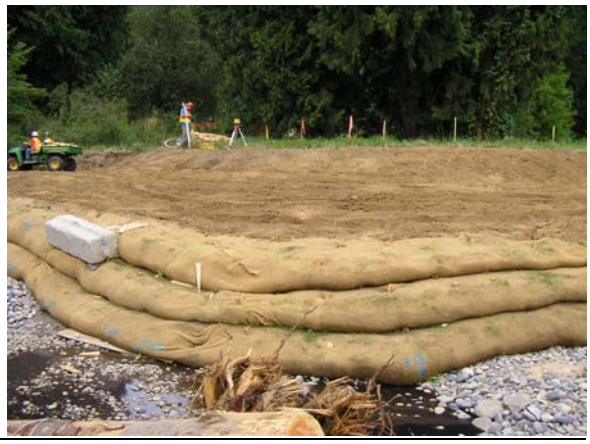
Looking SW, Holly Walla ,7-6-04

Looking N, Nadine Bole 7-17-04

Footer Log for LogJam, Nadine Bole 8-02-04

Logjam #2 in front, Logjam #3 in Back, Nadine Bole 8-02-04

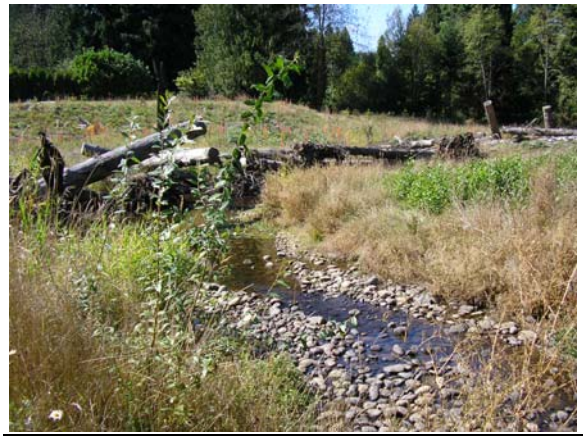
Looking at point bar across from Logjam # 2
Nadine Bole 8-02-04



Building soil wall
Nadine Bole 8-3-04

Lift construction along Riffle between logjams 1 & 2, Holly Walla, 8-11-04

Looking SW
Holly Walla 8-26-04



Looking N, Nadine Bole, 9-15-04

Looking N, James Allison, 4-1-05
(Meander Cutoff Channel to the left)

Logjam # 3

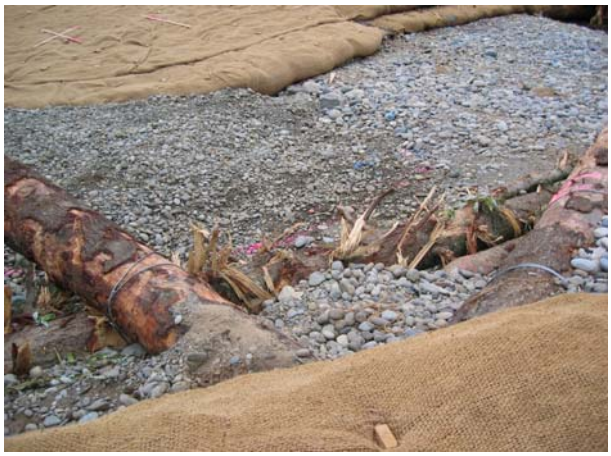
Looking SW, Holly Walla 7-06-04

Looking N, Nadine Bole, 7-21-04

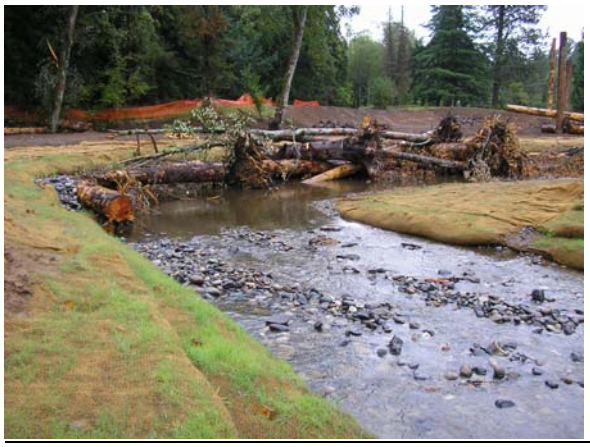
Looking S, Nadine Bole, 7-23-04

Looking N, Holly Walla, 7-30-04

Between Logjams 2 & 3,
Holly Walla, 7-30-04



Holly Walla, 8-11-04



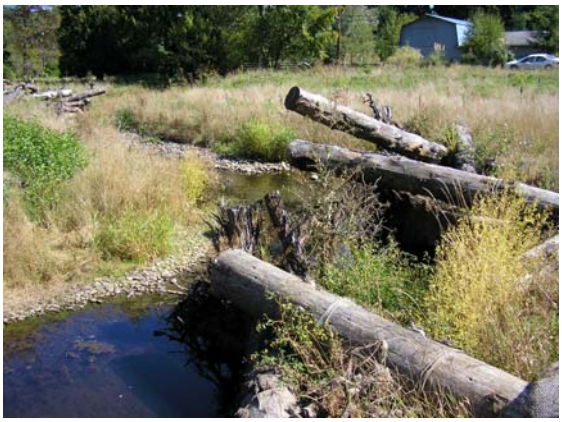
Looking SE, Nadine Bole 8-22-04

Looking S, Helena Abernathy 7-25-05

Logjam # 4

Looking SW, Nadine Bole 7-17-04

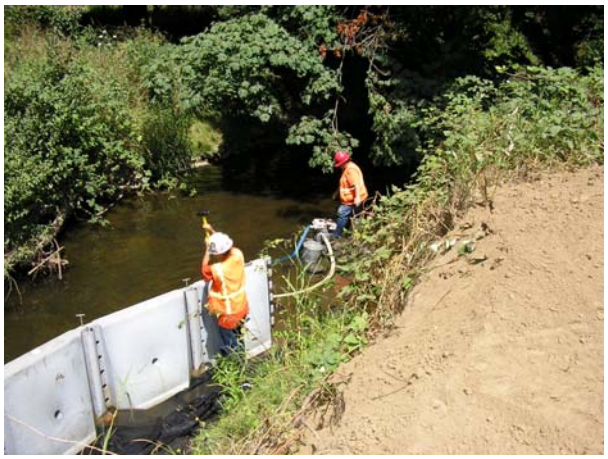
Looking S, Holly Walla, 8-5-04



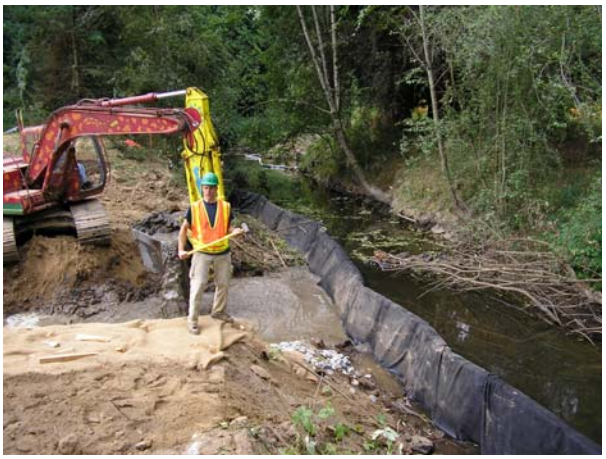
Looking S, Nadine Bole 9-15-04

Looking W, Helena Abernathy 7-25-05

Mouth of Kelley to Johnson Creek

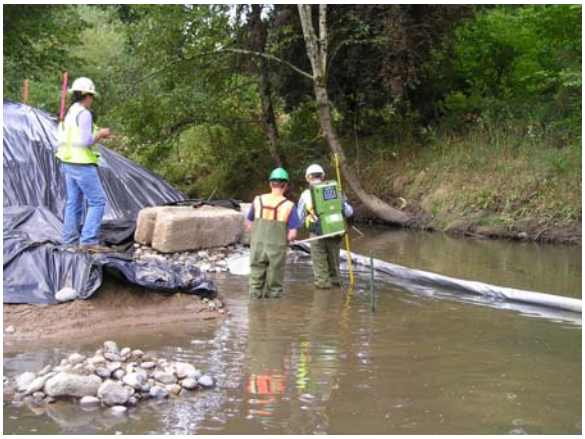


Nadine Bole 8-3-04



Nadine Bole 8-4-04

Nadine Bole 8-04-04



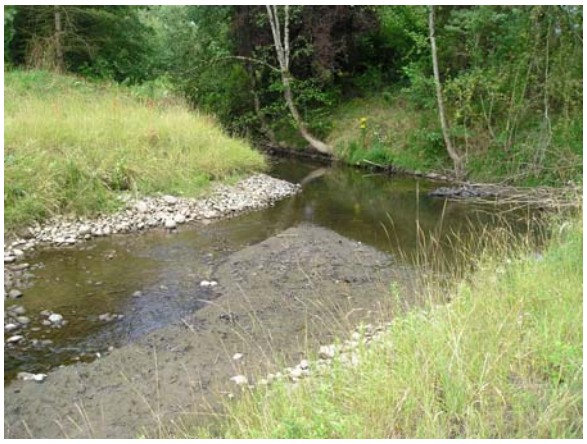
Holly Walla 8-5-04

Holly Walla 8-6-04

Nadine Bole 8-19-04

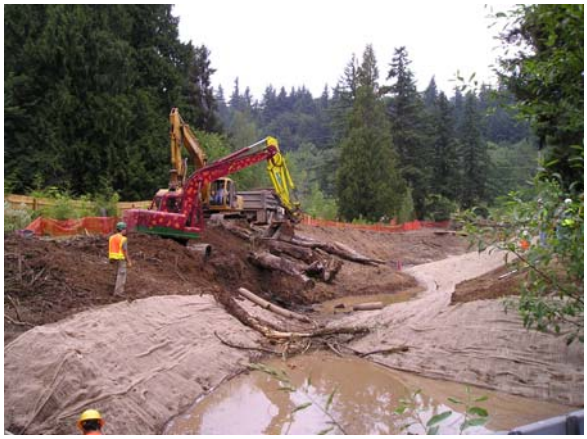
Looking W, Holly Walla, 8-25-04

Looking East, Nadine Bole, 8-25-04



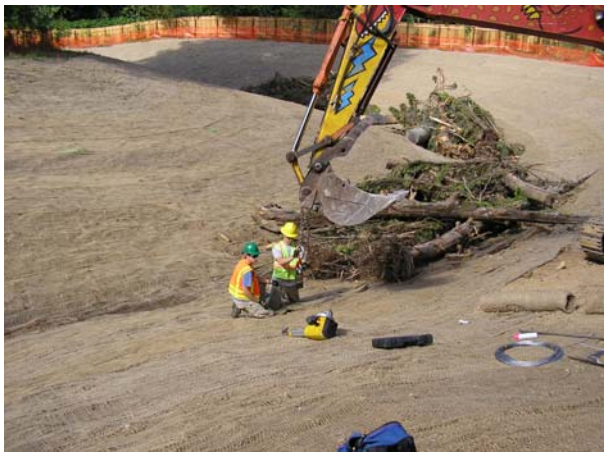
Looking W, Helena Abernathy, 7-25-05

Right Backwater Channel



Holly Walla, 8-2-04

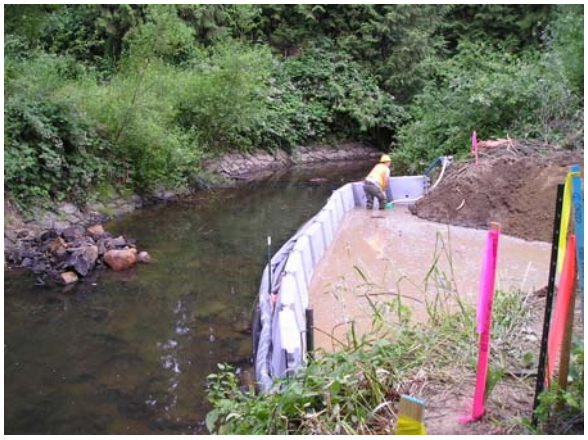
Holly Walla, 8-2-04



Nadine Bole, 8-4-04

Nadine Bole, 8-5-04

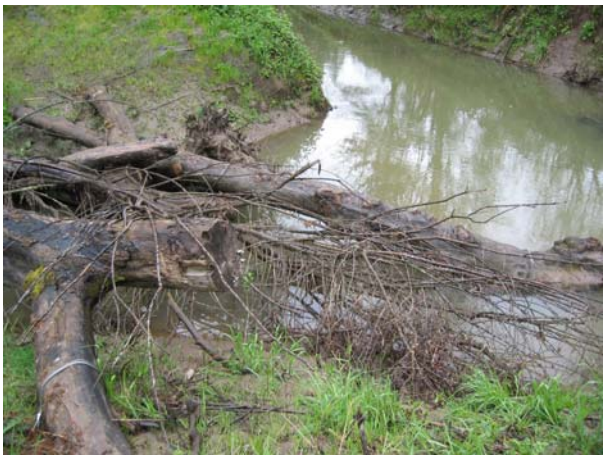
Holly Walla, 8-17-04



Holly Walla, 8-17-04

Holly Walla, 8-17-04

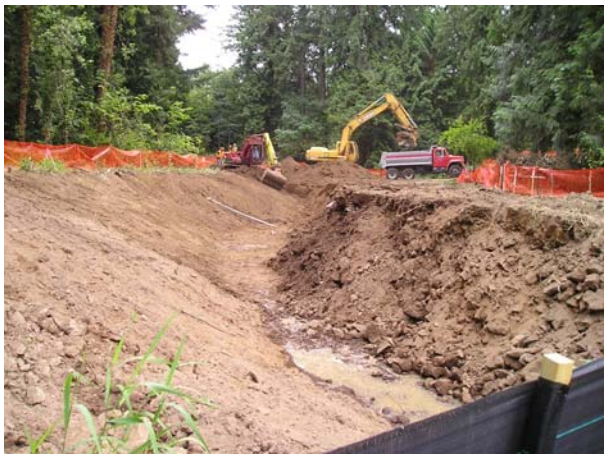
Nadine Bole, 3-28-05



Holly Walla 4-8-05

Helena Abernathy, 7-25-05

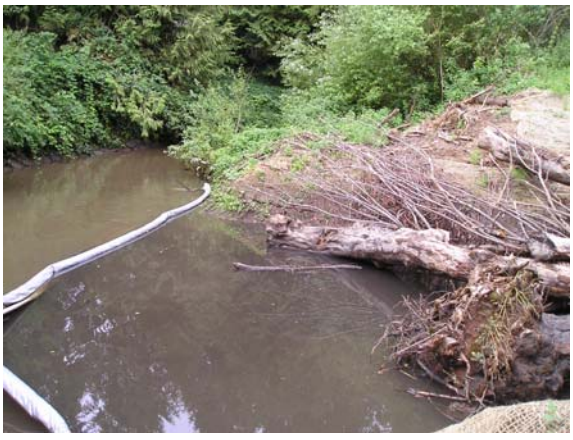
Left Backwater Channel



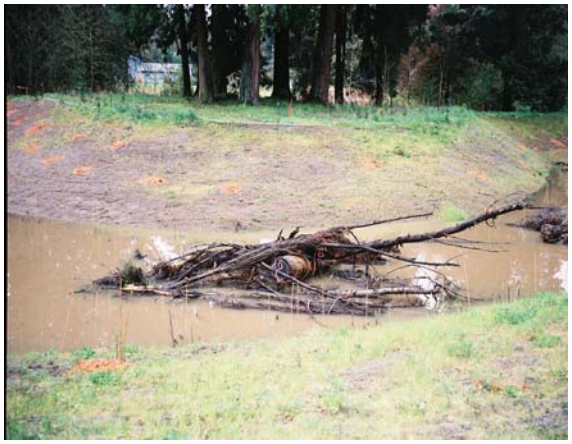
Holly Walla 7-9-04

Pulling soil plug 7-9-04

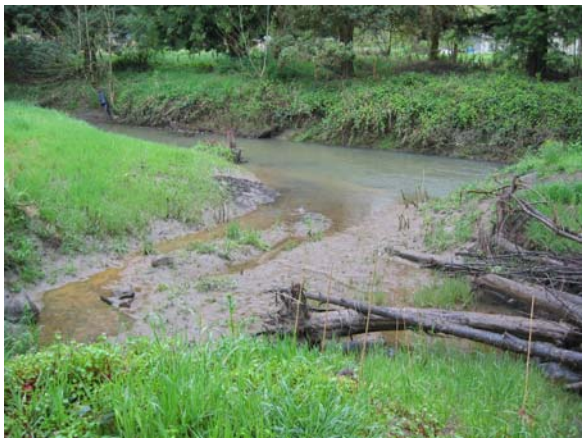
Holly Walla, 8-17-04



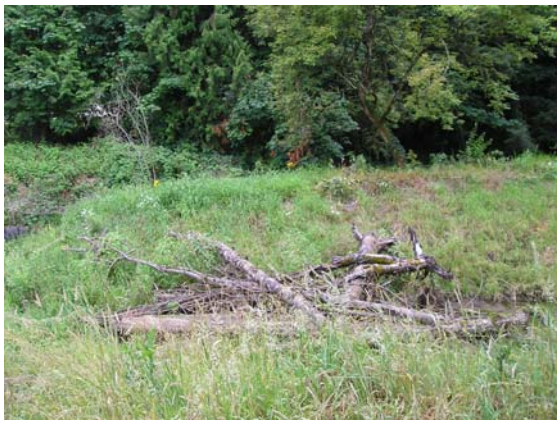
Holly Walla, 8-17-04



Nadine Bole, 3-23-05



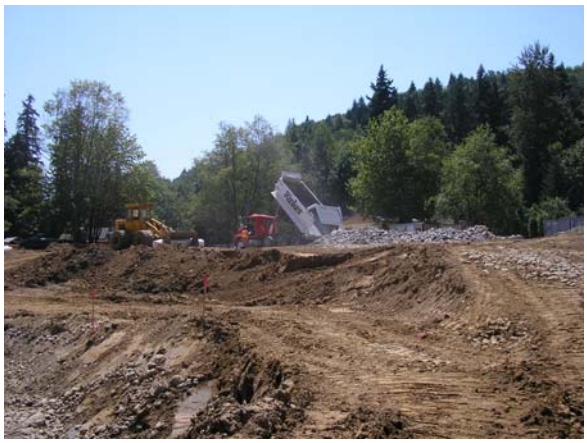
Holly Walla 4-8-05



Looking N, Helena Abernathy, 7-25-05

Looking E, James Allison, 11-30-05

Meander Cut-off Channel (to the West)



Beginning grading, Nadine Bole 7-28-04

Nadine Bole 8-5-04

Looking E, Nadine Bole 8-25-04

Looking SE, Nadine Bole 8-25-04

Looking S, Nadine Bole 8-25-04

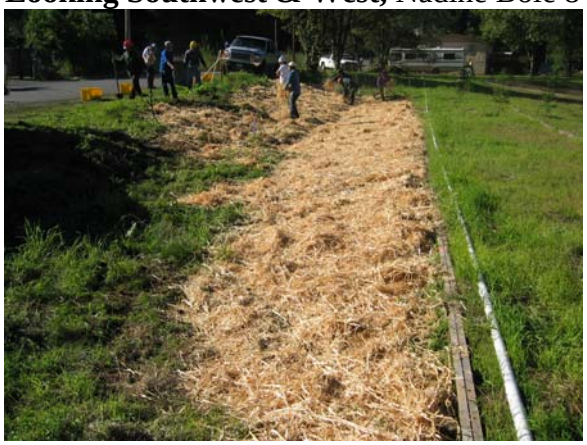
Looking N, Nadine Bole 3-28-05

Looking NW , Helena Abernathy, 7-25-05

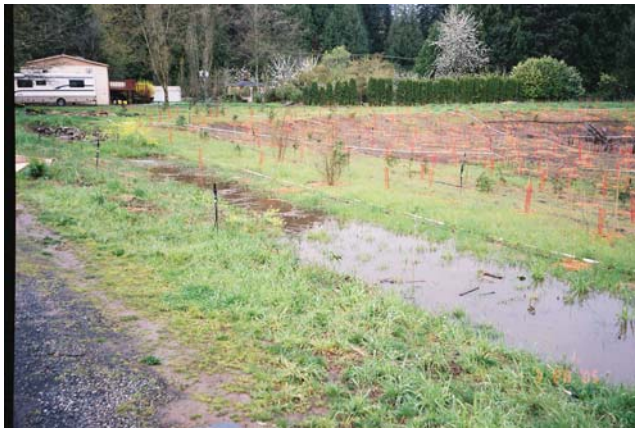
Looking NE, Helena Abernathy 7-25-05

Water Quality Facility

Looking Southwest & West, Nadine Bole 8-26-04



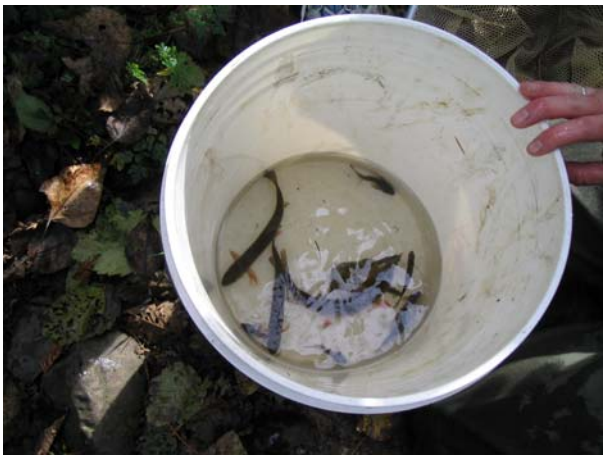
Holly Walla 10-14-04



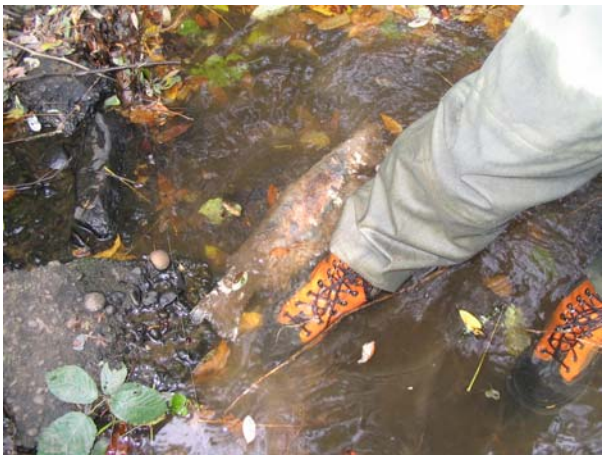
After Construction, Nadine Bole, 3-28-05

Holly Walla 12-07-05

Fish



Cut-bows and Sculpin,
just upstream of project site
Chad Smith 10-27-05

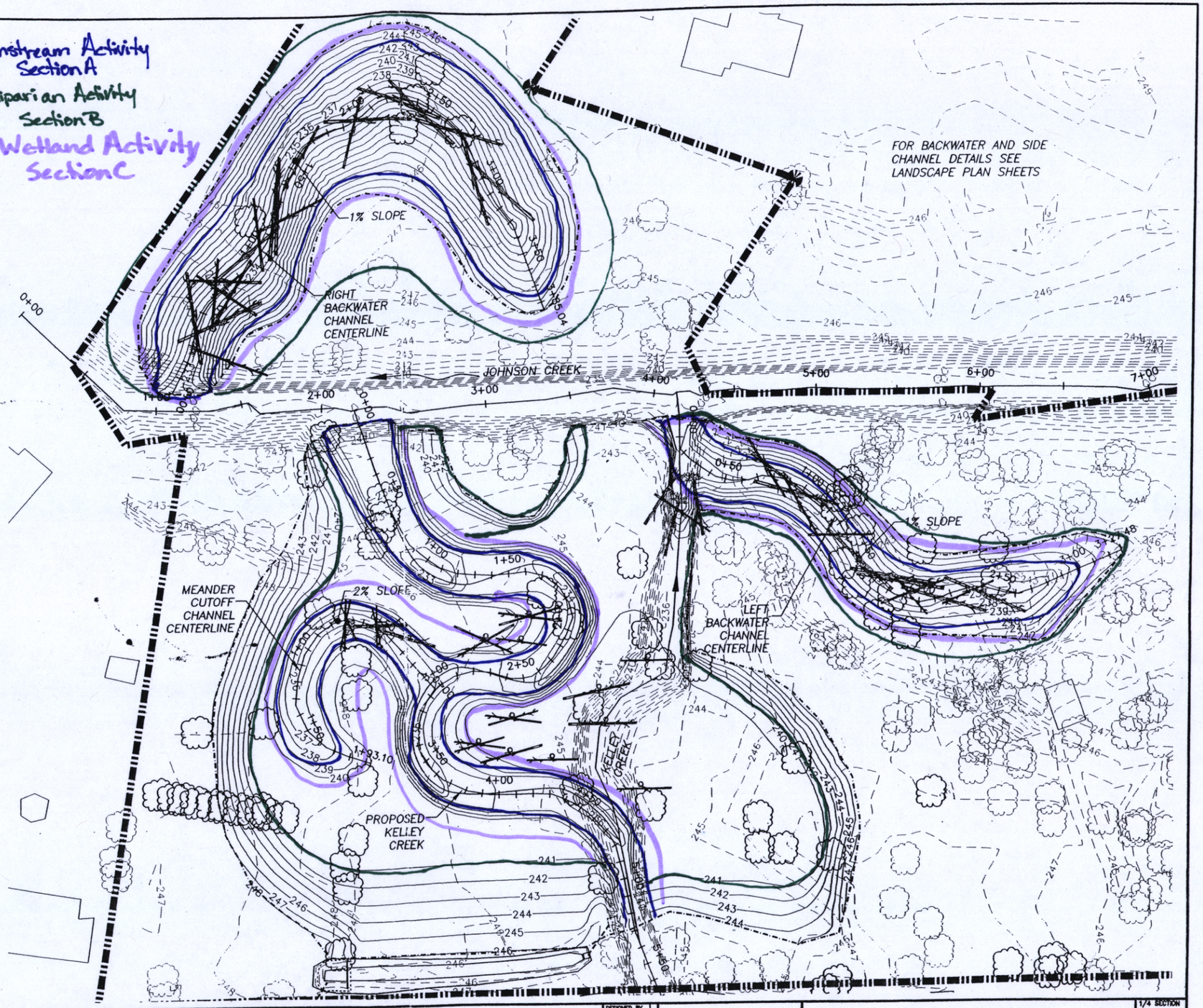


Coho in Kelley Creek,
just upstream of project site
Chad Smith 10-27-05

PLAN LEGEND

- APPROXIMATE PROJECT BOUNDARY
- EXISTING GROUND CONTOUR (1 FT)
- 247 PROPOSED CONTOUR (1 FT)
- EDGE OF GRADING
- 22+00 CREEK CENTERLINE WITH STATIONING
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- VERTICAL LOG (PARTIALLY BURIED)
- LARGE WOOD (PLACED AND ANCHORED ON FINAL GRADE)

- Instream Activity Section A
- Riparian Activity Section B
- Wetland Activity Section C



NOTES:

LARGE WOOD DEPICTED ON THIS SHEET TO BE PLACED ON SURFACE OF FINAL GRADE AND ANCHORED.

SEE DETAILS 1 AND 4, SHEET C13 FOR CABLING AND ANCHORING LARGE WOOD IN MEANDER CUTTOFF CHANNEL AND BACKWATER CHANNELS.

SEE DETAILS 3 AND 4, SHEET C13 FOR CABLING AND ANCHORING LARGE WOOD ON THE FLOODPLAIN.

SIZE, LOCATION AND ORIENTATION OF LARGE WOOD PLACEMENTS SHOWN FOR BID PURPOSES. FINAL LOCATION AND ORIENTATION WILL DEPEND UPON THE SIZE AND SHAPE OF THE MATERIAL DELIVERED OR SALVAGED.

LARGE WOOD AND ANCHOR PLACEMENTS TO BE FIT IN THE FIELD AND APPROVED BY THE OWNER'S REPRESENTATIVE.

-30 0 30 60
SCALE PLAN SCALE FEET

PLAN VIEW

inter·fluve, inc.
1020 Wasco Street, Suite 1
Hood River, OR 97031
541.386.9003 / Fax 541.386.9241
www.interfluve.com

NO.	DATE	DESCRIPTION	APPD.
		REVISION	

XREF(S) USED:
ROTATION ANGLE:
CONSTRUCTED BY
PROJECT COMPLETED
MAP CORRECTED BY ____ CHECKED BY
FINAL MAP DATA
1-15-04

DESIGN CHECK | DATE APPD.
CADD CHECK | PROGRAM MGR
CHECKED BY | CONST. MGR.
DESIGN MGR.

CITY OF PORTLAND
ENVIRONMENTAL SERVICES
DAN SALTZMAN, COMMISSIONER, PUBLIC AFFAIRS
LEE KLINGLER, PE., CHIEF ENGINEER
APPROVAL
ENVIRONMENTAL SERVICES CHIEF ENGINEER
REG. PROF. ENGR. NO. 9327

DESIGNED BY JSC
DRAWN BY SNZ/KRR
CHECKED BY MJH
DESIGN MGR. JSC

KELLEY CREEK FLOOD MITIGATION AND RESTORATION, PHASE II

1/4 SECTION 3646
JOB NO. 7327
SHEET NO. C7
9 of 22