

UMATILLA RIVER BASIN FISH HABITAT ENHANCEMENT

FY 1991 ANNUAL REPORT

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Project No. 87-100
Contract Number DE-AI79-87BP34272

January 1992

Umatilla River Basin Fish Habitat Enhancement
FY 1991 Annual Report

ABSTRACT

During the summer of 1991, construction continued on the Bonneville Power Administration funded anadromous fish habitat enhancement project in the Umatilla River sub-basin, Umatilla County, State of Oregon. 1991 was the final year of this five year project.

Work started in May 1 and ended on November 31. Preconstruction activity consisted of final layout and design of the project, movement of approximately 600 cubic yards of large boulders and 12 log truck loads of woody material to the construction site.

A total of five rock weirs, five rock deflectors, 20 woody debris placements, and 79 individual boulder placements were constructed in the South Fork and the main stem of the Umatilla River. A total of twelve log weirs, four rock weirs, two rock deflectors, and ten woody debris placements were placed in Meacham Creek. In addition, 47 weirs in Thomas Creek and the upper portion of the South Fork of the Umatilla River were repaired.

Project monitoring consisted of sediment sampling above and below the Umatilla River construction project area, and mapping and photographing all structures.

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INTRODUCTION

Project Location - The project area is located on the main stem and South Fork of the Umatilla River, Thomas Creek (a tributary to the South Fork), and Meacham Creek (a tributary to the main stem). These streams are located in the northern portion of Umatilla County, Oregon, on the Walla Walla Ranger District, Umatilla National Forest. Map coordinates are T.3N.. R.37E., Sections 21, 22, 27, 28, 33; T.2N.. R.37E. Sections 4, 5, 9, 10; and T.1S., R.36E. Sections 14 and 15.

Background - The commercial, recreational, and cultural values of anadromous fish are well documented. Historically, the Umatilla River and its major tributaries were important anadromous salmonid producers. Over the years the river system's production of steelhead trout (Oncorhynchus mykiss) has significantly declined and runs of spring chinook salmon (Oncorhynchus tshawytscha) were eliminated. At the present time the Oregon Department of Fish and Wildlife (ODF&W), Bonneville Power Administration (BPA), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and the Umatilla National Forest are cooperating to improve runs of existing steelhead trout and to re-establish runs of spring chinook salmon. This Forest Service fish habitat enhancement project is one phase of the overall project.

The primary habitat factor limiting chinook production in the South Fork and main stem of the Umatilla River has been a lack of summer holding water for adults. The pool/riffle ratio was 10:90 prior to project initiation, with most pools being less than two feet deep. Work in the south fork is geared to improving habitat for spring chinook. This work should also benefit steelhead trout and resident fish species.

Steelhead trout production in Thomas Creek was limited by extreme late summer low flows that often left the channel dry. Structures were built in Thomas Creek in 1987 and 1988 to dig pools deep enough into the channel to tap into sub-surface flows. These structures were damaged by high flows in the winter and spring of 1988 and 1989, and afterwards most failed to function properly. Repair of these structures began in the summer of 1989 and continued in the summer of 1990. Forty-seven structures were still in need of repair at the end of 1990.

Steelhead trout production in Meacham Creek was limited by the lack of pools deep enough to rear age 1+ parr. Unlike Thomas Creek, Meacham Creek retains year around flow and age 0+ fish are plentiful. The construction of pool and pocket pool habitat should increase steelhead production by increasing habitat for age 1+ fish.

Project Goals and Objectives - The goals of the project are to increase production of steelhead trout smolts and habitat potential for spring chinook salmon. These overall goals will be achieved by meeting the following objectives.

1. Increase adult holding pool habitat for spring chinook in the South Fork and main stem of the Umatilla River.

2. Increase low flow pool rearing habitat for steelhead trout in Thomas Creek and Meacham Creek, and for steelhead trout and chinook salmon in the South Fork and main stem of the Umatilla River.
3. Increase streambank stability.
4. Decrease bedload movement.
5. Improve upstream adult fish passage.

In-stream Work Period - The instream work period is from July 1 to August 15 in Thomas Creek and the Umatilla River. In 1990, redd construction began in the Umatilla River on August 17. The in-stream work period for Meacham Creek is from July 1 to October 31.

PROJECT DESCRIPTION

1991 project activities consisted of:

1. Preparing and administering contracts to;
 - a. Haul 600 cubic feet of boulders to the project sites.
 - b. Skid and haul large pieces of woody material (sections of blown over trees 40 feet long with roots and branches attached) to the project site.
 - c. Construct log and rock weirs, excavate downstream pools, and place woody material and rocks in the created pools to provide fish cover.
 - d. Construct log and rock deflectors where bank protection is needed.
 - e. Place individual boulders to create small mid-riffle pool habitat (pocket water).
 - f. Place clusters of woody material (anchored with boulders) to create juvenile rearing habitat.
 - g. Repair structures on Thomas Creek damaged by high flows.
2. Anchoring new and repaired structures in place by cabling them together with steel cable.
3. Monitor structures for structural damage and effectiveness.

Umatilla River - The contractor started hauling rock from the Corporation rock storage site on June 24 to the Umatilla River project site. An extra 300 cubic yards of rock was stored here from the 1990 project. This rock was sufficient for this year's needs on the Umatilla River. In-stream work began on July 1 in the Umatilla River with a John Deere 690B excavator. This portion of the project proceeded smoothly.

Hauling of woody material to the work site began July 10. This year an emphasis was placed on recruiting larger wood than in the past. An upland site was found with sufficient blown over trees close enough to a road that skidding would not be required. A self-loading log truck was used to pick up and transport the woody material to the work site. This portion of the project did not go as well as planned. Although the loading and hauling of smaller wood the previous year was quite successful, larger wood proved difficult for the self-loader to handle. In future projects, if this larger wood is necessary, a separate loader would probably work better. Wood haul lasted four days.

It was possible to deliver all of the rock and wood directly to each structure site eliminating the need to move it up or down the channel with the crawler/loader as in past years.

Meacham Creek - It was discovered through further reconnaissance and consultation with the Union Pacific Railroad that the bridges on the railroad's vehicle access road along Meacham Creek would not support extensive rock or woody material transport. However, also during this time period an old rock pit was found with plentiful oversized rock. This pit was within six miles of the project site and did not require crossing any bridges. A good source for woody material recruitment could not be found close to project site. For these reasons the project was redesigned to use less wood and more rock in the structures.

The start of work on Meacham Creek was delayed until September 18 due to extensive track maintenance being conducted by the Union Pacific Railroad. Their activity blocked the access road to any extensive use (the Forest Service does not have Right-of-Way to use this road and wishes to thank the Union Pacific Railroad's personnel for their help and cooperation). Two excavators were used during the rock haul process, one to load the rock into the trucks and the other to move it off the narrow roadbed after the trucks deposited the rock near the construction site. Rock haul at Meacham Creek ended September 30. High fire danger during this portion of the project required additional personnel for fire patrols and fire watches.

Both excavators continued to operate during the construction phase of the Meacham Creek sub-project. This phase started on October 1 and continued through the 18th.

Thomas Creek - Structure repair work began in Thomas Creek on July 1. The repair work was conducted with Schaeff model 40 superhoe (spyder). Portions of structures were repaired as needed. **Most** of the structures repaired this year had not been as badly damaged as structures repaired in previous years so work proceeded fairly rapidly. Repair work was completed in two weeks.

All new and repaired structures were cabled together using Hilte drills, epoxy glue, and steel cable. Because of the onset of poor weather, weirs on Meacham Creek were cabled only on their downstream wings, There will be a need after the 1992 snowmelt to evaluate these structures for additional cabling needs.

ACHIEVEMENTS

The following new structures were completed in FY 1991: (1) 12 log weirs creating summer rearing habitat for steelhead trout: (2) 4 rock weirs creating summer holding pools for adult chinook salmon. and 5 rock weirs creating summer

rearing habitat for steelhead trout: (3) 7 small and medium rock deflectors to improve bank stability; (4) 30 woody material placements to increase rearing habitat for all species: (5) 79 individual boulders placements also to increase rearing habitat for all species.

TYPE	LOG WEIRS	ROCK WEIRS	DEFLECTORS	WOODY MATERIAL	INDIVIDUAL BOULDERS	TOTALS
UMATILLA R.	0	5	5	20	79	109
MEACHAM CR.	12	4	2	10	0	28
						137

All of the repaired structures were cabled together to prevent possible damage from high flows. New structures were cabled where necessary. Woody material placements were cabled to boulders to prevent displacement during high flows.

Upon termination of in-channel activity disturbed areas were seeded with grass.

PROJECT MONITORING

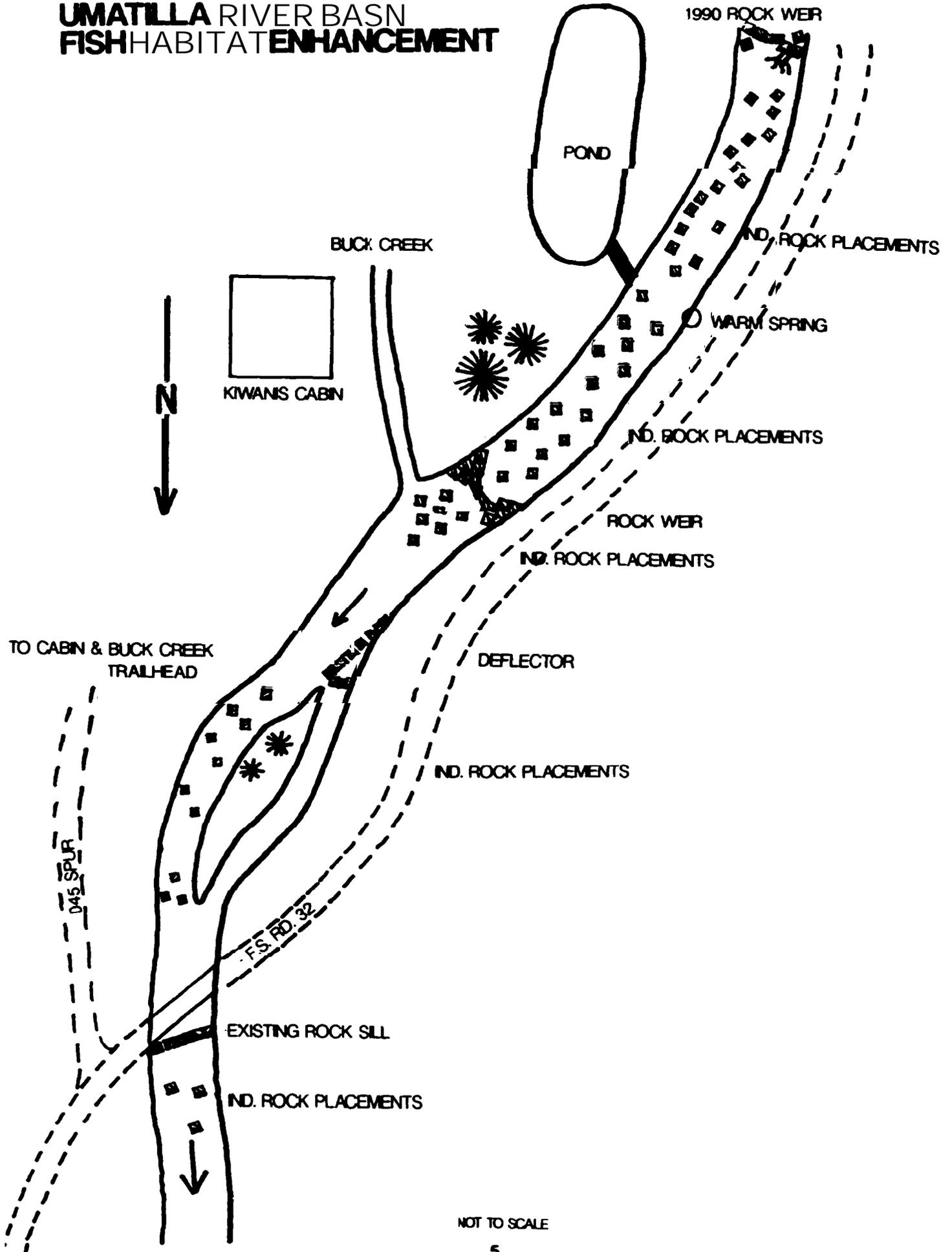
Monitoring in 1991 consisted of mapping and photographing all new structures and photographing all repaired structures. Pool size will be determined in the summer of 1991 after the spring high flows have had the opportunity to modify the pools. Turbidity samples were taken above and below the Umatilla River project area. Sediment data will be analyzed during the winter of 1992.

PROJECT COSTS

Project costs are estimated to be as follows.

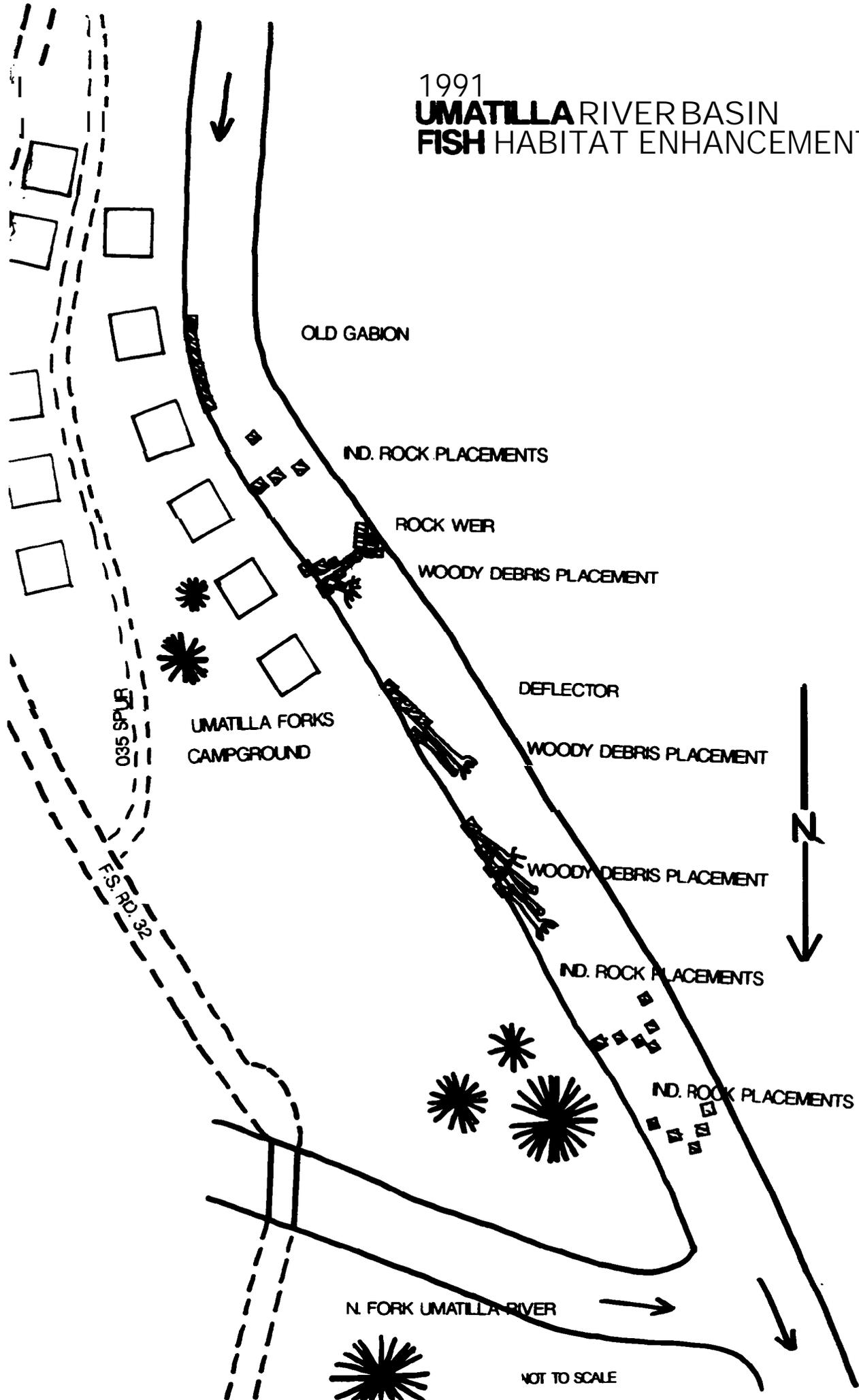
A. Salaries	\$	34,480
B. Transportation/Travel/Per Diem	\$	5,870
C. Expendable Supplies	\$	7,684
D. Non-expendable Supplies	\$	0
E. Overhead	\$	11,757
F. Subcontracts	\$	61,852
	\$	121,643

1991
**UMATILLA RIVER BASIN
FISH HABITAT ENHANCEMENT**



NOT TO SCALE

1991
UMATILLA RIVER BASIN
FISH HABITAT ENHANCEMENT



DAY USE
PICNIC AREA
& HANDICAP
FISHING AREA

ROCK WEIR

1991
**UMATILLA RIVER BASIN
FISH HABITAT ENHANCEMENT**

IND. ROCK PLACEMENTS

WOODY DEBRIS PLACEMENT

WOODY DEBRIS PLACEMENT

DEFLECTOR
WOODY DEBRIS PLACEMENT

WOODY DEBRIS PLACEMENT

DEFLECTOR

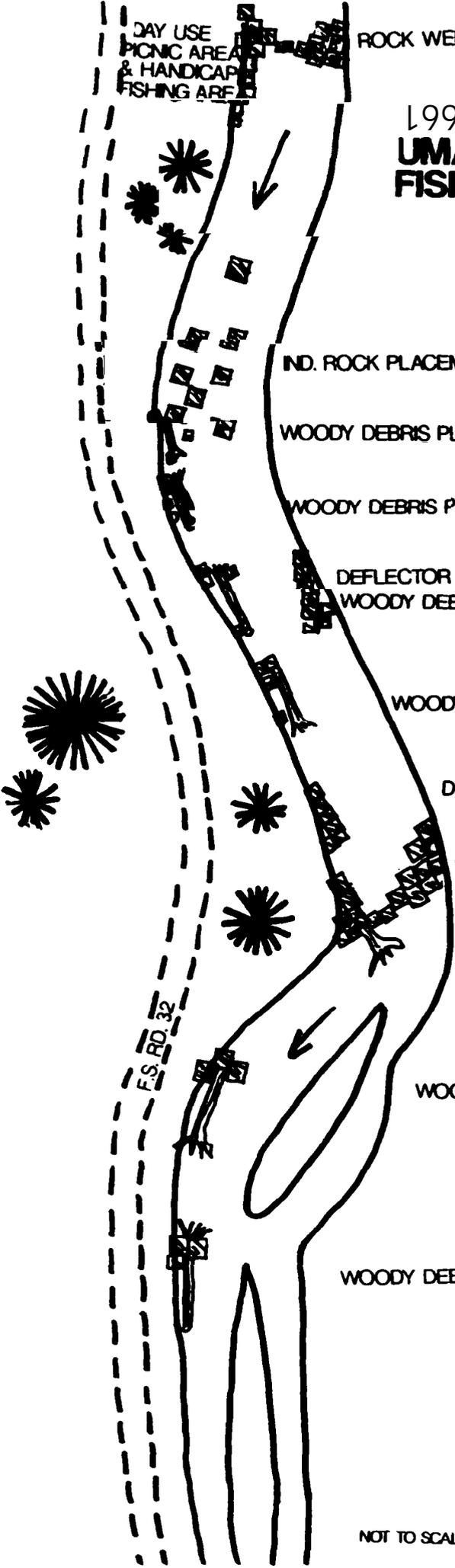
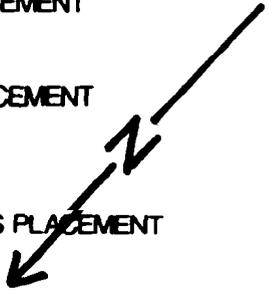
ROCK WEIR

WOODY DEBRIS PLACEMENT

WOODY DEBRIS PLACEMENT

WOODY DEBRIS PLACEMENT

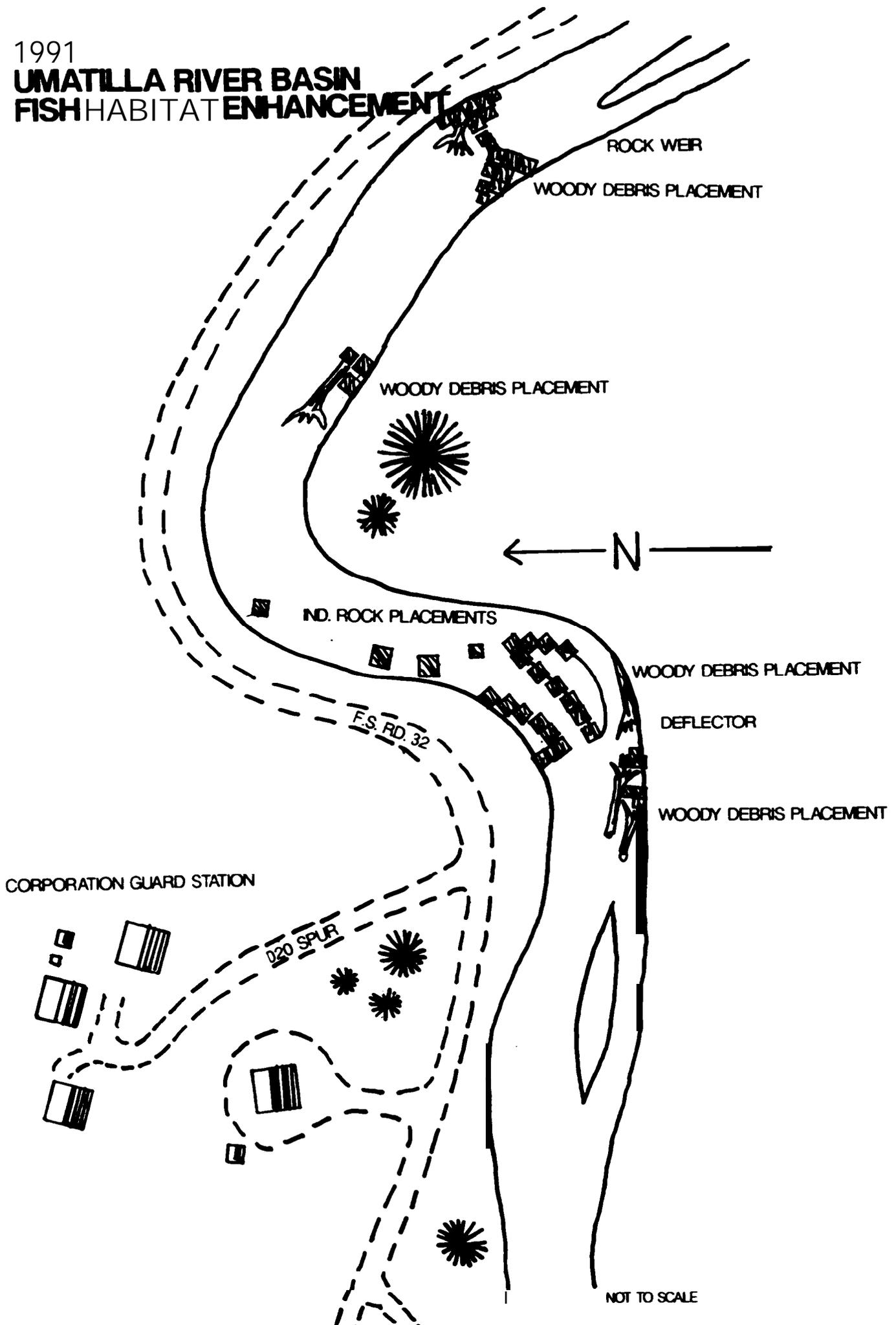
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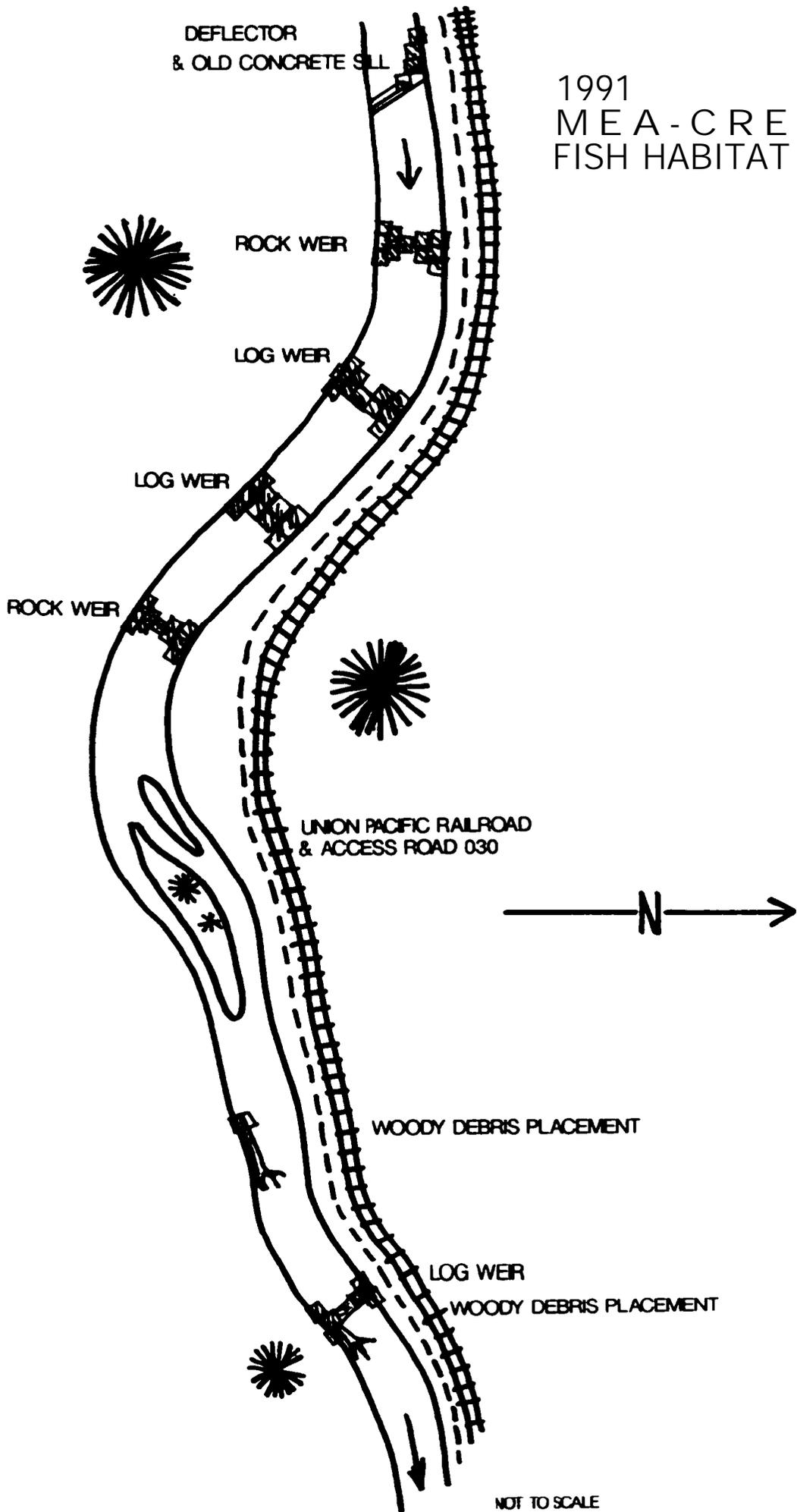
1991

UMATILLA RIVER BASIN FISH HABITAT ENHANCEMENT



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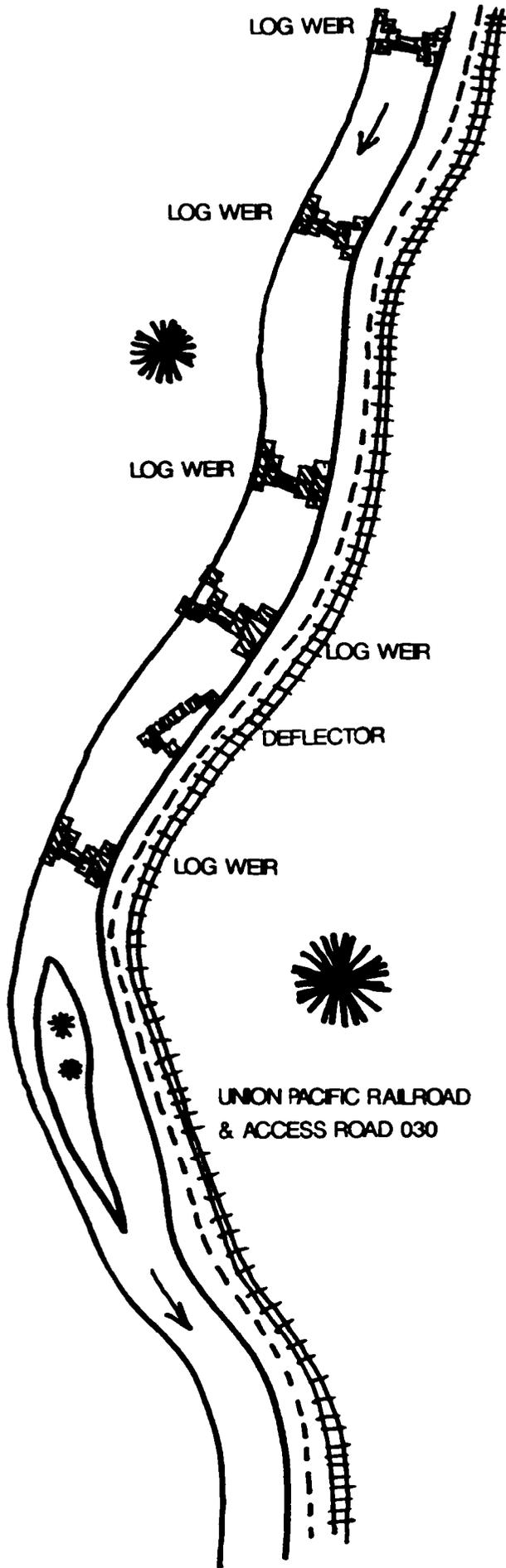
1991 MEA - CREEK FISH HABITAT ENHANCEMENT



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1991

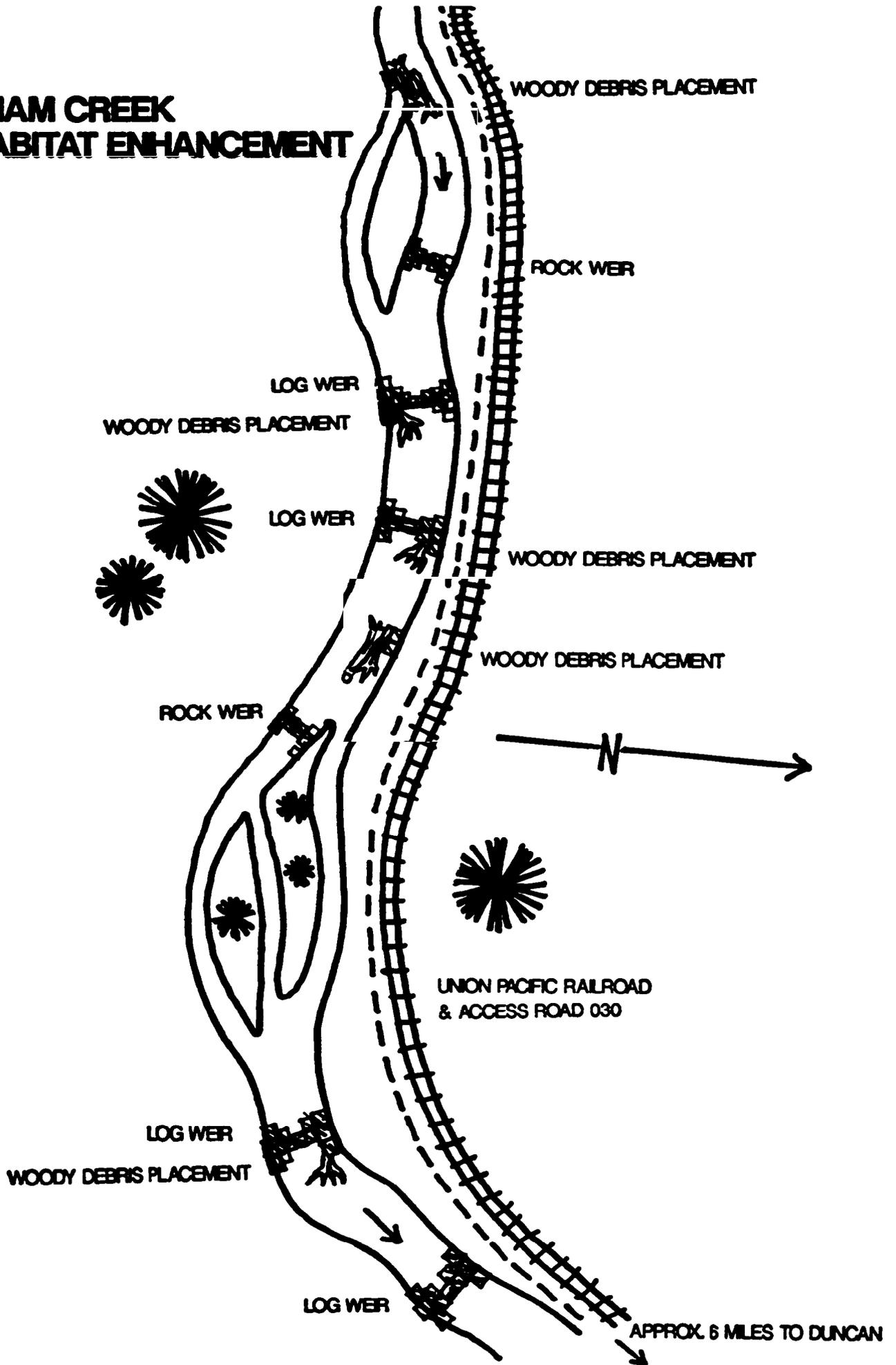
MEACHAM CREEK FISH HABITAT ENHANCEMENT



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MEACHAM CREEK FISH HABITAT ENHANCEMENT



NOT TO SCALE