Priest Rapids Dam
Off-ladder Adult Fish Trap
Annual Report 2007

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Executive Summary

On May 3, 2004, the National Marine Fisheries Service (NMFS - then referred to as NOAA Fisheries) issued its Biological Opinion of the effects (Biological Opinion) of the proposed action on listed species, in accordance with Section 7 of the Endangered Species Act of 1973 as amended (16 USC 1531 et seq.), regarding the Federal Energy Regulatory Commission's (FERC's) proposed action amending Public Utility District No. 2 of Grant County's (Grant PUD's) existing license for the Priest Rapids Hydroelectric Project (Project) to authorize implementation of an Interim Protection Plan for listed anadromous salmonids. On December 16, 2004, FERC adopted the Biological Opinion, which includes NOAA Fisheries' Reasonable and Prudent Alternative Actions and Incidental Take Statement for Upper Columbia River (UCR) spring-run Chinook salmon (*Oncorhynchus tschawytscha*) and UCR steelhead (*O. mykiss*). Action 22 of the Biological Opinion requires Grant PUD to construct an off-ladder adult fish trapping facility (OLAFT) at Priest Rapids Dam.

Grant PUD completed construction of Phase 1 (civil site work) of OLAFT construction during the fall of 2005. Activities conducted in Phase 1 included excavation for the facility drain, the anesthetic bath drain, and the sanitary sewer; removal of pavement and setting of facility grade; construction of the evaporation pond; and the reconstruction of the parking lot. Phase II (trap construction) began in August 2006 and was completed in June 2007. Washington Department of Fish and Wildlife used the facility from July through October 2007 to sample steelhead for the agency's stock assessment program, and to collect fall Chinook broodstock for the Priest Rapids Hatchery.

This annual report summarizes operations conducted at the OLAFT during 2007 and operations and activities planned for 2008.

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1.0 Introduction

On May 3, 2004, the National Marine Fisheries Service (NMFS - then referred to as NOAA Fisheries) issued its Biological Opinion of the effects (Biological Opinion) of the proposed action on listed species, in accordance with Section 7 of the Endangered Species Act of 1973 as amended (16 USC 1531 et seq.), regarding the Federal Energy Regulatory Commission's (FERC's) proposed action amending Public Utility District No. 2 of Grant County's (Grant PUD's) existing license for the Priest Rapids Hydroelectric Project (Project) to authorize implementation of an Interim Protection Plan for listed anadromous salmonids. On December 16, 2004, FERC adopted the Biological Opinion, which includes NOAA Fisheries' Reasonable and Prudent Alternative Actions and Incidental Take Statement for Upper Columbia River (UCR) spring-run Chinook salmon (*Oncorhynchus tschawytscha*) and UCR steelhead (*O. mykiss*).

Action 22 of the Biological Opinion requires Grant PUD to construct an off-ladder adult fish trapping facility at Priest Rapids Dam.

Action 22 provides:

> *FERC shall require Grant PUD to complete the design of an off-ladder adult trap in the left bank fishway at Priest Rapids Dam within 1 year of issuance of this Opinion. Design scoping shall commence within 90 days of this Opinion with a prompt construction schedule that will be developed in consultation with the PRCC and approved by NOAA Fisheries. Grant PUD, in coordination with the PRCC, may seek agreement on sharing the costs of constructing this facility with the Northwest Power Planning Council and other regional sources.*
>
> *Grant PUD shall construct the left bank fishway off-ladder trap within three years of issuance of this Biological Opinion, after consultation with the PRCC, and subject to NOAA Fisheries' approval of the design, regardless of funding commitments from other entities.*

2.0 Project History

The off-ladder adult fish trap (OLAFT) technical working group, consisting of NOAA Fisheries, Washington Department of Fish and Wildlife (WDFW), Yakama Nation, and Grant PUD biological, engineering, and consulting staff, was established in February 2005. This group selected the OLAFT site and the final design alternative.

In August 2005, Grant PUD initiated Phase 1 construction (civil site work) of the OLAFT. Phase 1 consisted of excavation for the facility drain, the anesthetic bath drain, and the sanitary sewer, removal of pavement and setting of facility grade, construction of the evaporation pond, and the reconstruction of the parking lot. In November 2005, 90% drawings for Phase 2 of the trap (trap construction) and construction schedule were presented to the OLAFT working group for final review. Discussions and revisions centered on lamprey issues, shading, fish handling, and return flumes. These items were considered in preparation of the final drawings. FERC approved the final design and authorized construction of the OLAFT in August 2006.

Phase II (trap construction) began in August 2006 and was completed in June 2007. On May 17, 2007 the water and fish passage portions of the facility were watered up and tested. Work that occurred between May 17 and facility completion in June occurred outside of the water filled area of the facility. Figure 1 shows the completed OLAFT facility.

Figure 1 Off-ladder adult fish trap located at Priest Rapids Dam, Columbia River mile 397.1, Washington, USA.

3.0 2007 Trap Operation

Washington Department of Fish and Wildlife operated the OLAFT in 2007 as part of its steelhead stock assessment. Grant PUD also requested that WDFW collect fall Chinook salmon broodstock for the Priest Rapids Hatchery at the OLAFT in 2007, due to low returns to the Columbia River and the Priest Rapids Hatchery.

Respective trapping dates are summarized in Tables 1 and 2. The facility was completely dewatered and winterized for the season on November 16, 2007.

Table 1 **2007 steelhead trapping dates for the Priest Rapids Dam off-ladder adult fish trap, Columbia River mile 397.1, Washington, USA.**

Steelhead Stock Assessment Sampling Dates 2007	
July 10	August 28
July 12	August 30
July 17	September 4
July 19	September 6
July 24	September 11
July 26	September 13
July 31	September 18
August 2	September 20
August 7	September 25
August 9	September 27
August 14	October 2
August 16	October 4
August 20	October 9
August 21	October 11
August 23	

Table 2 **2007 Chinook broodstock trapping dates for the Priest Rapids Dam off-ladder adult fish trap, Columbia River mile 397.1, Washington, USA.**

Chinook Broodstock Collection Dates 2007	
October 17	November 1
October 18	November 2
October 19	November 3
October 20	November 4
October 21	November 5
October 22	November 6
October 23	November 7
October 24	November 8
October 25	November 9
October 26	November 10
October 27	November 11
October 28	November 12
October 29	November 13
October 30	November 14
October 31	November 15

4.0 OLAFT Operation Observations

No mechanical operational failures were encountered during operation of the OLAFT in 2007. All gates, valves, plumbing, electrical components, and laboratory utilities operated as designed. Observed fish passage indicated that adult salmonids found the entrance channel and readily ascended the steeppass Denil (Figure 2). The sorting flume was of sufficient length to allow for the identification and sorting of trapped fish. All sorting gates worked as designed and no failures were documented during operation. It was also observed that fish readily migrated out of the return channel and back into the main fishway once they had been bypassed or sampled.

Figure 2 Steeppass Denil section of the off -ladder adult fish trap located at Priest Rapids Dam, Columbia River mile 397.1, Washington, USA.

4.1 Design Concerns

Salmon and steelhead appeared to be hesitant to cross the false weir in the head-box at the top of the steeppass Denil and would fall back into the Denil's channel once they encountered the drop in water velocity at the false weir. Fish were observed making multiple approaches to the false weir before crossing. Once fish crossed the false weir and entered the head of the sorting flume, they would often turn before entering the passive integrated transponder-tag (PIT-tag) detector or while in the PIT-tag detector. The skim of water used to wet the sorting flume provided just enough water for smaller fish to swim up the flume, or at least to hold their place. It was intermittently necessary to use a jet of water to force the fish down the flume.

Insufficient gradient in the sorting flume resulted in large fish not reaching the end of the flume, either to the return channel or the sampling station. The low gradient caused the fish to move slowly down the straight section of the flume. The same observation was made in the return channel and fish directed to the sampling station would often hang up just below the sorting gate. On several occasions, fish were manually forced down the flume with a jet of water.

4.2 Design Improvements

During mid-summer, air temperatures affected the water in the anesthetic bath, causing it to be too warm for safe fish handling. As a result, Grant PUD modified the anesthetic tank by constructing a recirculation water jacket around it. The jacket was plumbed with river water, which constantly circulated around the outside of the tank.

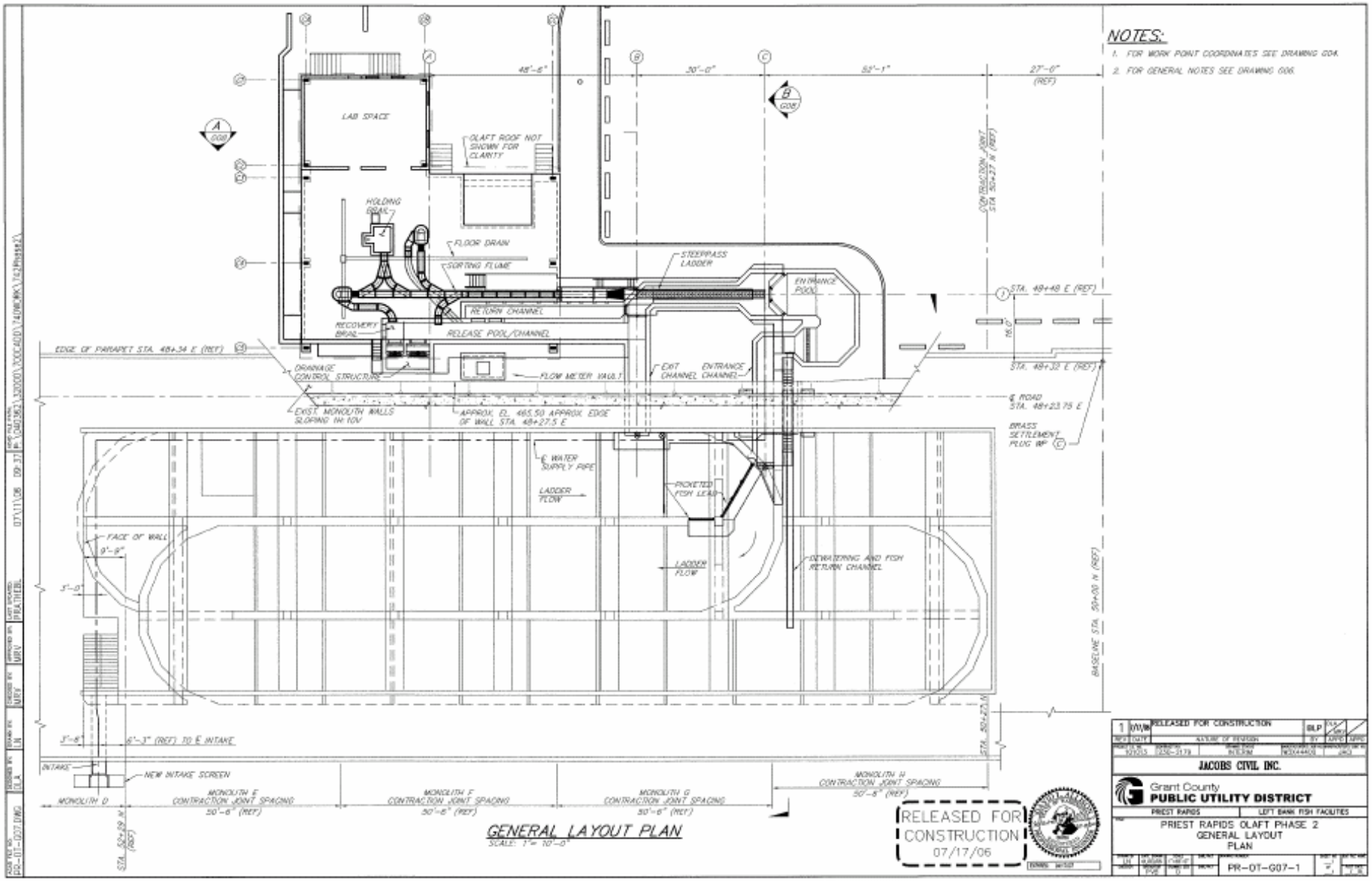
5.0 Design Modifications

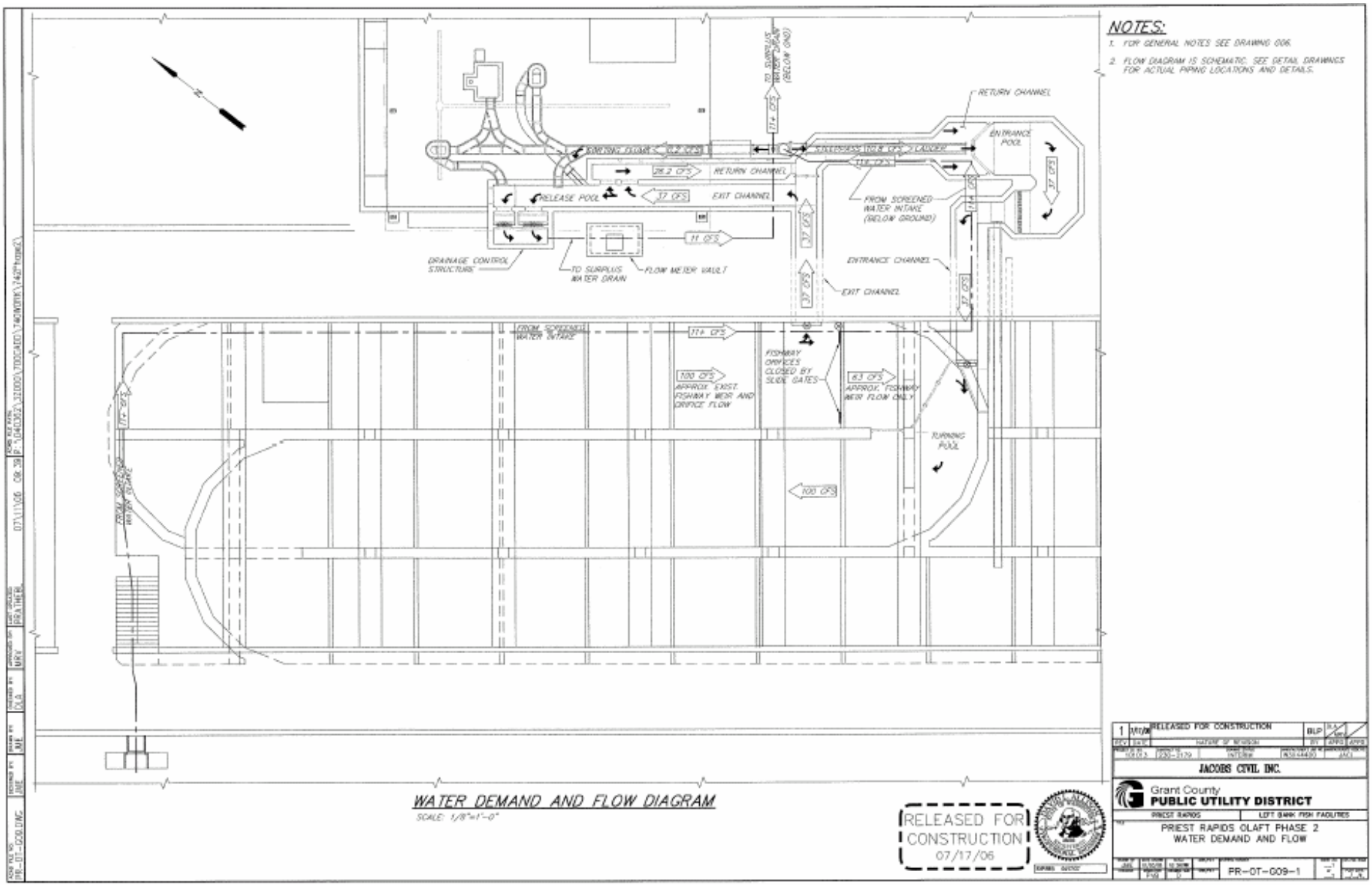
Grant PUD proposes to increase the slope of the existing flume sections and install a friction-reducing liner in the flumes prior to June 2008. These measures will increase the sliding efficiency of trapped fish. Grant PUD also proposes to build a new flume for fish transfer from the holding brail to the primary anesthesia tank, and a flume for fish return from the secondary anesthesia tank to the return channel. Radiant heating will also be added above the sorting flume and anesthesia tanks for worker comfort. Grant PUD proposes to complete these improvements during the winter of 2007-2008.

6.0 OLAFT Standard Operating Procedure

Grant County PUD is developing a Standard Operating Procedure (SOP) for the Priest Rapids Dam OLAFT and anticipates completing a final draft of the SOP available for inclusion in the Year 2008 Priest Rapids Dam OLAFT Annual Report (to be filed by 2/15/09).

Appendix A
Off-ladder Adult Fish Trap Drawings



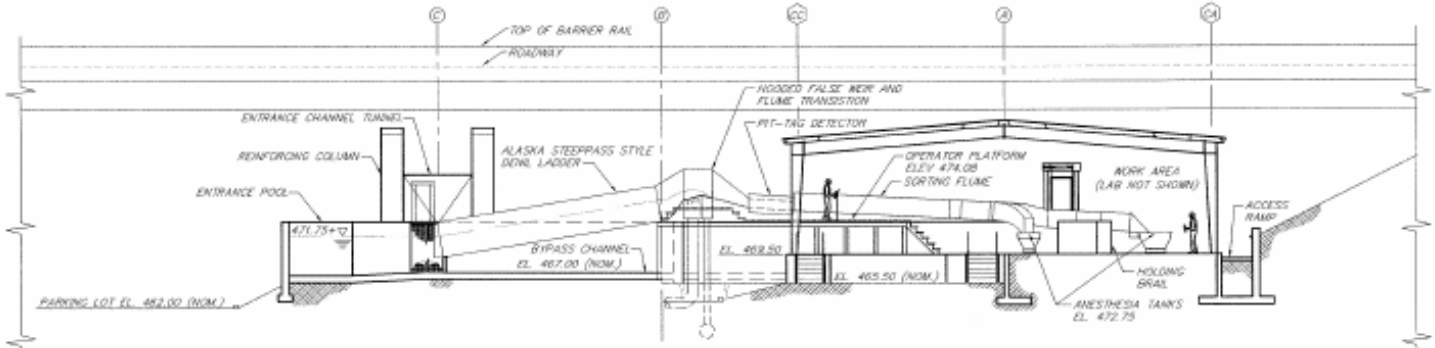


WATER DEMAND AND FLOW DIAGRAM

SCALE: 1/8"=1'-0"

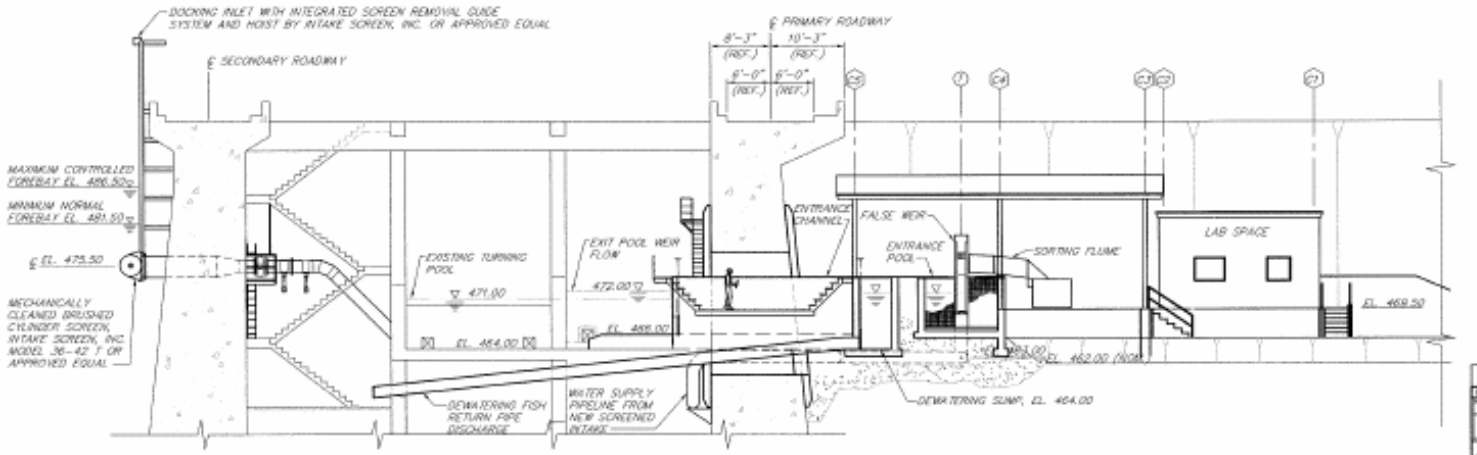
NOTES:

1. FOR GENERAL NOTES SEE DRAWING G06.



SECTION THROUGH OLAFT BUILDING AND ALONG REF. LINE 1

SECTION A
SCALE: 1/8"= 1'-0" G07



SECTION THROUGH ENTRANCE CHANNEL OPENING (PARALLEL TO REF. LINE C)

SECTION B
SCALE: 1/8"= 1'-0" G07

RELEASED FOR CONSTRUCTION
07/17/06

1 07/17/06 RELEASED FOR CONSTRUCTION BLP

JACOBS CIVIL INC.

Grant County PUBLIC UTILITY DISTRICT
PRIEST RAPIDS | LEFT BANK FISH FACILITIES

PRIEST RAPIDS OLAFT PHASE 2
GENERAL LAYOUT
SECTIONS

PR-OT-G08-1

Appendix B

2007 Priest Rapids Dam Off-ladder Adult Fish Trap Chinook Broodstock Collection Summary

	Trapping	<---------- Number Females Trapped ---------->													Total
	Period	6-7am	7-8am	8-9 am	9-10 am	10-11 am	11-12 am	12-1 pm	1-2pm	2-3pm	3-4pm	4-5pm	5-6pm	6-7pm	7-8pm	Females
17-Oct	7am-7pm						1									1
18-Oct	7am-7pm			1						1		2	1	1		6
19-Oct	7am-7pm									1						1
20-Oct	7am-7pm															0
21-Oct	7am-7pm															0
22-Oct	7am-7pm									1		1				2
23-Oct	7am-7pm								1		2		1	1		5
24-Oct	7am-7pm							1			1		1			3
25-Oct	6am-8pm				1	2			2	3	2	2	1	2	1	16
26-Oct	6am-8pm					1	1		1	1		2	1	2	1	10
27-Oct	6am-8pm				2						1					3
28-Oct	6am-8pm					2						1	2	1		6
29-Oct	6am-8pm			1		1	1				1	1	1			6
30-Oct	7:30am-8pm						1				2	1				4
31-Oct	7:30am-8pm		1			2				1				1	1	6
1-Nov	7:30am-8pm						1					1				2
2-Nov	7:30am-8pm							1		2			2		1	6
3-Nov	8:00am-8pm							1			1			3	1	6
4-Nov	7am-7:30pm									1						1
5-Nov	6:30am-8pm						1				1			1		3
6-Nov	7:30am-7:30pm									1		1				2
7-Nov	7:30am-7:30pm															0
8-Nov	7:30am-7:30pm									1						1
9-Nov	7:30am-7:30pm							1								1
10-Nov	7:30am-7:30pm									1				1		2
11-Nov	7:30am-7:30pm									1						1
12-Nov	7:30am-7:30pm									1			2	1		4
13-Nov	7:30am-7:30pm															0
14-Nov	8am-7:30pm															0
15-Nov	Ended trapping															
Total		0	1	2	3	8	6	4	4	16	11	12	12	14	5	98