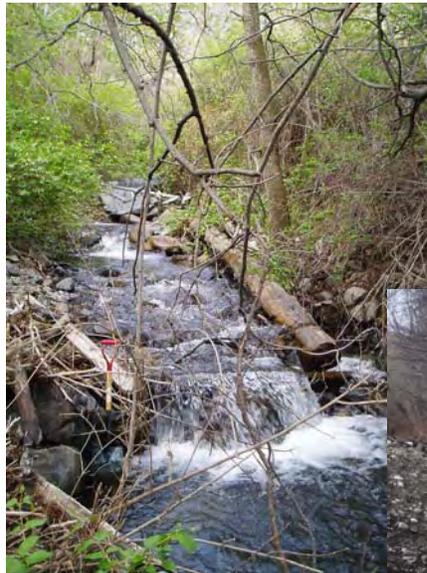


Completion Report

**Squaw Creek Diversion Dam
Fish Passage Improvement Project**

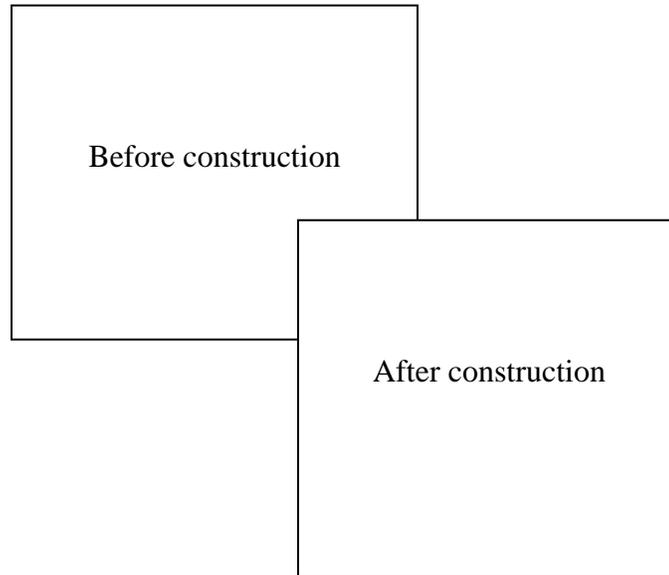
**Squaw Creek, Little Salmon River Subbasin
Central Idaho**



Prepared for
City of Riggins
Riggins, Idaho

Prepared by
Bureau of Reclamation
Pacific Northwest Region
Snake River Area Office
Grangeville Field Station

August 2006



This project was initiated and completed through the combined efforts of many entities, public and private. The purpose of the project was to provide for continued use of water while enhancing conditions for anadromous fish listed under the Endangered Species Act. The Bureau of Reclamation prepared this completion report in accordance with the 2004 National Marine Fisheries Service Federal Columbia River Power System Biological Opinion to describe the design and construction of this project.

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- Attachment A Construction Photographs
- Attachment B Location Map and Final Design Drawings
- Attachment C Memorandum of Agreement Squaw Creek Diversion Modifications

1. Introduction and Background

The city of Riggins draws irrigation water from both the Little Salmon River and Squaw Creek for irrigation of city residences. The Squaw Creek diversion dam has blocked fish passage into spawning and rearing habitats upstream of the dam for an unknown length of time. In December 2005, the Squaw Creek diversion was removed, in a cooperative project to restore access for salmon and steelhead. As part of this project, the main headgate on the Little Salmon River was modified to withdraw the amount of water from the Little Salmon River that previously was diverted from Squaw Creek during lower river flows. The main headgate and canal had an existing fish screen installed and maintained by the Idaho Department of Fish and Game (IDFG).

The Squaw Creek diversion dam was a concrete and boulder diversion dam about 5-feet-high with a crest length of about 10 feet. Two boulder drops were installed below the diversion dam as grade control. The total distance of the barrier extended along 75 feet of stream channel with each drop ranging from 2 to 5 feet in height. The total height of the diversion structure and grade control weirs was about 10.5 feet with a slope of 14.5 percent. During operation, the water level upstream from the dam was raised 1 to 2 feet using wood and plastic material. The rock ramp designed for this site has a 12 percent gradient due to the high stream channel grade and site constraints of existing features adjacent to the site.

The project was sponsored by the city of Riggins. Funding was provided through the Idaho Office of Species Conservation from Pacific Coast Salmon Recovery Funds. Cost share for the project was provided by the city of Riggins (in-kind contributions) and IDFG. The Bureau of Reclamation (Reclamation) assisted with the designs and permitting of the project. The water user is the city of Riggins. The contractor was Cook and Sons, White Bird, Idaho.

The project was identified and planned as part of a conservation measure to implement the 2004 Updated Proposed Action of the FCRPS Biological Opinion (NOAA Fisheries 2004). The tributary habitat program was designed as a voluntary program to work with private landowners, local governments, and water users to address specific limiting factors in the basins in an attempt to offset mortality associated with the main stem Columbia River dams. Flow, diversions, and altered channel morphology were identified as limiting factors to salmon and steelhead in the FCRPS Biological Opinion (2004).

The project is part of a demonstration project that the city of Riggins will use to show irrigation improvements to other agencies and private landowners in the local area to encourage continued participation in the program. The project was successful due to interagency efforts to work with willing landowners to address these resource-related issues.

1.1 Problems and Solutions

The Squaw Creek diversion was a full passage barrier to Chinook salmon and a partial to full passage barrier to steelhead trout depending on stream flow. Adult steelhead were observed unable to climb the uppermost drop on the diversion dam. The concentration of steelhead trout at this location made them vulnerable to illegal fishing. In addition, this diversion did not have a fish screen or an adjustable headgate. Entrainment of juvenile steelhead trout into the canal occurred when the Squaw Creek diversion was operated.

1.2 Participation and Cooperation

The project was sponsored and coordinated by the city of Riggins. Funding was provided by the Idaho Office of Species Conservation (OSC) Pacific Coast Salmon Recovery Funds. The city of Riggins contributed in-kind contributions for contract advertisement and oversight. IDFG provided personnel and equipment during fisheries surveys and salvage operations. Reclamation provided technical assistance with the designs and permitting, material selection, and contract inspection. The contractor was Cook and Sons, White Bird, Idaho.

1.3 Fishery

Fishery information was excerpted from the *Biological assessment for the installation of a rock ramp fishway at the irrigation diversion dam on Squaw Creek and off channel headgate improvements at the Little Salmon diversion, city of Riggins* (Reclamation 2005).

Chinook salmon (*Oncorhynchus tshawytscha*) were listed as threatened in 1992 (FR 57:14653). The ESU designated by NOAA Fisheries is the Snake River. The project is within designated critical habitat and essential fish habitat for spring/summer Chinook salmon. The mainstem Little Salmon River downstream from Squaw Creek is used as juvenile rearing and adult migration habitat (BLM 2000). The population in the Little Salmon River is heavily supplemented by hatchery fish released at the Rapid River hatchery.

Steelhead trout (*O. mykiss*) were listed as threatened in 1997 (FR 62:43937). The ESU designated by NOAA Fisheries is the Snake River. Squaw Creek is listed as critical habitat for steelhead, and provides spawning and early rearing for steelhead. Adult steelhead are frequently observed below the uppermost drop of the diversion dam during the spring months unsuccessfully attempting to ascend the dam. Adult steelhead are thought to be able to ascend the dam under certain flow conditions. Fish sampling efforts above the diversion dam have found few rainbow/steelhead trout.

Columbia Basin bull trout (*Salvelinus confluentus*) were listed as threatened in 1998 (FR 63:31647). Bull trout have never been observed in this tributary and there is no critical

habitat proposed for this species in the project area. Juvenile and adult rearing habitat is located on the mainstem Little Salmon River upstream and downstream from Squaw Creek (BLM 2000).

1.4 Permits

Formal consultations under the Endangered Species Act were completed with NOAA Fisheries (2005). A programmatic NEPA was completed for the Tributary Habitat Program by Reclamation (2003). A cultural site evaluation was conducted as part of the NEPA process. The Squaw Creek diversion was eligible as an historic feature. Therefore, a consultation with the Idaho State Historic Preservation Office was conducted, and a memorandum of agreement to provide photographic documentation of the structure was completed in August 2005. The project was exempt from other permits.

1.4.1 Contracts Specifications and Bidding

Final designs and contract specifications for the project were prepared by Reclamation and provided to the city of Riggins. The City approved the specification and conducted the contract bidding and oversight.

2. Project Description

The Squaw Creek diversion modification was in two construction locations: the city of Riggins diversion on the Little Salmon River and Squaw Creek just upstream from the Highway 95 crossing (Drawing no. 1678-100-524). Instream work was located in Squaw Creek at the SE ¼, NE ¼ Section 21, T. 24 N., R. 1 E and was conducted from December 8-12, 2005. The off channel work at the main headgate was conducted between December 13-31, 2005.

Instream construction work on Squaw Creek removed the existing dam and installed a rock ramp fishway. Off channel modifications at the main canal headgate located on the Little Salmon River removed a metal pipe and installed retaining walls at the headgate. The removal of the metal pipe and the installation of a concrete sill and retaining walls will reduce head losses at this diversion, enabling increased water delivery particularly during low river flows.

Construction started December 8, 2005, with the stream diversion, fish salvage, and dam removal/excavation. A coffer dam was built from wood and stream bed material, and the creek was diverted into a HDPE pipe. The creek was run into the existing canal, back watered over the Squaw Creek canal flume, and diverted back into the creek upstream from the Highway 95 bridge.

Fish Salvage

The IDFG conducted the fish salvage in cooperation with the contractor and Reclamation. Fish in the dewatered section of the stream were captured with the aid of an electroshocker and dip nets on December 8, 2005 (Table 1). Air temperatures were below freezing and surface ice had formed in the pools of the creek. This surface ice was broken to salvage fish from the pools. Due to the freezing temperatures, fish were only counted and identified to minimize handling, stress, and exposure to freezing temperatures. The fish were transported to live wells after each pass with the electrofisher, and released upstream from the project site. Captured fish included Chinook salmon (*Oncorhynchus tshawytscha*), rainbow/steelhead trout (*O. mykiss*) and sculpin (*Cottus* sp.). Sculpin captured during the salvage were not recorded.

Table 1. Fish captured and transported from Squaw Creek construction site, December 8, 2005.

Species	Total Number	Size Estimate
Chinook salmon	1	1-3 inches
rainbow/steelhead	19	1-3 inches
rainbow/steelhead	7	3-5 inches

2.2 Construction Process

The project was constructed in two phases: instream construction work on Squaw Creek to remove the existing dam and install a rock ramp fishway, and to perform some off channel modifications at the main canal headgate located on the Little Salmon River upstream from Squaw Creek.

2.2.1 Description of Work

December 8

The contractor arrived onsite with a 320 Cat backhoe and one end dump. A culvert and fill access to the south side of the creek was installed over the City's canal flume. Brush was cleared from both sides of the creek. The contractor removed half of the existing concrete diversion structure and excavated a bed for the diversion pipe. Next, the contractor installed flexible PVC pipe and constructed a sand bag dike across the ditch in preparation for dewatering the work site through the temporary bypass. The creek was run into the existing canal, back watered over the Squaw Creek canal flume, and diverted back into the creek upstream from the Highway 95 bridge.

Dana Weigel and IDFG personnel removed all fish from the stream bed between the cofferdam and the irrigation flume.

December 9

Contractor removed the existing concrete structure and did additional clearing of brush from both sides of the creek. They began hauling creek ramp rock from a quarry in the Fiddle Creek area. The stream slopes were graded on both sides of the ramp and placed 5 larger rocks and smaller ramp rock.

December 10

Rock placement for the upper and lower ramps was completed. The contractor removed the coffer dam and the bypass pipe, and rewatered the creek channel.

December 11

Construction work completed except for removal of the ditch crossing into the project and delivery of seed to the city for site revegetation.

December 12

The contractor removed the temporary crossing over the canal flume. Equipment was moved to the worksite at the headgate on the Little Salmon River. The contractor excavated around the headgate and corrugated metal pipe immediately downstream of the headgate. The area on the canal was excavated for the wing walls and floor structure. The corrugated metal pipe was removed. The work area was sand bagged to prevent seepage.

December 14

Placed concrete for headgate walls. Curing for 3 days.

December 15

Curing concrete.

3. Conclusions

The headgate modifications at the point of diversion on the Little Salmon River compensate for the removal of the Squaw Creek point of diversion by decreasing head losses; this should result in increased water delivery particularly during low river flows.

Post-construction adjustments are sometimes needed particularly when constructing with natural materials. Project success at the Squaw Creek rock ramp will need to be assessed based on stability of the rock ramp and ability for targeted fish species to pass over the ramp at various flows. Seasonal high flows will likely alter the rock ramp through time and additional rock placement may be needed in areas where material has been scoured out.

Most rock ramps are designed to be less than 5 percent grade. The Squaw Creek ramp was designed at a substantially higher grade (12 percent) due to the channel grade at the site and constraints from existing features adjacent to the site. Revegetation will help stabilize the steep banks along the rock ramp. The site was seeded after construction; however, the seed did not establish as expected. Material such as a hemp mat may help in reducing erosional losses on the stream bank and help to reestablish vegetation. Part of the cottonwood tree alongside the project broke off during a storm depositing woody debris in the lower portion of the ramp. This woody material could effect sediment transport through the ramp or result in other unintended erosion. The debris could be removed or pulled up onto the stream bank to protect the function of the ramp particularly while the vegetation is being reestablished on the banks. Over time, the rock ramp should function as a natural stream channel.

4. References

- Bureau of Reclamation (Reclamation). 2003. Finding of no significant impact and programmatic environmental assessment for implementing fish habitat measured in four mountain Snake Province subbasins under Action 149 of the December 2000 National Marine Fisheries Service Federal Columbia River Power System Biological Opinion. Pacific Northwest Region. Boise ID.
- Bureau of Reclamation (Reclamation). 2004. Predesign memorandum for Squaw Creek improvements. Pacific Northwest Region. Boise ID.
- National Marine Fisheries Service (NOAA Fisheries). 2004. ESA section 7 consultation on remand for the operation of the Columbia River power system and 19 Bureau of Reclamation projects in the Columbia Basin. NMFS Log no. F/NWR/2004/00727.
- National Marine Fisheries Service (NOAA Fisheries). 2005. Endangered Species Act – section 7 consultation biological and conference opinion and Magnuson-Stevens Fishery Conservation and Management Act essential fish habitat consultation. Installation of a rock ramp fishway at the irrigation diversion dam on Squaw Creek and off channel headgate improvements at the Little Salmon diversion, city of Riggins. NMFS No. 2005/03190.

Squaw Creek Diversion Fish Passage Improvement Project

Little Salmon River, Little Salmon River Subbasin Central Idaho

Attachment A

Construction Photographs

Photograph 1 Squaw Creek diversion dam before the project.

Photograph 2 Squaw Creek diversion canal and headgate before project construction.

Photograph 3 Squaw Creek rock ramp during construction, view to the west.

Photograph 4 Post construction after removal of the Squaw Creek diversion dam and installation of rock ramp fishway.

Photograph 5 Excavation and removal of corrugated metal pipe at Little Salmon headgate.

Photograph 6 Placing and finishing the floor on downstream side of Little Salmon headgate.

Photograph 7 Little Salmon headgate completed.



Photograph 1. Squaw Creek diversion dam before the project. The dam is boulder and concrete with a height of 5 feet and a crest length of 10 feet. Photo by: D. Weigel, Reclamation.



Photograph 2. Squaw Creek diversion canal and headgate before the project construction. Photo by D. Weigel, Reclamation.



Photograph 3. Squaw Creek rock ramp during construction view to the west. The stream diversion into the PVC pipe and canal is shown on the right of the photo. Excavation of the existing diversion dam with the south half of the structure still in place. Photo by K. White, Reclamation.



Photograph 4. Post construction after the removal of the Squaw Creek diversion dam and the installation of the rock ramp fishway. Photo by D. Weigel, Reclamation.



Photograph 5. Excavation and removal of the 36-inch corrugated metal pipe at the Little Salmon headgate. Removal of the pipe is expected to increase the rate of diversion at this headgate to compensate for the removal of the Squaw Creek diversion dam. Photo by K. White, Reclamation.



Photograph 6. Placing and finishing the floor at the downstream side of the Little Salmon headgate. The blue tarp covered and heated the concrete for curing in the cold temperatures. Photo by K. White, Reclamation.



Photograph 7. Completed project at the Little Salmon headgate. A metal pipe was removed and the concrete retaining wall and canal floor were installed. Photo by J. Chan, Reclamation.

**Squaw Creek Diversion
Fish Passage Improvement Project**

**Little Salmon River,
Little Salmon River Subbasin
Central Idaho**

Attachment B

Location Map and Final Design Drawings

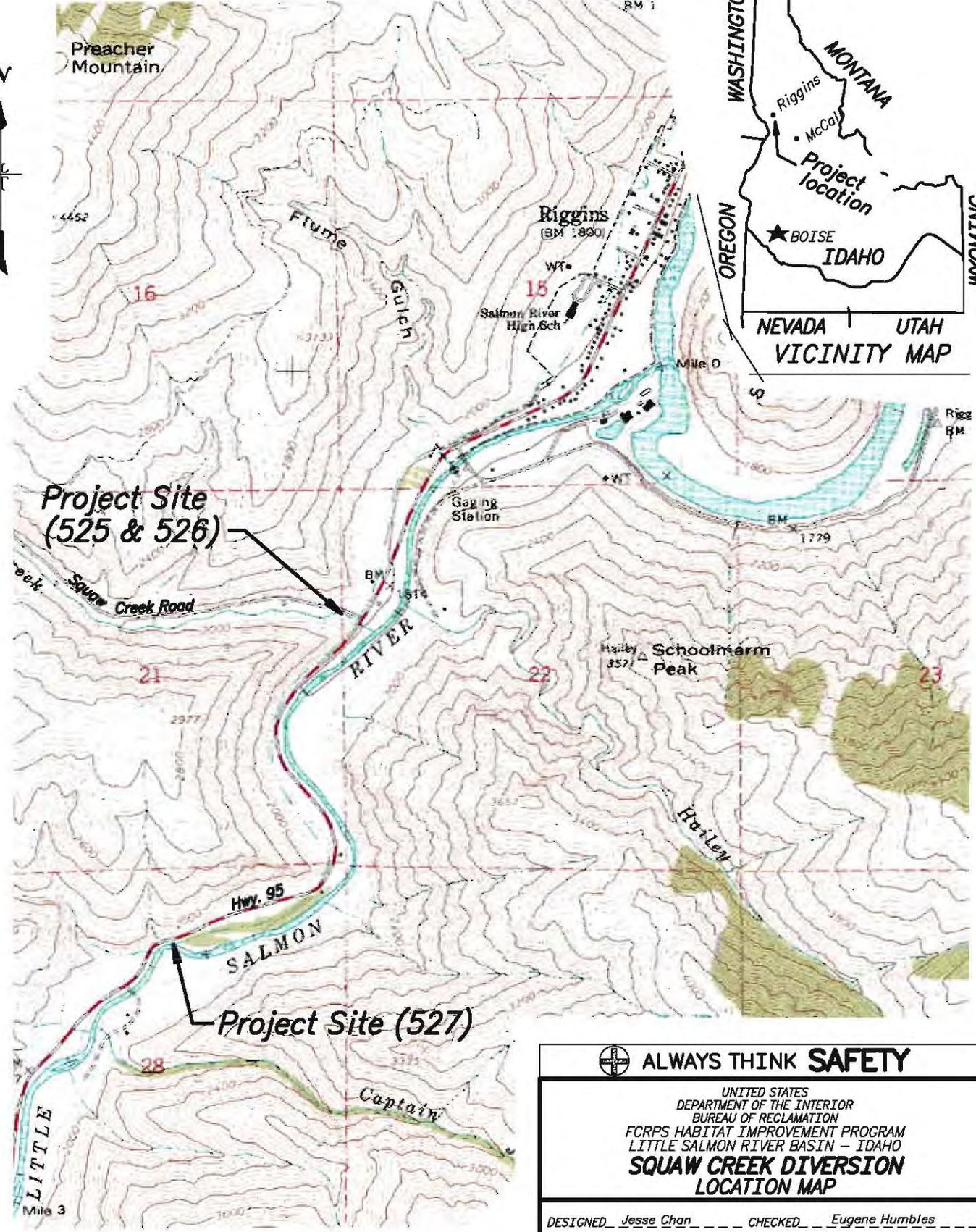
Drawing No. 1678-100-524 Location Map

Drawing No. 1678-100-525 Project Plan, Flume Crossing Plan, and Sections

Drawing No. 1678-100-526 Profiles and Sections

Drawing No. 1678-100-533 Streamflow Statistics Report

Sec 21 & 28, T.24N., R.1E., B.M.



Project Site (525 & 526)

Project Site (527)

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FCRPS HABITAT IMPROVEMENT PROGRAM
LITTLE SALMON RIVER BASIN - IDAHO
**SQUAW CREEK DIVERSION
LOCATION MAP**

DESIGNED Jesse Chan CHECKED Eugene Humbles
DRAWN G.GROOMS TECH. APPROVAL Jesse Chan
APPROVED Dave Jennings
PROGRAM MANAGER

CADD SYSTEM AutoCAD Rel. 16.2s CADD FILENAME 1678-100-524.DWG

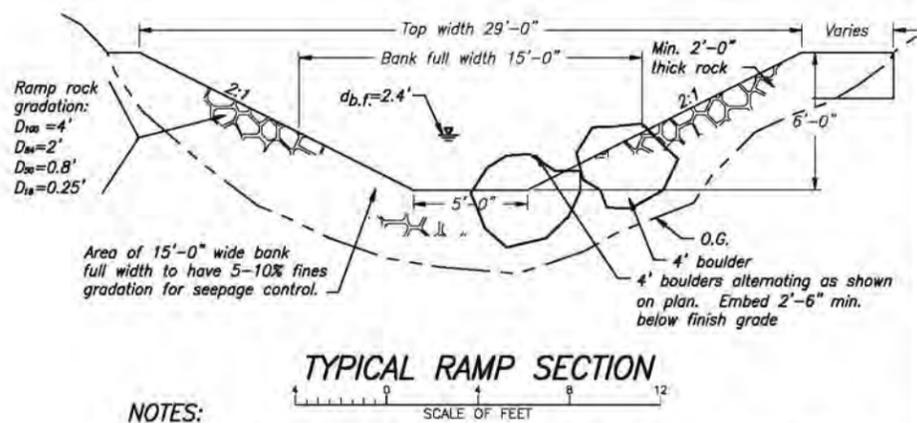
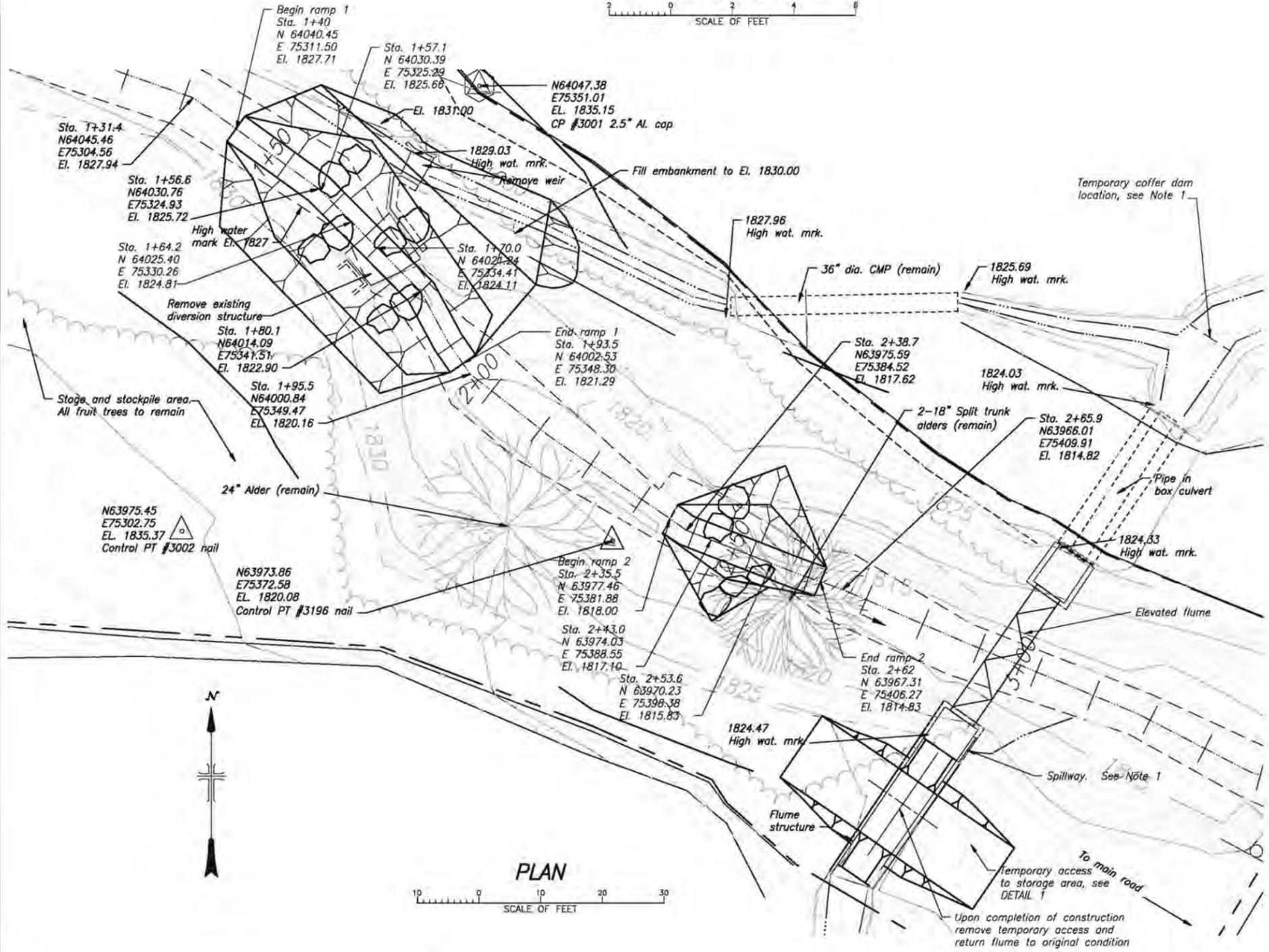
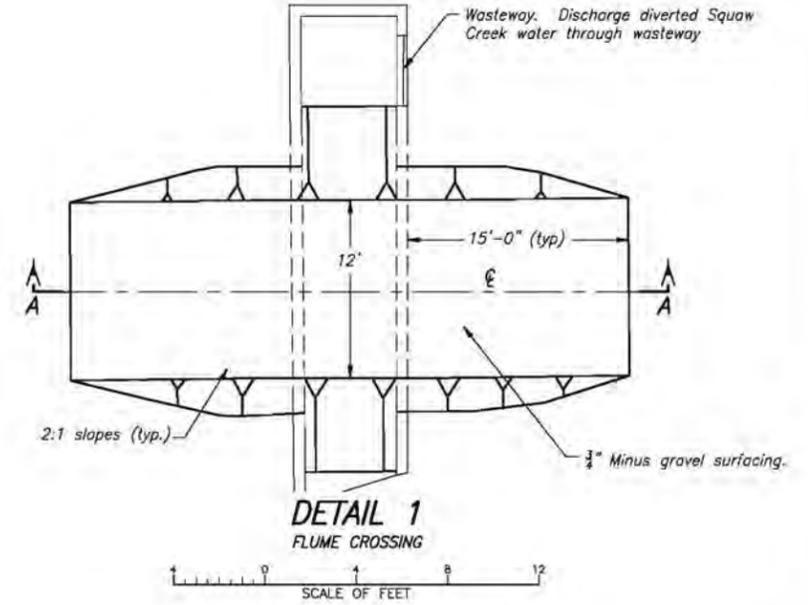
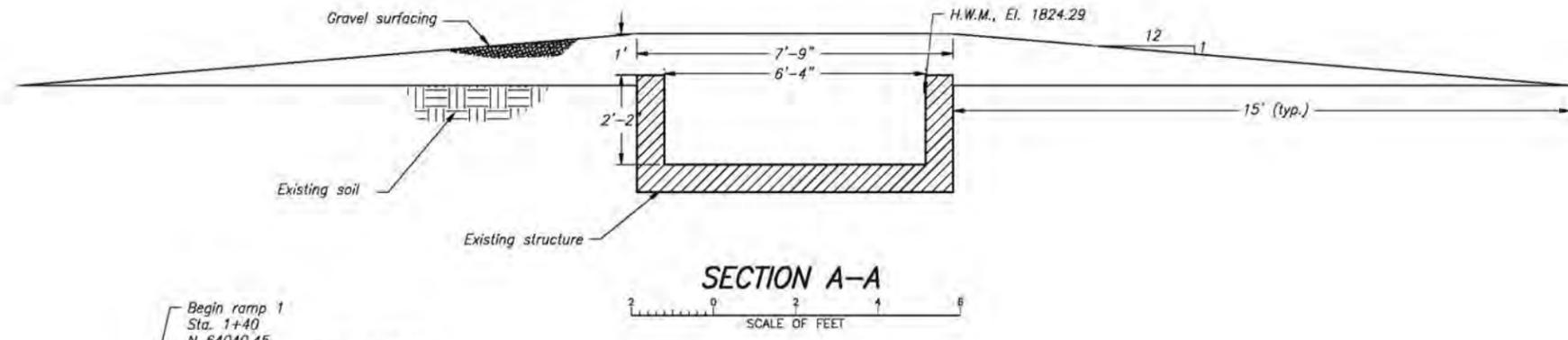
BOISE, IDAHO Jan 2004 **1678-100-524**

RIGGINS, IDAHO 7.5" QUADRANGLE

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PLOTTED BY
SWEDDLE

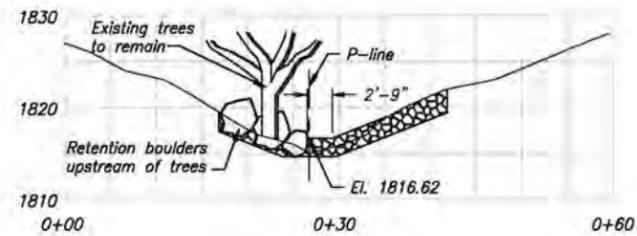


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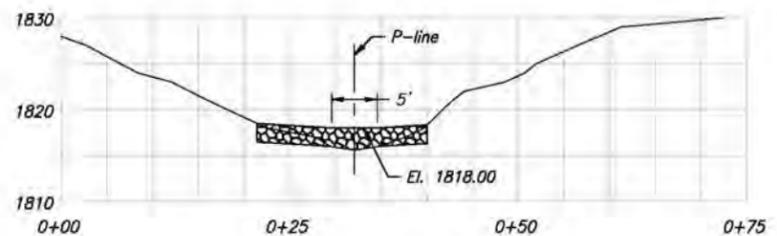
1. Divert Squaw Creek water through city of Riggins diversion and discharge out of spillway if canal is dry.
2. Drawing No. 1678-100-526 shows additional grade control boulders, but excludes typical ramp section boulders.

REV NO 1	2005-11-16 100-JMC	Changed rock size from 5' to 4' and deleted CMP's for crossing.
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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECREATION		
COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT FORPS HABITAT IMPROVEMENT PROGRAM - LITTLE SALMON RIVER BASIN-IDAHO		
SQUAW CREEK DIVERSION		
PROJECT PLAN, FLUME CROSSING PLAN, AND SECTIONS		
DESIGNED	Jesse Chan	CHECKED
DRAWN	L. Boekweg	TECH. APPR.
APPROVED	Dave Jennings	PROJECT MANAGER
BOISE, IDAHO	SHEET 1 OF 1	2004-07-15
1678-100-525		

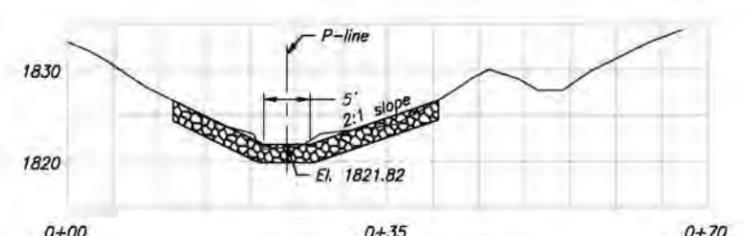
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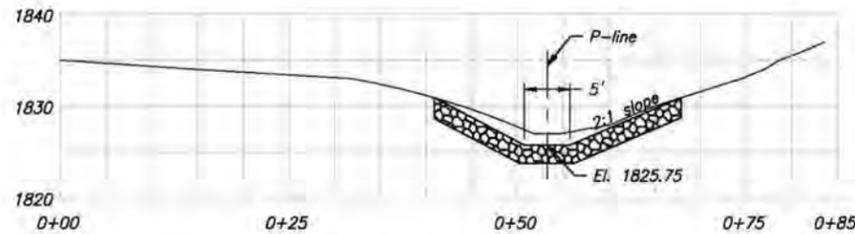
Sta. 2+50



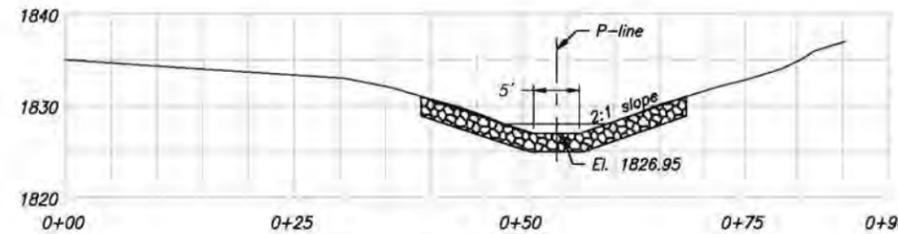
Sta. 2+39.22



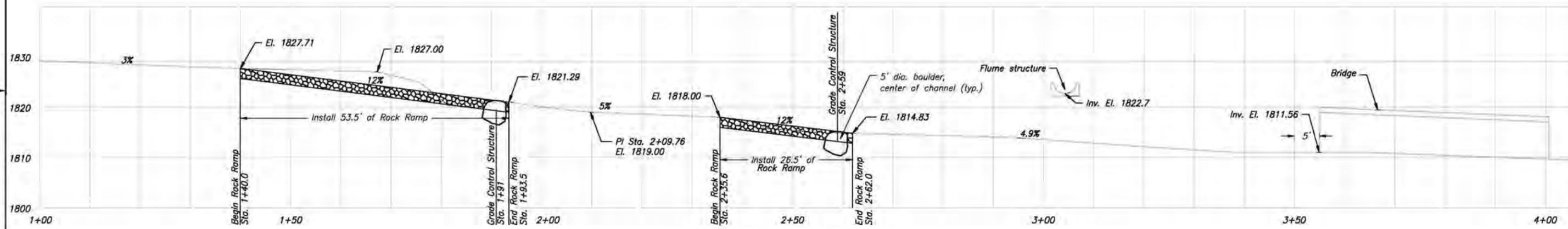
Sta. 1+89.76



Sta. 1+57.08



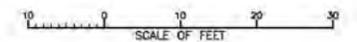
Sta. 1+47.08



RIVER PROFILE Sta. 1+00-4+00

NOTE:

1. Rock ramp to have min. bed thickness of 2'-0".
2. Typical section ramp boulders are not shown, see Drawing No. 1678-100-525 for stationing and location



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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
FORPS HABITAT IMPROVEMENT PROGRAM - LITTLE SALMON RIVER BASIN-IDAHO

SQUAW CREEK DIVERSION
PROFILES AND SECTIONS

DESIGNED Jesse Chan CHECKED Eugene Humbles
DRAWN L. Boekweg TECH. APPR. Jesse Chan

APPROVED Dave Jennings
PROJECT MANAGER

BOISE, IDAHO SHEET 1 OF 1 2004-07-20 1678-100-526

CAD SYSTEM
AUTOCAD
CAD FILENAME
UNKNOWN
DATE AND TIME PLOTTED
Not Printed
PLOTTER
HP DesignJet 500



Streamflow Statistics Report

Date: Wed Jun 2 2004 14:24:11
 Site Location: Idaho
 Latitude: 40.9480
 Longitude: -119.9388
 Drainage Area: 18.4 mi²

Peak Flow Basin Characteristics

100% Region_4 (18.4 mi ²)			
Parameter	Value	Min	Max
Drainage Area (mi ²)	18.4	2.3	13418.3
Mean Basin Elevation (ft)	4960	2955.8	7461.3

Low Flow Basin Characteristics

100% Low_Flow_Region_4 (18.4 mi ²)			
Parameter	Value	Min	Max
Drainage Area (mi ²)	18.4	1	13418.3
Mean Basin Slope ft Per ft (ft/ft)	0.47	0.187	0.572
Mean Annual Precipitation (in)	26.5	15.9	64.6
Mean Basin Elevation (ft)	4960	3528.6	7461.3
Percent Forest (%)	41.5	4.8	93

Streamflow Statistics

Statistic	Flow (ft ³ /s)	Standard error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
Peak-Flow Statistics					
Q2	181	67			
Q5	283	56			
Q10	358	52			
Q25	461	49			
Q50	539	48			
Q100	620	48			
Q200	705	47			

Q500	835	48			
Mean Annual Flow Statistics					
Qa	11.5	33			
January Flow-Duration Statistics					
Jan_Q20	14	41			
Jan_Q50	6.57	50			
Jan_Q80	4.55	52			
February Flow-Duration Statistics					
Feb_Q20	19.2	39			
Feb_Q50	10.4	43			
Feb_Q80	6.47	47			
March Flow-Duration Statistics					
Mar_Q20	22	43			
Mar_Q50	12.4	44			
Mar_Q80	6.99	53			
April Flow-Duration Statistics					
Apr_Q20	46.5	35			
Apr_Q50	22.1	42			
Apr_Q80	10.9	55			
May Flow-Duration Statistics					
May_Q20	37.1	35			
May_Q50	16.9	56			
May_Q80	10.4	58			
June Flow-Duration Statistics					
Jun_Q20	15.7	60			
Jun_Q50	9.02	65			
Jun_Q80	5.34	56			
July Flow-Duration Statistics					
Jul_Q20	5.06	53			
Jul_Q50	3.33	54			
Jul_Q80	2.19	70			
August Flow-Duration Statistics					
Aug_Q20	4.05	62			
Aug_Q50	3.35	78			
Aug_Q80	2.57	97			
September Flow-Duration Statistics					
Sep_Q20	4.1	65			
Sep_Q50	3.18	73			

Sep_Q80	2.7	95			
October Flow-Duration Statistics					
Oct_Q20	5.34	52			
Oct_Q50	4.3	60			
Oct_Q80	3.66	65			
November Flow-Duration Statistics					
Nov_Q20	6.7	47			
Nov_Q50	5	51			
Nov_Q80	4.28	56			
December Flow-Duration Statistics					
Dec_Q20	7.79	57			
Dec_Q50	5.95	50			
Dec_Q80	4.39	57			

DATE AND TIME PLOTTED: DECEMBER 1, 2005 08:40 PLOTTED BY: SWEDELE

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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT FCRPS HABITAT IMPROVEMENT PROGRAM - LITTLE SALMON RIVER BASIN - IDAHO

SQUAW CREEK DIVERSION

STREAMFLOW STATISTICS REPORT

DESIGNED - Jesse Chan CHECKED - Eugene Humbles
 DRAWN - Boekweg TECH. APPR. - Jesse Chan
 APPROVED - Dave Jennings
PROJECT MANAGER

BASE: DWG SHEET 1 OF 1 1678-100-533

**Squaw Creek Diversion
Fish Passage Improvement Project**

**Little Salmon River,
Little Salmon River Subbasin
Central Idaho**

Attachment C

Memorandum of Agreement

Squaw Creek Diversion Modifications

MEMORANDUM OF AGREEMENT

SQUAW CREEK DIVERSION MODIFICATIONS

Whereas, the Bureau of Reclamation (Reclamation), Pacific Northwest Region, Snake River Area Office, proposes to demolish an historic stone dam structure and associated headworks in conjunction with fish enhancement at the Squaw Creek diversion near Riggins, Idaho;

Whereas, the Squaw Creek diversion structures are features that contribute to the significance of the adjacent Riggins Ditch, a property determined eligible for the National Register of Historic Places;

Whereas, the proposed demolition will have an adverse effect upon the integrity of the Riggins Ditch;

Whereas, the Idaho State Historic Preservation Officer (SHPO) has been consulted pursuant to the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) and has reviewed the proposed undertaking to consider feasible and prudent alternatives and means to minimize or satisfactorily mitigate the adverse effect;

Whereas, the Advisory Council on Historic Preservation (Council) has been notified of the adverse effect and has determined they do not need to participate in the consultation;

NOW, THEREFORE, Reclamation and the Idaho SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to mitigate the adverse effect of the undertaking on the historic properties, and to meet Reclamation's responsibilities under Section 106 of the National Historic Preservation Act.

STIPULATIONS

1. Treatment. Reclamation will provide the Idaho State Historic Preservation Office with the following documentation of Squaw Creek Diversion:

- One set of 35 mm, 4 X 6 inch, black and white photographs, including a photograph log. Each photograph will be labeled on the back with a Stabilo pencil and will include the date, property name and location, site number, and photographer's name.

2. Amendment. If a signatory determines the terms of the MOA cannot be met or that a change is necessary to meet the requirements of the law, that signatory will immediately request that the consulting parties consider an amendment or addendum. Any necessary amendment or addendum will be executed as defined in the 36 CFR 800 regulations.

3. Dispute Resolution. If a dispute arises regarding implementation of the MOA, Reclamation will consult with the objecting party to resolve the dispute. If the dispute cannot be resolved, comments will be requested from the Council, as defined in 36 CFR 800.

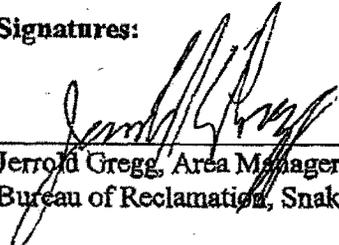
4. Suspension and Termination. Either party to this MOA may suspend it by written notice to the other consulting party. Additional consultations will then occur in an effort to resolve any issues and to re-implement the MOA in amended form. This agreement may be terminated by mutual agreement of the

signatories at any time upon written notification of those parties. Failure to carry out the terms of this MOA requires Reclamation to comply with Section 106 in accordance with 36 CFR 800.3-800.6 for this undertaking.

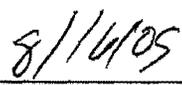
5. **Effective Period.** This MOA shall be effective upon its execution by the last signatory and shall remain in effect, unless terminated, suspended, or amended, until December 31, 2005.

Execution of this MOA by Reclamation and the SHPO evidences that Reclamation has afforded the SHPO and Council a reasonable opportunity to comment pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, on the demolition of the Palmer House. Satisfaction of the stipulations of the MOA indicates that Reclamation has taken into account and mitigated the adverse effects of the project upon affected historic properties.

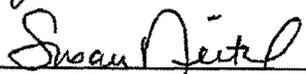
Signatures:



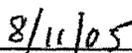
Jerrold Gregg, Area Manager
Bureau of Reclamation, Snake River Area Office



Date



Susan Neitzel, Deputy SHPO
Idaho State Historic Preservation Office



Date