

State of Idaho
Department of Water Resources
Water Right License
Water Right No. 72-16896

Priority: October 13, 2012

Maximum Diversion Rate: 295.00 CFS

Maximum Diversion Volume: 17,300.0 AF

It is hereby certified that:

J R SIMPLOT CO
C/O VIC CONRAD
1099 W FRONT ST
PO BOX 27 BOISE ID 83707-0027

has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated September 27, 2012, and has submitted Proof of Beneficial Use on December 17, 2015. An examination confirms water is diverted from:

Source: YANKEE FORK

Tributary: SALMON RIVER

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
RECREATION	01/01 to 12/31	295.00 CFS	17,300.0 AF
FISH HABITAT	01/01 to 12/31	295.00 CFS	17,300.0 AF

Location of Point(s) of Diversion

YANKEE FORK NW¼ NE¼, Sec. 29, Twp 12N, Rge 15E, B.M. CUSTER County

Place of Use: RECREATION

Twp	Rng	Sec	NE				NW				SW				SE				No QQ	Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE		
12N	15E	29		X	X											X				

Place of Use: FISH HABITAT

Twp	Rng	Sec	NE				NW				SW				SE				No QQ	Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE		
12N	15E	29		X	X											X				

Conditions of Approval

1. Fish Habitat and Recreation Uses are for an artificial side channel along the Yankee Fork which provides habitat for steelhead salmon and resident fish species and increase recreational opportunity.
2. Use of water under this right shall be non-consumptive.
3. Use of water under this right may be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 170.
4. When notified by the Department or by a watermaster with regulatory authority over this right, the right holder shall report the amount of water diverted in connection with this right. The report shall be submitted in the manner and frequency specified by the Department or the watermaster.
5. This right does not grant any right-of-way or easement across the land of another.

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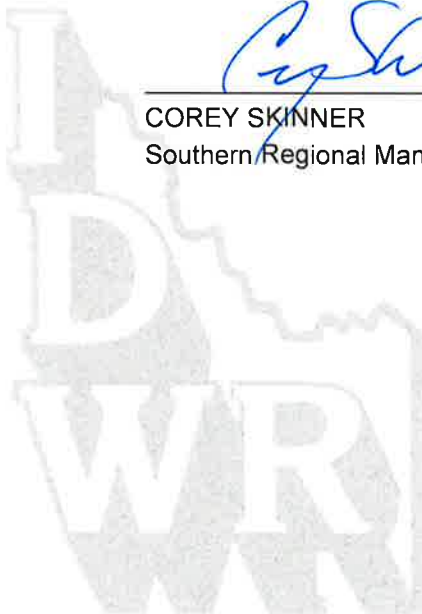
6. This right shall be junior and subordinate to future water rights authorizing the diversion and use of water from the Yankee Fork River and its tributaries, including ground water.

This license is issued pursuant to the provisions of Idaho Code § 42-219. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

Signed this 19th day of July, 2019.

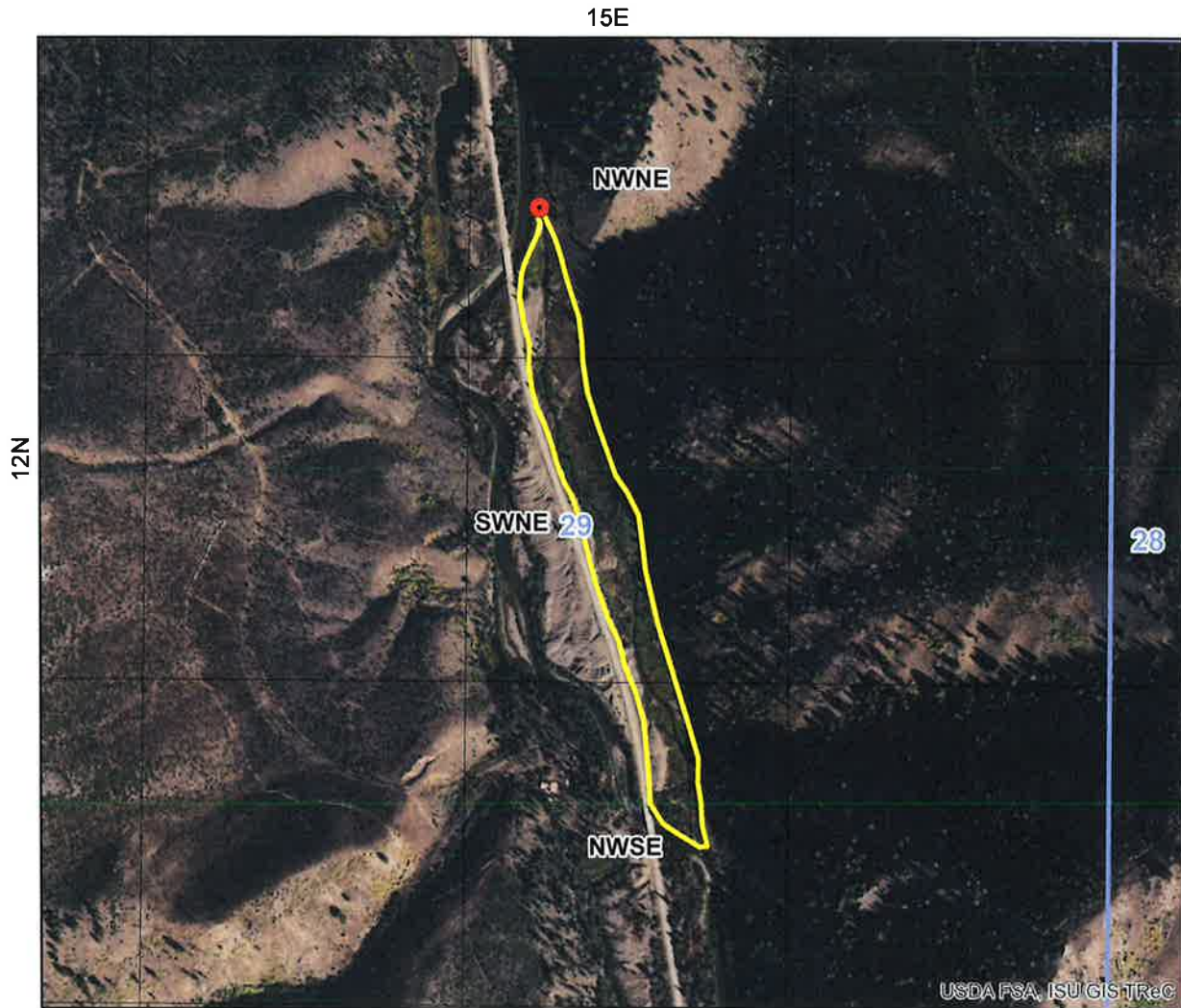


COREY SKINNER
Southern Regional Manager



State of Idaho
Department of Water Resources
Attachment to Water Right License
72-16896

This map depicts the RECREATION & FISH HABITAT place of use boundary for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.



-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters

0 0.075 0.15 0.3 Miles





State of Idaho

DEPARTMENT OF WATER RESOURCES

Southern Region • 650 ADDISON AVE W STE 500 • TWIN FALLS, ID 83301-5858

Phone: (208)736-3033 • Fax: (208)736-3037 • Website: www.idwr.idaho.gov

Brad Little
Governor

Gary Spackman
Director

July 22, 2019

J R SIMPLOT CO
C/O VIC CONRAD
1099 W FRONT ST
PO BOX 27
BOISE ID 83707-0027

RE: License No. 72-16896

Issuance of License

Dear Water Right Holder(s):

The Department of Water Resources ("Department") has issued the enclosed Water Right License confirming that a water right has been established in accordance with your permit. Please be sure to thoroughly review all the conditions of approval listed on your license. The conditions may include ongoing requirements, such as maintenance of a measuring device or implementation of mitigation, as well as information about how your water use may be administered, such as regulation by a water master in a water district.

The license is a PRELIMINARY ORDER issued by the Department pursuant to Rule 730 of the Department's Rules of Procedure (IDAPA 37.01.01.730). It can and will become a final order without further action by the Department unless a party petitions for reconsideration, files exceptions, or requests a hearing as described in the enclosed information sheet.

Also, please note that water right owners are required to report any change of water right ownership and/or mailing address to the Department within 120 days of the change. Failure to report these changes could result in a \$100 late filing fee. Water right forms are available from any office of the Department or on the Department's website at idwr.idaho.gov

If you have any questions concerning the enclosed information, please contact me at (208) 736-3033.

Sincerely,

Corey Skinner
Southern Regional Manager

Enclosure(s)

CERTIFICATE OF SERVICE

I hereby certify that on July 22, 2019, I served a true and correct copy of Water Right License No. 72-16896 by U.S. Mail, postage prepaid, to the following:

J R SIMPLOT CO (Current Owner)
C/O VIC CONRAD
1099 W FRONT ST
PO BOX 27
BOISE ID 83707-0027

WATER DISTRICT #170
CINDY YENTER (Water master)
102 S WARPATH
SALMON ID 83467



Denise Maline
Administrative Assistant 1

EXPLANATORY INFORMATION TO ACCOMPANY A PRELIMINARY ORDER

(To be used in connection with actions when a hearing was **not** held)

(Required by Rule of Procedure 730.02)

The accompanying order or approved document is a "**Preliminary Order**" issued by the department pursuant to section 67-5243, Idaho Code. **It can and will become a final order without further action of the Department of Water Resources ("department") unless a party petitions for reconsideration, files an exception and brief, or requests a hearing as further described below:**

PETITION FOR RECONSIDERATION

Any party may file a petition for reconsideration of a preliminary order with the department within fourteen (14) days of the service date of this order. **Note: the petition must be received by the department within this fourteen (14) day period.** The department will act on a petition for reconsideration within twenty-one (21) days of its receipt, or the petition will be considered denied by operation of law. See Section 67-5243(3) Idaho Code.

EXCEPTIONS AND BRIEFS

Within fourteen (14) days after: (a) the service date of a preliminary order, (b) the service date of a denial of a petition for reconsideration from this preliminary order, or (c) the failure within twenty-one (21) days to grant or deny a petition for reconsideration from this preliminary order, any party may in writing support or take exceptions to any part of a preliminary order and may file briefs in support of the party's position on any issue in the proceeding with the Director. Otherwise, this preliminary order will become a final order of the agency.

REQUEST FOR HEARING

Unless a right to a hearing before the Department or the Water Resource Board is otherwise provided by statute, any person aggrieved by any final decision, determination, order or action of the Director of the Department and who has not previously been afforded an opportunity for a hearing on the matter may request a hearing pursuant to section 42-1701A(3), Idaho Code. A written petition contesting the action of the Director and requesting a hearing shall be filed within fifteen (15) days after receipt of the denial or conditional approval.

ORAL ARGUMENT

If the Director grants a petition to review the preliminary order, the Director shall allow all parties an opportunity to file briefs in support of or taking exceptions to the preliminary order and may schedule oral argument in the matter before issuing a final order. If oral arguments are to be heard, the Director will within a reasonable time period notify each party of the place, date and hour for the argument of the case. Unless the Director orders otherwise, all oral arguments will be heard in Boise, Idaho.

CERTIFICATE OF SERVICE

All exceptions, briefs, requests for oral argument and any other matters filed with the Director in connection with the preliminary order shall be served on all other parties to the proceedings in accordance with IDAPA Rules 37.01.01302 and 37.01.01303 (Rules of Procedure 302 and 303).

FINAL ORDER

The Director will issue a final order within fifty-six (56) days of receipt of the written briefs, oral argument or response to briefs, whichever is later, unless waived by the parties or for good cause shown. The Director may remand the matter for further evidentiary hearings if further factual development of the record is necessary before issuing a final order. The department will serve a copy of the final order on all parties of record.

Section 67-5246(5), Idaho Code, provides as follows:

Unless a different date is stated in a final order, the order is effective fourteen (14) days after its service date if a party has not filed a petition for reconsideration. If a party has filed a petition for reconsideration with the agency head, the final order becomes effective when:

- (a) The petition for reconsideration is disposed of; or
- (b) The petition is deemed denied because the agency head did not dispose of the petition within twenty-one (21) days.

APPEAL OF FINAL ORDER TO DISTRICT COURT

Pursuant to sections 67-5270 and 67-5272, Idaho Code, if this preliminary order becomes final, any party aggrieved by the final order or orders previously issued in this case may appeal the final order and all previously issued orders in this case to district court by filing a petition in the district court of the county in which:

- i. A hearing was held,
- ii. The final agency action was taken,
- iii. The party seeking review of the order resides, or
- iv. The real property or personal property that was the subject of the agency action is located.

The appeal must be filed within twenty-eight (28) days of this preliminary order becoming final. See section 67-5273, Idaho Code. The filing of an appeal to district court does not itself stay the effectiveness or enforcement of the order under appeal.

Inouye, Allison

From: Jim Gregory <gregory_jim@yahoo.com>
Sent: Friday, June 07, 2019 3:54 PM
To: Inouye, Allison
Subject: Fw: YF PS3 Diversion
Attachments: PS3 Inlet Weir Rating Table.xls; YF_PS3_Design_Calcs.pdf; Yankee Fork Stage Data.xlsx

Allison,

Here is the information BOR sent me. I have not looked at it yet, but maybe you could take a quick look and see if it meets your needs. If not, I can apply the rating data to the stage information.

Jim

Jim Gregory
Lost River Fish Ecology, INC.
5306 Zollinger Rd.
Mackay, Idaho 83251
Phone (208)588-2447
Cell (208)390-5306

----- Forwarded Message -----

From: Drury, Paul <pdrury@usbr.gov>
To: Jim Gregory <gregory_jim@yahoo.com>; Michael Knutson <mknutson@usbr.gov>; Ferron Peterson <fpeterson@usbr.gov>
Sent: Friday, June 7, 2019, 3:33:08 PM MDT
Subject: YF PS3 Diversion

Hi Jim,

Attached is the rating table developed for the staff gage at PS3, the design calculations from CH2MHill for the diversion, and some raw stage data.

The raw stage data may not be of much use without some analysis and interpretation. Hopefully this will help answer questions from IDWR to prove beneficial use.

Let me know if you need any drawings, as-builts, or closeout reports for further justification

Paul E. Drury

Reclamation | PN Region | [Project Management](#)
1150 N Curtis Road, Suite 100, Boise ID 83706-
1234 208-378-5076 | pdrury@usbr.gov | PN-6420

Design Calculations Summary Memorandum

Introduction

The Bureau of Reclamation (Reclamation) and Bonneville Power Administration (BPA), in conjunction with the J.R. Simplot Company (Simplot), U.S. Forest Service (USFS), Idaho Office of Species Conservation (OSC), Trout Unlimited (TU), and the Shoshone-Bannock Tribes (Tribes), are working together to implement habitat improvement projects on the Yankee Fork of the Salmon River (Yankee Fork), a tributary to the Salmon River in central Idaho. The Pond Series 3 (PS3) Side Channel is the focus of the current efforts. The primary goal of the proposed project is to provide high-flow refuge and year-round rearing habitat for juvenile Snake River Chinook salmon (*Oncorhynchus tshawytscha*). The project is also expected to improve holding and spawning habitat for returning adult Chinook salmon, as well as habitat for Snake River steelhead (*O. mykiss*) and other native salmonids, including bull trout (*Salvelinus confluentus*).

Previously, CH2M HILL described the vision, goals, objectives, and design criteria for the PS3 Side Channel Project in the *Intermediate (60 Percent) Basis of Design Report* (CH2M HILL, 2012a) ("BDR") and the hydraulic modeling approach, methods, and results in the *Hydraulic Modeling and Interpretation Technical Memorandum* (CH2M HILL, 2012b) ("Modeling TM"). This memorandum summarizes the design discharges, describes the design approaches and methods, and presents the design calculations (Appendix A). The approaches and methods are presented for three major categories and 14 (grouped as the following 11) project design elements and materials as follows:

- Flow Conveyance and Control
 - Alcove, Nose, and Inlet Structure
 - Inlet Channel and Roughened Channel
 - Energy dissipation pools
- Bed and Bank Stabilization
 - Boulders
 - Riprap
 - Engineered Streambed Material
 - Grade Control Structures
- Habitat
 - Fabric Encapsulated Soil Lifts (FESL)
 - Wood Habitat Structures
 - Riffle Gravel
 - Mainstem Point Bar

Where applicable, for some design elements, the timing of specific decisions relative to the overall design process is included. All results presented here are consistent with the final design package, completed in June 2012.

Design Discharges

Specific design recurrence intervals and associated discharges for the Yankee Fork mainstem and PS3 Side Channel were selected by Reclamation based on analysis in the *Final Yankee Fork Tributary Assessment for the Upper Salmon Subbasin, Custer County, Idaho* (Reclamation, 2012) and input from CH2M HILL and members of the Yankee Fork Interdisciplinary Team. These selections balanced needs to protect the project investment (i.e., maintain structural stability and integrity of some elements) and manage risk (i.e., reduce potential unintended impacts of the project) with the overall goal to allow the project to evolve in response to the expected flow regime. Because of the remote project location and lack of major infrastructure in the project area, the primary

design concern is related to the potential “stream capture” of the mainstem Yankee Fork through the PS3 Side Channel. For this reason, flow control and bed stabilization measures were incorporated into the project as described in the following sections, and the design discharges were selected by Reclamation accordingly. The design discharges are summarized by design element in Exhibit 1. Design velocities and design depths corresponding to each of the design elements are also summarized in Exhibit 1. The 10-year and 50-year design discharge hydraulic modeling results for each design discharge were reviewed. The 50-year design discharge velocities and depths are provided in Appendix B.

Design Approaches and Methods

The BDR (CH2M HILL, 2012a) describes the overall project approach, methods, and design criteria, and the Drawings (CH2M HILL, 2012c) and Technical Specifications (CH2M HILL, 2012c) further describe the design elements summarized in this memorandum.

Flow Conveyance and Control

Several design elements, including the Alcove, Nose, Inlet Structure, Inlet Channel, Roughened Channel, and energy dissipation pools, will function together to convey and control flows. The Nose and Alcove will route a portion of the mainstem flow through the Inlet Structure which will control the flow into the Side Channel. The Inlet Channel and Roughened Channel will convey flows through the location of an existing culvert; the energy dissipation pools will contain hydraulic jumps and dissipate excess energy.

Alcove, Nose, and Inlet Structure

The Alcove and Nose will divert a portion of the mainstem flow through the PS3 Side Channel with the goal of providing year-round surface water connectivity and juvenile access to the PS3 Side Channel. The Alcove and Nose were designed to provide velocities and depths that will provide habitat for juvenile salmonids and attract them to the PS3 Side Channel; the 2-year design discharge was used as the habitat suitability analysis flow.

The Inlet Structure will control flows entering the Side Channel and thereby help reduce the potential of the Side Channel capturing the mainstem Yankee Fork. In addition to meeting the hydraulic design criteria presented in the Modeling TM (CH2M HILL, 2012b), the Inlet Structure was also designed to accomplish the following:

- Provide 1 foot of freeboard above the 50-year design discharge, based on 2D modeling results
- Resist overturning forces and moments—the vertical embedment depth of the sheetpile wall was designed to resist hydraulic (up to the 50-year design discharge) and geotechnical overturning moments and sliding forces
- Reduce the potential for flanking—the sheetpile wall was extended laterally into the Reinforcement Berms

The Inlet Structure design calculations are included in Appendix A.

Inlet Channel and Roughened Channel

The existing culvert drops more than 5 feet vertically from its upstream end to its downstream end. Removing only the culvert would create a knickpoint that could migrate upstream and potentially capture the mainstem Yankee Fork. To address this challenge, the Inlet Channel and Roughened Channel will be constructed to provide a smooth transition between the Alcove and the downstream reach of the PS3 Side Channel. The Inlet Channel dimensions and slope were developed with input from Reclamation as part of the 60 Percent Design to provide a slope that may allow fish passage for some species at some flows and also maintain velocities fast enough to periodically flush out beaver dams that may limit inflow to the PS3 Side Channel. Reclamation’s *Rock Ramp Design Guidelines* (Reclamation, 2007) was used to guide design of the Roughened Channel. Refinements to the low flow channel dimensions to enhance constructability were also incorporated in response to Reclamation review comments on the 60 Percent Design. Further information regarding the design approach for the Roughened Channel can be found in the Modeling TM (CH2M HILL, 2012b).

Energy Dissipation Pools

The constriction at the Inlet Structure and steep longitudinal slope of the Roughened Channel will accelerate flows enough that hydraulic jumps may occur downstream of both elements. An energy dissipation pool will be constructed downstream of the Inlet Structure, and an existing pool downstream of the Roughened Channel will be armored. Both energy dissipation pools will increase the likelihood of containing the associated hydraulic jumps and limiting bed and bank erosion.

The approach to sizing the energy dissipation pools is outlined in the Modeling TM (CH2M HILL, 2012b). The Inlet Structure energy dissipation pool design calculations are provided in Appendix A. Riprap design is detailed in the Riprap sub-section.

Bed and Bank Stabilization

Boulders, riprap, engineered streambed material, and grade control structures will be constructed to stabilize portions of PS3 Side Channel design elements. Boulders, riprap, and engineered streambed material will help resist erosion and stabilize the beds and banks of the Alcove, Nose, Inlet Structure, Inlet Channel, Roughened Channel, and Berm Reinforcement. The grade control structures will limit the longitudinal extent of migrating knickpoints to portions of the PS3 Side Channel where channel evolution (both horizontal and vertical) is desired to increase channel complexity and habitat (Station [STA] 23+20 to 39+00).

Boulders

Boulders removed from the mainstem Yankee Fork near Cabin Bridge will be used to construct portions of the Nose, Alcove, and Inlet Structure. The boulders will be placed to stabilize design elements that route flow (and juvenile Chinook salmon) into the PS3 Side Channel year-round. The boulders also provide flexibility to modify the Nose and Alcove, if, over time, adjustments to the flow allocation are required or if other projects are implemented in the vicinity and change PS3 Side Channel inlet hydraulics. Because of the massive size of the boulders (up to 12 tons) and the observation that they persisted in the same location for many years through high flows in the mainstem channel, the boulders were assumed to be permanently stable up to the 50-year design discharge, and no design calculations were used to size the boulders for their placement along the Nose and Alcove.

Riprap

Two gradations, or classes, of riprap will be used to construct the PS3 Side Channel project. Class 1 will be a general gradation with a median grain size diameter of 12 inches; Class 1 riprap will be used for the majority of the project. Class 2 riprap will be a coarser gradation with a median diameter of 24 inches and will be used where larger rock is required to resist erosive forces. Both classes of riprap will be used to construct portions of the Alcove, Nose, Inlet Structure, Berm Reinforcement, Cearley Creek confluence, Roughened Channel, Roughened Channel grade control structures, and two additional grade control structures to stabilize elements up to the 50-year design discharge. Applicable methods and equations were selected based on their potential limitations and appropriate uses; the equations and associated riprap sizing calculations are shown in Appendix A. Exhibit 2 provides a summary of the design depth and design velocity used to size riprap as well as the provided material (Riprap Class 1, Riprap Class 2, or Engineered Streambed Material) for each of the design elements.

Gradations were developed to create a well-graded material capable of reducing the potential for erosion of the underlying material. As recommended in Hydraulic Engineering Circular (HEC) No. 11 (FHWA, 1989), design specifications provide for two limiting gradation curves so the stone gradation (as determined from field test samples) may be within these limits. The gradation limits were specified to allow some flexibility so that production costs would not be excessive. Riprap design calculations for the Alcove, Berm Reinforcement, Cearley Creek confluence, energy dissipation pools, grade control structures, Nose, and Roughened Channel grade control structures are provided in Appendix A.

Engineered Streambed Material

Engineered Streambed Material will line the channel and streambanks of the Inlet Channel and Roughened Channel to reduce the potential for erosion of the bed and banks using a material with a more natural appearance than riprap. The median grain size diameter that would provide stability up to the 50-year design discharge was calculated as shown in Appendix A.

Engineered Streambed Material gradations were developed to simulate well-graded, rounded, natural stream bed materials. USFS's *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings* (USFS, 2008) was used to develop a gradation that would provide bed structure necessary to resist erosive forces while also limiting interstitial flow and mimicking natural streambed material. The gradation was developed using the Fuller-Thompson equation:

$$P/100 = [d/D_{max}]^n \quad \text{Equation 6.1 (USFS, 2008)}$$

where d is any particle size of interest, P is the percentage of the mixture smaller than d, D_{max} is the largest size material in the mix, and n is a parameter that determines how fine or coarse the resulting mix will be.

For the 60 Percent Design, the Engineered Streambed Material median grain size was selected to be stable up to the 50-year design discharge. Exhibit 2 provides a summary of the design depth and design velocity used to size the Engineered Streambed Material for the 60 Percent Design. At the direction of Reclamation prior to the 95 Percent Design submittal, the Engineered Streambed Material specification was revised to specify angular material to allow the reduction of particle sizes across the gradation. Median grain size diameter design calculations for Engineered Streambed Material are provided in Appendix A.

Grade Control Structures

Grade control structures will be constructed at the entrance and exit of the Roughened Channel and at STA 19+00 and STA 23+10 to reduce the potential for headcut propagation and provide increased vertical grade control up to the 50-year design discharge. Grade control structure stability will be a function of the following two parameters:

- Resistance to displacement
- Resistance to undermining

Locations of the grade control structures were selected by identifying locations where Froude numbers exceeded 1.0, based on 2D modeling results (CH2M HILL, 2012b). Because of the high velocities in locations where grade control structures will be sited, the grade control structures will be constructed of Class 2 riprap to resist erosive forces. (Design of the grade control structure riprap is described in a previous section, and grade control structure riprap stability calculations are included in Appendix A).

To limit the potential of undermining and displacement of the grade control structures, riprap will be placed beneath the finished grade to a depth greater than the maximum depth of scour. The grade control structures will extend up and into the banks to prevent lateral flanking of the structures and limit horizontal migration of the side channel. Scour analysis calculations are provided in Appendix A.

Habitat

FESL, Wood Habitat Structures, Riffle Gravel, and the Point Bar near Outlet Channel Mouth were designed to increase habitat complexity, provide cover for juvenile salmonids in PS3 Side Channel and the mainstem Yankee Fork, and encourage steelhead spawning in the side channel.

Fabric Encapsulated Soil Lift (FESL)

FESL is designed and constructed to be flexible (i.e., deform without failing) if it is undermined by scour, thereby retaining structural integrity and creating habitat complexity and cover. Use of live stakes, brushlayer, and fascine in the FESL further contribute to the complexity and cover, especially as the vegetation matures and develops a deep binding root mass. Coir erosion control fabrics used in the FESL are incorporated to provide short-term (several years) protection until the vegetation establishes. The design incorporates two fabrics; an outer geotextile serves the function of retaining earth material, and the inner geotextile functions to resist scour from

high shear stress/flow velocities. The inner geotextile was designed based on aperture size (sized to retain sand-sized particles). The outer geotextile was designed for the appropriate weight and strength which exceed the anticipated velocities of the 10-year design discharge (8 fps) by a factor of at least 1.5.

Wood Habitat Structures

Based on direction from Reclamation and members of the Yankee Fork Interdisciplinary Team, specific design criteria were developed for the Wood Habitat Structures. The design criteria and associated assumptions are included in Appendix A. Wood Habitat Structures were designed to remain stable up to the 10-year design discharge, per guidance from Reclamation.

Displacing forces and moments (buoyant and hydrodynamic drag forces) and stabilizing forces and moments (weight of the bole, rootwad, and backfill and lateral earth pressure) were calculated and compared to evaluate the factor of safety (FS) for the structure, defined as the sum of stabilizing forces or moments divided by the sum of dislodging forces or moments, respectively. Factors of safety were calculated for three possible failure mechanisms:

1. Buoyant uplift (cross-sectional plane): occurs if buoyant forces exceed weight forces and cause the log to "float" out of its embankment
2. Translation ("sliding") (plan-view plane): occurs if backfill material cannot provide the required force to resist hydrodynamic drag forces acting on the log and rootwad and prevent the log from sliding downstream
3. Horizontal rotation (plan-view plane): occurs if backfill material cannot provide the required moments to resist rotation of the log from hydrodynamic drag forces acting on the log and rootwad which "push" the exposed portions of the log and cause the log to rotate

The factor of safety was first evaluated by comparing displacing forces and moments to stabilizing forces and moments, as described previously. If the target factor of safety was not provided, critical parameters (depth of burial and weight of backfill) were adjusted until the target factor of safety was provided. Wood Habitat Structure stability analyses for 12 inch, 18 inch, and 24 inch bole diameter logs are presented in Appendix A.

Riffle Gravel

Riffle gravel will line the bed of riffle sub-reaches in the Side Channel downstream of PS3 Side Channel Station STA 22+56. The riffle gravel gradation was selected to promote interstitial flow and support steelhead spawning. Gradation specifications for riffle gravel were extracted from steelhead spawning gravel gradation analyses (Katzel and McKnight, 2001) and approved by TU and Reclamation. The riffle gravel was assumed to be stable for the majority of flows, and no design calculations were performed to size the riffle gravel. In contrast to the Bed and Bank Stabilization elements described above, the riffle gravel is intentionally smaller to allow adjustment of the alignment and profile of the Side Channel downstream of STA 23+20. Such adjustments are anticipated and desired by Reclamation and the Yankee Fork Interdisciplinary Team.

Mainstem Point Bar

Reclamation and the Yankee Fork Interdisciplinary Team expect the mainstem Yankee Fork to evolve over time and would like to encourage development of a pool near the outlet of the Side Channel. Creation of the mainstem point bar should help to promote hydraulic conditions that will result in a self-maintaining pool adjacent to the point bar. The created pool and mainstem point bar would increase habitat complexity in the mainstem Yankee Fork and the pool would provide a holding place for juvenile salmonids and improve juvenile salmonid access to the PS3 Side Channel from the downstream end. Coarse substrate from the excess tailings will be placed to augment an existing point bar. No design calculations were used to size the material for the point bar.

EXHIBIT 1

Summary of Design Discharges, Depths, and Velocities

Design Element	Design Recurrence Interval ^a (yr)	Mainstem Design Discharge ^b (cfs)	PS3 Side Channel Design Discharge ^c (cfs)	Design Depth ^d (ft)	Design Velocity ^d (ft/s)
Alcove	N/A	N/A	N/A	N/A	N/A
Boulder	N/A	N/A	N/A	N/A	N/A
Energy dissipation pools	50	3,304	3,304	3.0	10.0
Engineered streambed material	50	3,304	300	2.4	8.0
FESL	10	2,340	210	N/A	7.6
Grade Control Structures	50	3,304	300	2.0	8.5
Inlet Channel	50	3,304	300	2.4	6.0
Inlet Structure	50	3,304	300	5.75	N/A ^e
Mainstem point bar	N/A	N/A	N/A	N/A	N/A
Nose	50	3,304	300	4.5	7.5
Riffle gravel	N/A	N/A	N/A	N/A	N/A
Riprap (all locations)	50	3,304	300	See Exhibit 2	See Exhibit 2
Roughened Channel	50	3,304	300	2.4	6.0
Wood Habitat Structure	10	2,340	210	Bankfull ^f	5.2

^a Selected by Reclamation^b From the *Final Yankee Fork Tributary Assessment for the Upper Salmon Subbasin, Custer County, Idaho* (Reclamation, 2012)^c From 2D modeling of the proposed design (CH2M HILL, 2012a)^d From 2D modeling of the proposed design^e Velocity was considered only for the hydraulic design of the Inlet Structure^f Wood Habitat Structure conservatively estimated to be fully submerged

Inouye, Allison

From: Jim Gregory <gregory_jim@yahoo.com>
Sent: Tuesday, June 04, 2019 7:23 AM
To: Inouye, Allison
Cc: Peter Anderson
Subject: Re: Yankee Fork PS3 Project

Allison,

The PS3 project inflow was rated for a while and BOR collected some flow data. I will see if I can get that data for you.

Peter Anderson at Trout Unlimited worked on this project with us too, so I have cc'd him here.

I am in the field today, but will try to get with you tomorrow to answer any other questions.

Jim

Jim Gregory
Lost River Fish Ecology, INC.
5306 Zollinger Rd.
Mackay, Idaho 83251
Phone (208)588-2447
Cell (208)390-5306

On Monday, June 3, 2019, 9:35:17 AM MDT, Inouye, Allison <Allison.Inouye@idwr.idaho.gov> wrote:

Hi Jim,

I left you a voicemail, and wanted to follow up with an email as well. I am trying to research the Yankee Fork Side Channel Habitat Improvement (PS3) Project, undertaken with JR Simplot Co, Trout Unlimited, and other partners. JR Simplot Co has a water permit for that project and I am looking for any water measurement data, reports, or other information that I could use to document how the permit was developed in terms of flow rate and annual volume of water that is diverted through that side channel. When I visited the site, I noticed a staff gage at the inlet and wondered if it might be a rated section and/or if any flow data has been collected. Alternatively, I wondered if the side channel was engineered in a way to divert a certain portion of the river flow – if so, having that information would be very helpful as well.

Feel free to contact me via phone or email.

Thanks for your time,

Allison

Inouye, Allison

From: Inouye, Allison
Sent: Monday, June 03, 2019 9:38 AM
To: 'Peterson, Ferron'
Subject: RE: [EXTERNAL] Yankee Fork PS3 Project

Hi Jeff,
Thank you for getting back to me and providing that contact info. I will reach out to them.
Best,
Allison

From: Peterson, Ferron [mailto:fpeterson@usbr.gov]
Sent: Monday, June 03, 2019 7:58 AM
To: Inouye, Allison <Allison.Inouye@idwr.idaho.gov>
Subject: Re: [EXTERNAL] Yankee Fork PS3 Project

I think that Jim Gregory or Cassie Wood (works for Trout Unlimited) would be the better contacts - they helped develop the YF projects and have more hands on experience with the project

I believe the sill of the side channel entrance was set to allow a minimum of 5 cfs into the side channel ?

Jeff

gregory_jim@yahoo.com

Caselle.Wood@tu.org

On Fri, May 31, 2019 at 3:30 PM Inouye, Allison <Allison.Inouye@idwr.idaho.gov> wrote:

Hi Jeff,

I am trying to research the Yankee Fork Side Channel Habitat Improvement (PS3) Project, undertaken with JR Simplot Co, Trout Unlimited, and other partners. I found your contact information on a website about the project. JR Simplot Co has a water permit for that project and I am looking for any water measurement data, reports, or other information that I could use to document how the permit was developed in terms of flow rate and annual volume of water that is diverted through that side channel. When I visited the site, I noticed a staff gage at the inlet and wondered if any flow data has been collected. Alternatively, I wondered if the side channel was engineered in a way to divert a certain portion of the river flow – if so, having that information would be very helpful as well.

If you have any information you could share, or if you might be available to discuss the project by phone, I would greatly appreciate it.

Best,

Allison

Allison Inouye

Water Resource Agent

Southern Regional Office | Idaho Dept. of Water Resources

p (208) 736-3033 | f (208) 736-3037

Allison.Inouye@idwr.idaho.gov

Inouye, Allison

From: Inouye, Allison
Sent: Thursday, May 09, 2019 12:40 PM
To: 'vic.conrad@simplot.com'
Subject: IDWR Water Permit No. 72-16896

Hello Vic,

I left you a voicemail and wanted to follow up with an email. I am working on licensing IDWR water permit 72-16896 which authorizes 295 cfs from the Yankee Fork for fish habitat & recreation purposes. Do you have any water measurement or diversion data, reports, construction as-builts, or any other information that has already been compiled that I might be able to use in licensing that permit?

Thank you,
Allison

Allison Inouye
Senior Water Resource Agent
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