

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 74-16226
Exam Date: 06/11/2024

1. Current Owner:
STATE OF IDAHO FISH & GAME COMMISSION PO BOX 25 BOISE ID 83707-0025
2. Accompanied by: Mike Demick (IDFG)
Phone No: (208) 866-2593
Address: Baker Country Store, Baker, ID (meeting place)
Relationship to permit Holder: IDFG Representative

3. **SOURCE:** PRATT CREEK **Tributary** LEMHI RIVER
Method of Determination: GARMIN Trex GPS & GIS

B. OVERLAP REVIEW

1. Other water rights with the same place of use: NO Overlap

Water Right No.	Source	Purpose of Use	Basis
NONE	NA	NA	NA

Comments: There are no rights overlapping the permitted place of use (POU).

2. Other water rights with the same point-of-diversion: NO Overlap

Water Right No.	Source	Purpose of Use	Basis
74-16093	PRATT CREEK	IRRIGATION	LICENSE
74-16094	PRATT CREEK	IRRIGATION	LICENSE
74-16095	PRATT CREEK	IRRIGATION	LICENSE
74-16096	PRATT CREEK	IRRIGATION	LICENSE
74-16097	PRATT CREEK	IRRIGATION/STOCKWATER	LICENSE
74-1857	PRATT CREEK	IRRIGATION	LICENSE
74-2019	PRATT CREEK	IRRIGATION	LICENSE

Comments: The above irrigation rights share the headgate diverting water from the creek along a ditch to the fish screen enclosure about 100ft downstream where most of the water passes through the screen drum into a pipeline to a pump delivering water to the to the appurtenant right POU's. As the permitted use non-consumptive (returning the flow to the creek) and the rate can be administered at the headgate so that the permitted volume is diverted in addition to the existing rights supplied by the irrigation ditch there are no concerns regarding negative impact to existing rights.

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

PRATT CREEK L1 (NE¼ NE¼), Sec. 6, Twp 20N, Rge 24E, B.M. LEMHI County
Method of Determination: GARMIN Trex GPS- Headgate N45°05.901 W113°39.206 and GIS.

PLACE OF USE: FISH PROPAGATION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
20N	24E	6	X L1																

Method of Determination: GARMIN Trex GPS and GIS.

3.
 - ☒ Delivery System Diagram Attached (required). Indicate all major components and distances between components.
 - ☒ Indicate weir size/pipe as applicable.
 - ☒ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
 - ☒ Aerial Photo Attached (required for irrigation of 10+ acres).
 - ☒ Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
LPC-02(headgate)	NA	NA	NA	NA	NA

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Staff Gauge	Feet to 10 ^{ths}	Unknown	Unknown	Unknown	3.3'	NA

2. Measurements: Total head measured from the center of the orifice, 2 ½" above the bottom of the fish bypass enclosure.**E. FLOW CALCULATIONS**X Additional Computation Sheets AttachedMeasured Method: A staff gauge was used to measure the total head above the center of the 4" orifice in the bypass enclosure.Formula for Discharge from a Tank:

$$C_d A_o (2gh)^{1/2} = Q \text{ (discharge in cfs)}$$

Where-C_d= coefficient of discharge=0.67 (based on 2011 Fish Bypass memo)A_o= Area of orifice opening in ft² = (A = πr²)

g= 32.2 ft/sec (constant)

Orifice diameter= 4"=0.33ft

Orifice r=0.165ft

h= Head above the center of the orifice = 2.23 ft from bottom of enclosure – (2.5in/12 center of orifice)= 26.76in -2.5in=24.26in

highwater mark h= 3.1' from bottom of enclosure= 37.2in – 2.5in to center of orifice= 34.7in

Calculated Q for highwater mark= 0.80cfs (see attached calc sheet)Comments: I recommend that the license is issued with a rate of 0.80cfs, per the 2011 fish bypass memo and Field Examiners Handbook-references Orifice rate calculation spreadsheet.**F. VOLUME CALCULATIONS**

1. Volume Calculations for irrigation: N/A

2. Volume Calculations for Other Uses:

$$V = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$0.80\text{cfs} \times 246 \text{ days (3/15 to 11/15)} \times 1.9835 = 390.4 \text{ AF} \approx 390 \text{ AF}$$

Comments: The fish bypass is designed for use whenever the ditch is in use for the irrigation season. I recommend the license be issued for 390 AF annually, based on usage calculation above.**G. NARRATIVE/REMARKS/COMMENTS**

The headgate Idaho Fish and Game (IDFG) identifies as LPC-02 (photos 1a & b) diverts water from Pratt Creek into a ditch which flows approximately 100ft to the southwest to a steel enclosure with a drum screen and 4" bypass orifice. The bypass and fish screen are to prevent juvenile fish from being trapped in the irrigation ditch. The head within the fish screen enclosure can be adjusted by adding or removing boards into the between the drum screen and the water wheel (photo 2). A staff gauge measured a maximum head to the highwater mark of 34.7 inches above the center of the orifice within the enclosure (photo 3). A maximum of 0.80cfs bypasses the screen through a 4" round orifice slip panel in the southeast corner of the enclosure (photo 4) where flow is returned to Pratt Creek approximately 20ft to the east through a 10" diameter PVC pipe (photo 5).

Based on the field measurement and Department processing guidance for fish bypass diversions I recommend the license is issued for the full permitted rate of 0.80cfs and an annual volume of 390 AF. Condition 01H should be replaced with condition R02 at licensing as per current guidance.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
FISH PROPAGATION	03/15 to 11/15	0.80 CFS	390 AF

Totals: 0.80 CFS 390 AF

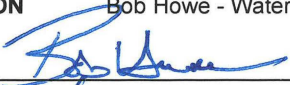
2. Recommended Amendments

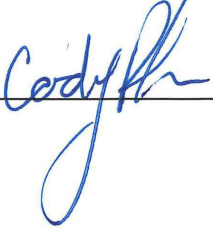
☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☒ None

I. AUTHENTICATION

Bob Howe - Water Resource Agent

Field Examiner's Name  Date 9/30/21

Reviewer  Date 10-21-24

Field Exam Flow Rate Calculation Sheet for Fish Screen Orifices

Water Right Number: 74-16226
Field Examiner: Bob Howe
Date of Exam: 6/11/2024

Discharge from a tank through an orifice (see attached memo from water right 72-16754 by Corey Skinner for a formula and orifice coefficient).

Formula = $C_d A_o (2gh)^{1/2}$

Where C_d = coefficient of discharge
 A_o = Area of orifice opening in Square feet
 $g=32.2$ feet per second²

h = Measured head above center of orifice opening in feet

Orifice Diameter in inches =	4
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$$A_o = (\pi r^2) / 144 = \text{Square Feet}$$

A_o = 0.087

Head above center of orifice in Inches =	34.7
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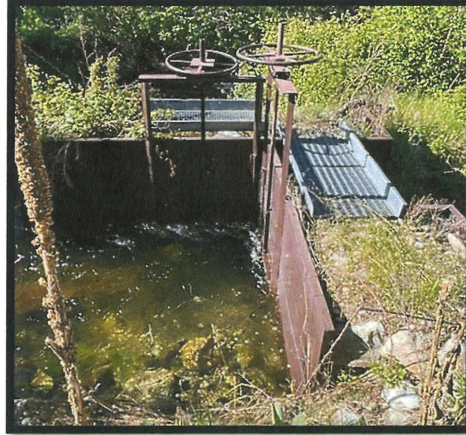
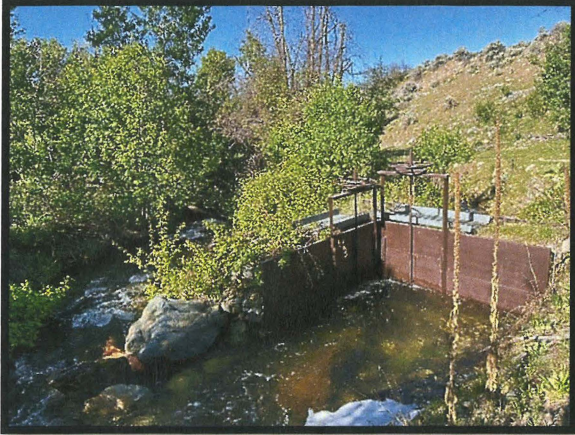
 (Measured to High Water Mark)

h = 2.892

Coefficient of Discharge for Orifice* =	0.67
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Total Diversion Rate = 0.80

* Per Cory Skinner's memo for Basin 71 and 72 IDF&G Fish Bypass Permit Files dated August 24, 2011, the Coefficient for round edge orifice should be 0.67.



Photos 1a & 1b – LPC-2 Headgate -Approximately 100ft northeast of the fish bypass enclosure.

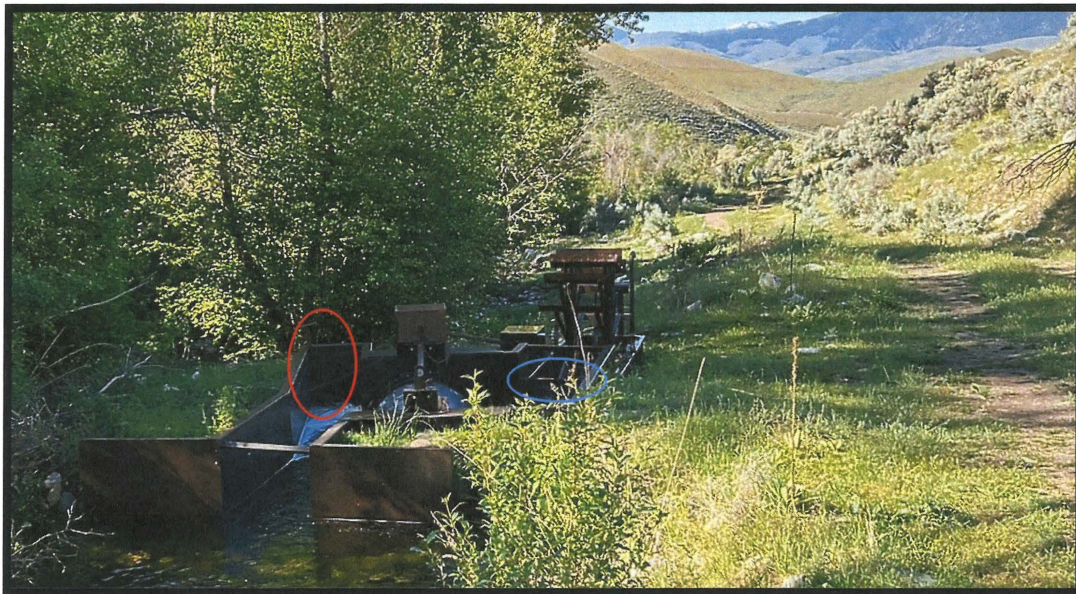


Photo 2- Fish bypass enclosure with the 4" orifice slip panel on the left (handle circled red) and boards installed in front of the water wheel on the right to raise the head within the enclosure (circled in blue).



Photo 3- Staff gauge measurement adjacent to the orifice approximately 2.2 ft with highwater mark at 3.1 ft.



Photo 4- Orifice Slip panel removed by Mike Demick (IDFG escort). Centered approx. 2 ½ in above the bottom of the enclosure.



Photo 5- 10" PVC fish bypass pipe returning flow to Pratt creek about 20 ft east of the fish screen enclosure.

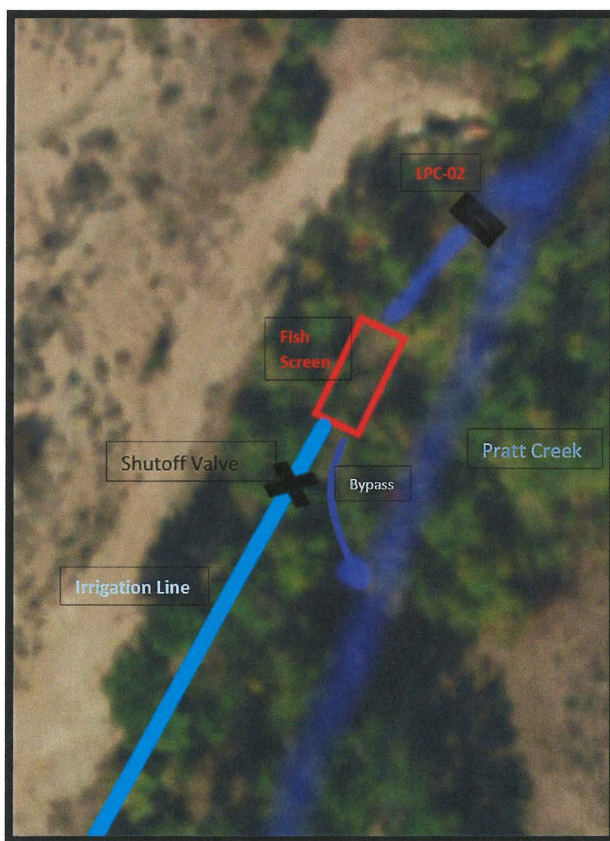


Figure 1- System diagram – Water is diverted from Pratt Creek at the LPC-02 headgate passing through the fish screen to the water wheel and into the irrigation line or entering the 4" screen bypass orifice and returning to Pratt Creek via a 10" PVC bypass line.