

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 47-17094

Exam Date: 10/22/2013

1. Current Owner: JACK GOODMAN
4148 N 1100 E
BUHL ID 83316
2. Accompanied by: Jack Goodman
Phone No: 208-308-1561
Address: Same as above
Relationship to Permit Holder: Permit holder

3. SOURCE TRIBUTARY
LATERAL NO 58 MUD CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None
2. Other water rights with the same point of diversion: None

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

LATERAL NO 58 NW1/4SW1/4 Sec. 33, Twp 09S, Rge 14E, B.M.
TWIN FALLS County

Method of Determination: Aerial imagery/site visit

2.

PLACE OF USE: POWER

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
09S	14E	33							X										

Method of Determination: Aerial Imagery/Site visit

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.

<u>Well or Diversion</u> <u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Pump Serial No. or Discharge</u> <u>Size</u>
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NA

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

<u>Measurement</u> <u>Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
Flowmeter	Sonic	Fuji				

2. Measurements: Performed a ten minute test on each incoming pipe just above the powerhouse.

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method: The flow from the 8' pipe was 500.1 gpm and the flow from the 12' pipe was 1732.9 gpm for a total of 2233 gpm or 4.98 cfs. The measurement was taken soon after water was turned into the lateral in the spring and not all farmers in the area had started irrigating due to a wet spring, which would account for the high flow. I believe flows in the majority of the season would closer reflect the permitted amount.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: NA

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \text{NA}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = \text{NA}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \text{NA}$$

2. Volume Calculations for Other Uses: To determine the volume, the revenue and the capacity of the system were evaluated. The measured capacity of the diversion system was 4.98 cfs, while the permit is limited to 3.1 cfs. It was assumed that the high revenue/day would be based on 4.98 cfs so a calculated adjustment was made, based on $[3.1/4.98 \times 99.34 = 61.84]$; any value above 61.84 was assumed to be based on a flow rate in excess of the permitted limit of 3.1 cfs. Once the adjustments were made, the volume was calculated based on the following equation: $\text{Volume AF} = [(\text{\$/day})/61.84] \times 3.1 \times \text{days} \times 1.9835$. The largest annual volume for the period of record appears to be 756 AF. See attached sheets.

G. NARRATIVE/REMARKS/COMMENTS

The field exam for permit 47-17094 was initially conducted on October 22, 2013; at that time flow in the lateral upstream of the penstock had begun to drop as a result of the conclusion of the irrigation season, so a return visit to measure the flow was made on April 23, 2014. Jack Goodman, the permit holder, was present for both exams.

The point of diversion is a concrete wing wall inlet structure located on the end of Twin Falls Canal Company Lateral number 58 northwest of Buhl, Idaho. Trash is removed from the lateral with an automatic trash rack before it enters the inlet. Water then enters two pipelines, one 8 inches in diameter, the other 15 inches in diameter, before dropping 94 feet to the powerhouse. The 15 inch pipeline is reduced to 12 inches about halfway down the drop, and it is joined by the 8 inch line as it enters the powerhouse. After power generation, water exits the powerhouse into Mud Creek. The original design called for a single 15 inch line reduced to 12 inch line, but its capacity was not sufficient for the permitted flow. Any excess water not entering the inlet structure overflows a concrete check, and runs downhill into Mud Creek.

The facility was designed to produce 25 kilowatts of power at 3.2 cfs of flow. On the day of the exam, the output was 21.41 kW. The generator is a Lincoln model CCD10540T64, 40 HP, 705 RPM, 60 HZ, 460 volt, 29.8 kW unit. The turbine is an Ossberger SH 35 LG, manufactured in Germany. A transducer is located in the penstock pool, which detects changes in the water level and either closes or opens the turbine inlet accordingly.

Mr. Goodman and his partner, Jeff Comer, originally had a power sales agreement with Idaho Power, but the power company, with the support of the Idaho Public Utilities Commission, cancelled the contract, and the system is operated on a net metering agreement, where Mr. Comer and Mr. Goodman are credited for power produced in excess of what they use on their own properties during the high flows of the irrigation season, and they use those credits to offset their power use during the off season. The first date of energy production for the project was on June 12, 2006.

Although the POD appears to straddle the QQ line, and the POU appears to be outside the permitted QQ, the taxlot data, and a known shift in the imagery would indicate that the POU and the POD are located as permitted.

Paperwork in the backfile pertaining to 47-17094 contains an agreement between Mr. Goodman and Jeff Comer, who are partners in the hydropower venture. Mr. Comer owns the property at the POU. There is also a letter granting a right of way for the pipeline to pass through the property of Stewart Mabey and a letter from the Twin Falls Canal Company stating no objections to the project, which uses the spilled flow at the end of their Lateral No. 58. The project appears to be very well executed and the permit should be licensed.

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

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
POWER	01/01 to 12/31	3.100 CFS	756.0 AF
<u>Totals:</u>		3.100 CFS	756.0 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 ☐ Other

I. AUTHENTICATION

Field Examiner's Name [Signature] Date 10/22/2013

Reviewer [Signature] Date 6/9/14

Idaho Department of Water Resources

System Diagram



Legend

- Township/Range
- Sections
- QQ



Date: 12/5/2013

0 0.015 0.03 0.06 Miles

State of Idaho
Department of Water Resources

Attachment To Water Right License

47-17094

This map depicts the POWER 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.

14E



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

0 0.05 0.1 0.2 Miles

40 acre tract line shifted east. to the SWNW Sec 33





Turbine and generator inside powerhouse

Outlet from powerhouse into Mud Creek





POD – Trash rack and penstock inlet

POU - Powerhouse and penstock pipes



LD01

LD01

No. 01

4/23/2014 14:01

LOG NAME:GOOD12

+5.308E+0 ft/s

START :04-23 13:56

+1.733E+3 gal/m

END :04-23 14:06

+TOTAL 0008649 gal

INTERVAL:00:01:00

NORMAL

4/23/2014 13:56

4/23/2014 14:02

+5.373E+0 ft/s

+5.392E+0 ft/s

+1.754E+3 gal/m

+1.761E+3 gal/m

+TOTAL 0000000 gal

+TOTAL 0010384 gal

NORMAL

NORMAL

4/23/2014 13:57

4/23/2014 14:03

+5.301E+0 ft/s

+5.258E+0 ft/s

+1.731E+3 gal/m

+1.717E+3 gal/m

+TOTAL 0001706 gal

+TOTAL 0012116 gal

NORMAL

NORMAL

4/23/2014 13:58

4/23/2014 14:04

+5.299E+0 ft/s

+5.386E+0 ft/s

+1.730E+3 gal/m

+1.758E+3 gal/m

+TOTAL 0003438 gal

+TOTAL 0013849 gal

NORMAL

NORMAL

4/23/2014 13:59

4/23/2014 14:05

+5.257E+0 ft/s

+5.285E+0 ft/s

+1.716E+3 gal/m

+1.726E+3 gal/m

+TOTAL 0005173 gal

+TOTAL 0015585 gal

NORMAL

NORMAL

4/23/2014 14:00

4/23/2014 14:06

+5.319E+0 ft/s

+5.350E+0 ft/s

+1.737E+3 gal/m

+1.747E+3 gal/m

+TOTAL 0006909 gal

+TOTAL 0017329 gal

NORMAL

NORMAL

Goodman 12" pipe into power house
permit
47-17094

LD02

No. 02

LOG NAME:GOOD8

START :04-23 14:25

END :04-23 14:35

INTERVAL:00:01:00

4/23/2014 14:30

+3.470E+0 ft/s

+5.027E+2 gal/m

+TOTAL 0002498 gal

NORMAL

4/23/2014 14:25

+3.447E+0 ft/s

+4.992E+2 gal/m

+TOTAL 0000000 gal

NORMAL

4/23/2014 14:31

+3.417E+0 ft/s

+4.950E+2 gal/m

+TOTAL 0002999 gal

NORMAL

4/23/2014 14:26

+3.450E+0 ft/s

+4.997E+2 gal/m

+TOTAL 0000492 gal

NORMAL

4/23/2014 14:32

+3.453E+0 ft/s

+5.001E+2 gal/m

+TOTAL 0003499 gal

NORMAL

4/23/2014 14:27

+3.450E+0 ft/s

+4.997E+2 gal/m

+TOTAL 0000993 gal

NORMAL

4/23/2014 14:33

+3.432E+0 ft/s

+4.971E+2 gal/m

+TOTAL 0003999 gal

NORMAL

4/23/2014 14:28

+3.472E+0 ft/s

+5.029E+2 gal/m

+TOTAL 0001494 gal

NORMAL

4/23/2014 14:34

+3.469E+0 ft/s

+5.025E+2 gal/m

+TOTAL 0004500 gal

NORMAL

4/23/2014 14:29

+3.481E+0 ft/s

+5.042E+2 gal/m

+TOTAL 0001996 gal

NORMAL

4/23/2014 14:35

+3.447E+0 ft/s

+4.992E+2 gal/m

+TOTAL 0005001 gal

NORMAL

Goodman 8" Pipe into Powerhouse

*permit
47-17094*

[illegible]

1:30 PM

04/11/14

Accrual Basis

Goodco Power
Income by Customer Detail
 January through December 2009

Type	Date	Num	Account	Amount	Balance
Idaho Power Company					
Sales Receipt	1/26/2009	0109	Production payment	385.82	385.82
Sales Receipt	2/19/2009	0209	Production payment	346.97	732.79
Sales Receipt	3/16/2009	0309	Production payment	237.20	969.99
Sales Receipt	6/8/2009	0409	Production payment	158.71	1,128.70
Sales Receipt	6/8/2009	0509	Production payment	293.98	1,422.68
Sales Receipt	6/18/2009	0609	Production payment	993.40	2,416.08
Sales Receipt	7/29/2009	0709	Production payment	1,210.17	3,626.25
Sales Receipt	8/19/2009	0809	Production payment	860.67	4,486.92
Sales Receipt	9/21/2009	0909	Production payment	984.20	5,471.12
Sales Receipt	10/20/2009	1009	Production payment	605.90	6,077.02
Sales Receipt	11/25/2009	1109	Production payment	948.50	7,025.52
Sales Receipt	12/21/2009	1209	Production payment	520.73	7,546.25
Total Idaho Power Company				7,546.25	7,546.25
Platt Electric Company					
Sales Receipt	9/21/2009	0909-2	Other Income	104.94	104.94
Total Platt Electric Company				104.94	104.94
TOTAL				7,651.19	7,651.19

18.870

1422.68

81.270

6123.57

6:41 PM
04/11/14
Accrual Basis

Goodco Power
Income by Customer Detail
January through December 2010

Type	Date	Num	Account	Amount	Balance
Idaho Power Company					
Sales Receipt	1/26/2010	126	Production payment	336.76	336.76
Sales Receipt	2/23/2010	223	Production payment	261.11	597.87
Sales Receipt	4/20/2010	420	Production payment	168.15	766.02
Sales Receipt	4/20/2010	421	Production payment	103.53	869.55
Sales Receipt	5/20/2010	520	Production payment	259.69	1,129.24
Sales Receipt	6/14/2010	614	Production payment	1,111.88	2,241.12
Sales Receipt	7/19/2010	719	Production payment	798.96	3,040.08
Sales Receipt	8/23/2010	823	Production payment	478.07	3,518.15
Sales Receipt	9/9/2010	929	Production payment	742.90	4,261.05
Sales Receipt	10/26/2010	1026	Production payment	935.15	5,196.20
Sales Receipt	11/30/2010	1130	Production payment	937.11	6,133.31
Total Idaho Power Company				6,133.31	6,133.31
TOTAL				6,133.31	6,133.31

18.490
1129.24
81.690
5009.07