

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 72-16707

Exam Date: 7/28/2014

1. Current Owner: JOHN PIVA
PO BOX 1219
CHALLIS ID 83226
(208)879-4601

And

KATHY PIVA
PO BOX 1219
CHALLIS ID 83226
(208)879-4601

2. Accompanied by: Mr. Piva (permit holder), and Jim Bitzenburg (IDWR)

3. SOURCETRIBUTARY

GROUND WATER

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 SYSTEM1. LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER

NW1/4NE1/4NW1/4

Sec. 27, Twp 14N, Rge 19E, B.M.

CUSTER County

Method of Determination: Aerial photography and field verification.

2.

PLACE OF USE: IRRIGATION

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>	
14N	19E	22											1.8						1.8
14N	19E	27					3.2	11.0											14.2

Total Acres: 16

Method of Determination: Aerial photography and field verification.

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>
D0054810		7			

*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		7K0085TB		3/2014
Pressure gauge						

2. Measurements: A ten minute test was run with the permit holder operating two Impact Sprinklers and 14 irrigation Pod Sprinklers. The measurement was taken on one rain bird with a highest recorded flow during the test was 22 gpm or 0.05cfs for one rain bird.

E. FLOW CALCULATIONS

☐ Additional Computation Sheets Attached

Measured Method: A measurement was taken on one rain bird with a highest recorded flow during the test being 22 gpm or 0.05 cfs for one rain bird. As a check, the irrigation was estimated using a pressure gauge, counting the number of sprinklers and verifying the nozzle diameter on the impact sprinklers.

Two impact sprinklers equipped with 11/32 nozzles at 40 psi can produce 21.8 gpm each per the Rain Bird performance data for this type of irrigation system (performance data sheet included). This is consistent with the measured test taken during the licensing exam (Log included). In addition 14 irrigation pods were running during the measurement rated at 7 gpm per applicant.

2 impact sprinklers @ 22 gpm each for a total of 44 gpm.

14 irrigation pods @ 7 gpm each for a total of 98 gpm.

Totalling 142 gpm equals 0.32 cfs.

Using the Theoretical Horsepower Equation.

78' = depth to water based on 2009 well driller's report static water level.

7.0 = horsepower of pump based on statement of applicant

40 = psi based on measured pressure of the system

$$8.8 \times 7.0 \times 0.8 / 78 + (2.31 \times 40) = 49.28 / 170.4 = 0.29 \text{ cfs}$$

Conclusion: The two estimates are close enough to allow for the larger of the two amounts to be licensed.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: 16 acres and standard diversion allowance for the area is 3.5 AF / Acre.

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = (16 \text{ acres}) \times (3.5 \text{ AF per acre}) = 56 \text{ AFA}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = (0.32 \text{ cfs}) \times (214 \text{ days}) \times (1.9835) = 135.8$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 56 \text{ AF}$$

2. Volume Calculations for Other Uses: NA

G. NARRATIVE/REMARKS/COMMENTS

Application for Permit 72-16707 was filed by John and Kathy Piva on August 21, 2007 seeking to appropriate a total of 0.42 cfs from a well for irrigation use of 21 acres. On June 3, 2008, the permit was issued and proof of beneficial use was due on or before June 1, 2010. John and Kathy Piva submitted proof of beneficial use on May 24, 2009. On July 28, 2014 Jim Bitzenburg and I met with Mr. Piva to conduct the licensing exam for the permit. Mr. Piva took us to the well location to get the GPS coordinates and verify that a meter had been installed. The meter is a Blue White F2000 model RJ currently not operating and there is a lockable valve installed. Mr. Piva explained that the well has a 7 hp pump and various types of irrigation systems to provide water to different areas. The irrigation system consists of 14 moveable irrigation pods used to irrigate the alfalfa field. The tree farm area contains 10 lines with 50 bubblers per line and 5 Hunter PGP Sprinklers. Also the rows of trees along the outer edges have 180 bubblers. In addition there are 6 large impact sprinklers along the east side of the property. It was observed that the system in place is capable of irrigating the 16 acre place of use. Mr. Piva indicated that he irrigates the property in stages with 1 to 2 impact sprinklers, the irrigation pods and 1 set of bubblers (90-100) either from the tree farm area (100 bubblers) or the row of trees (90 bubblers) are all on at one time. The area around the home is also irrigated under this right. Mr. Piva indicated the home was on a separate well. A measurement was taken on one of the large impact sprinklers, however during the measurement 2 large sprinklers and the 14 pods were on so the flow for the irrigation pods was estimated. A pressure gauge was used to measure the large impact sprinklers nozzle pressure.

The recommended diversion volume for irrigation will be limited to the amounts outlined in the volume calculations section above for a total volume of 56 AF.

Recommended diversion rate of 0.32 cfs for irrigation use based on the flow calculations. Note that this is less than the permitted amount. Permit 72-16707 is located within water district 170.

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>
IRRIGATION	04/01 to 10/31	0.320 CFS	56.0 AF
	<u>Totals:</u>	0.320 CFS	56.0 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 Benny Walker Date 9/30/14
 Reviewer [Signature] Date 10/1/14



SWSW

22

SESW

Place of Use

14N19E

NW1/4

27

Point of Diversion

NENW

Permit 72-16707



Above: Well Tag #D0054816

Below: Meter and lockable valve



Permit 72-16707



Tree Farm Area with bubblers

And

Trees at various stages of growth



Permit 72-16707



Moveable Irrigation Pods and Two Rows of Trees

A Single Pod



Permit 72-16707



Large Impact Sprinkler and Measurement Site

Hunter PGP Sprinklers



LD02

No. 02

7/28/2014 10:53

LOG NAME:CHGUN

+4.418E+0 ft/s

START :07-28 10:48

+2.174E+1 gal/m

END :07-28 10:58

+TOTAL 0000107 gal

INTERVAL:00:01:00

NORMAL

7/28/2014 10:48

7/28/2014 10:54

+4.431E+0 ft/s

+4.441E+0 ft/s

+2.181E+1 gal/m

+2.186E+1 gal/m

+TOTAL 0000000 gal

+TOTAL 0000128 gal

NORMAL

NORMAL

7/28/2014 10:49

7/28/2014 10:55

+4.439E+0 ft/s

+4.406E+0 ft/s

+2.185E+1 gal/m

+2.168E+1 gal/m

+TOTAL 0000021 gal

+TOTAL 0000150 gal

NORMAL

NORMAL

7/28/2014 10:50

7/28/2014 10:56

+3.086E+0 ft/s

+4.405E+0 ft/s

+1.519E+1 gal/m

+2.168E+1 gal/m

+TOTAL 0000042 gal

+TOTAL 0000171 gal

NORMAL

NORMAL

7/28/2014 10:51

7/28/2014 10:57

+4.476E+0 ft/s

+4.372E+0 ft/s

+2.203E+1 gal/m

+2.152E+1 gal/m

+TOTAL 0000063 gal

+TOTAL 0000193 gal

NORMAL

NORMAL

7/28/2014 10:52

7/28/2014 10:58

+4.440E+0 ft/s

+4.380E+0 ft/s

+2.185E+1 gal/m

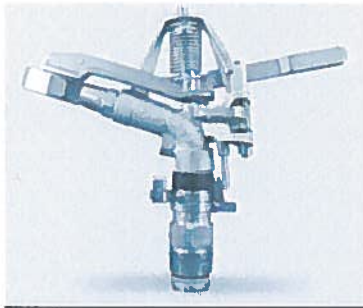
+2.156E+1 gal/m

+TOTAL 0000085 gal

+TOTAL 0000214 gal

NORMAL

NORMAL



85EHD-LA

1 1/4" 32 mm Full or Part Circle, Brass Impact Sprinklers

Bearing: 1 1/4" Male NPT, Brass

Trajectory Angle: 17°

Operating Range: 20-100 psi 1.4-6.9 bars

Flow Rate: 17.1-127.7 GPM 3.88-29.0 m³/h

Radius: 48-108 ft. 14.64-32.9 meters

One 3/4" Female NPT Nozzle Port, only

Features

- Heavy duty brass construction
- Stainless steel wear buttons, springs and fulcrum pin
- Locking stainless steel trip collars
- Chemically resistant washers
- Full or Part Circle operation
- Two-year warranty

Benefits

- Internal straightening vane increases distance of throw
- Stainless steel buttons protect trip mechanism from wear
- Corrosion and grit resistant
- Built to last

U.S. STANDARD DATA

PERFORMANCE DATA

85EHD-LA

STRAIGHT BORE NOZZLE (SBN-5) WITH PLUG* (Stream Height: 10 ft.)

PSI @ Nozzle	NOZZLE SIZE US STANDARD									
	11/32"	3/8"	13/32"	7/16"	15/32"	1/2"	17/32"	9/16"	5/8"	11/16"
25	52 17.10	55 20.30	57 23.40	60 26.70	60 30.30	60 33.80	60 37.10	60 42.30	60 51.50	60 61.90
30	57 18.80	59 22.30	62 25.70	63 29.30	65 33.20	67 37.10	67 40.80	67 46.40	67 56.50	67 68.10
35	60 20.30	62 24.10	65 27.80	67 31.70	70 35.90	71 40.10	73 44.10	73 50.20	73 61.10	73 73.80
40	62 21.80	65 25.80	67 29.70	70 33.90	72 38.50	75 42.90	76 47.20	79 53.70	79 65.40	79 79.20
45	65 23.10	67 27.40	70 31.60	72 36.00	75 40.80	77 45.60	80 50.10	80 57.10	84 69.50	84 84.20
50	67 24.40	69 28.90	72 33.30	74 38.00	77 43.10	79 48.10	82 52.90	84 60.20	87 73.30	88 88.90
55	69 25.50	71 30.30	74 34.90	76 39.70	79 45.30	82 50.30	84 55.60	86 63.20	91 77.30	92 93.50
60	71 25.80	73 30.80	76 35.90	78 41.60	81 47.40	83 53.00	86 58.80	88 66.50	93 80.70	96 97.80
65	72 26.90	75 32.00	77 37.40	80 43.30	83 49.90	85 55.30	88 61.20	90 69.40	94 84.40	98 102.00
70	74 28.10	77 33.30	79 38.90	82 45.10	84 51.40	87 57.50	89 63.50	92 72.20	96 87.80	100 106.00
75	76 29.20	78 34.50	81 40.30	83 46.80	86 53.30	89 59.60	91 65.80	93 74.90	98 91.00	102 109.90
80	77 30.40	80 35.70	82 41.80	85 48.40	88 55.10	90 61.60	93 68.10	95 77.50	99 94.10	103 113.70
85	79 31.50	81 37.00	84 43.20	86 50.00	89 56.90	92 63.50	94 70.30	97 80.00	101 97.10	105 117.30
90	80 32.70	83 38.30	85 44.60	88 51.50	91 58.50	93 65.30	96 72.40	98 82.20	102 99.90	106 120.90
95	82 33.90	84 39.50	87 46.00	89 53.00	92 60.00	95 67.10	97 74.40	99 84.30	103 102.60	107 124.30
100	83 34.00	85 40.10	88 47.40	91 54.50	93 61.50	96 68.90	98 76.40	101 87.20	105 105.20	108 127.70

LOW PRESSURE NOZZLE (LPN-5)*

(Stream Height: 10 ft.)

PSI @ Nozzle	NOZZLE SIZE US STANDARD			
	3/8"	7/16"	1/2"	5/8"
20	48 17.80	51 24.00	54 30.80	56 46.00
25	52 20.30	55 26.70	58 33.80	61 51.50
30	55 22.30	60 29.30	63 37.10	67 56.50
35	59 24.10	64 31.70	68 40.10	72 61.10
40	63 25.80	68 33.90	72 42.90	77 65.40
45	66 27.40	72 36.00	75 45.60	82 69.50
50	68 28.90	73 38.00	77 48.10	85 73.30
55	70 30.30	75 39.70	80 50.30	89 77.30

Part Numbers and Ordering Information

Sprinkler Only	
U.S. Standard	
Sprinkler without Nozzle	A23960

Nozzle Only		XX = Nozzle Size									
	U.S. Standard	11/32"	3/8"	13/32"	7/16"	15/32"	1/2"	17/32"	9/16"	5/8"	11/16"
Brass Straight Bore Nozzle	SBN-5 103043-XX	22	24	26	28	30	32	34	36	40	44
Brass Low Pressure Nozzle	LPN-5 108149-XX	—	24	—	28	30	32	—	—	40	—

Bold nozzle size numbers denote the most common nozzle choices.