

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
IN-OFFICE REVIEW/BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 81-11998

Exam Date: 4/7/2014

1. Does this qualify for an in-office field exam (IDAPA 035.02.r)? ☒ Yes ☐ No
- Irrigation of 5 acres or less
 - Storage of up to 14.6 AF for stockwater purposes only
 - Any use other than irrigation or storage, if the combined diversion rate is 0.24 cfs or less
 - Other < >

2. Current Owner: Name: David & Mary Rodgers
 Owner of Record Correct? ☒ Yes ☐ No
 Address of Record Correct? ☒ Yes ☐ No
 If No: Address

3. Beneficial Use Fees have been paid: ☒ Yes ☐ No Receipt No: CO98432

4. SOURCE TRIBUTARY

Unnamed Stream

Sinks

Method of Determination: Applicant submitted an aerial photo map that outlined POD & POU.

Change in Source: ☐ Yes ☒ No**B. OVERLAP REVIEW**

1. Other water rights with the same place of use: Overlap? ☐ Yes ☒ No

Water Right No.	Source	Purpose of Use	Basis

Comments: There are no other water rights that share POU.

2. Other water rights with the same point of diversion: Overlap? ☐ Yes ☒ No

Water Right No.	Source	Purpose of Use	Basis

Comments: There are no other water rights that share POD.

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

Source	Govt. Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.		County
Unnamed Spring			SW	NW	12	32N	05E		Idaho

Method of Determination: Legal Description in permit validated by PLS data and mapping.

Change in POD? ☐ Yes ☒ NoAmendment Required? ☐ Yes ☒ No

2. **PLACE OF USE:** Use: Fire Protection & Irrigation

TWP	RGE	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
32N	05E	11				1.3 L2													
32N	05E	12							0.7										
																			2.0

Method of Determination: Conversation with land owner described POU clearly around home. PLSS data through ArcMap match.

Change in POU? ☐ Yes ☒ NoAmendment Required? ☐ Yes ☒ No

☐ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

☒ Aerial Photo Attached (required for irrigation of 10+ acres).

☐ Photo of Diversion and System Attached

4. Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size

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

D. FLOW MEASUREMENTS

1.Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements: In-office field exam so flow measurements not applicable.

E. FLOW CALCULATIONS

☒ Additional Computation Sheets Attached

Measured Method:

Administrator memo #17 authorizes a irrigation flow rate of 0/03 cfs per acre.

>>> 2.0 acres * 0.03 cfs/acre = 0.06 cfs

See the theoretical calculation sheet with a calculated average flow rate of 0.10 cfs.

Measurement = 0.10 cfs

Permit allowed = 0.10 cfs

License recommend for 0.06 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 2.0 \times 3.0 = 6.0$

$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.06 \times 246 \times 1.9835 = 29.3$

$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 6.0$

2. Volume Calculations for Other Uses:

G. PURPOSE OF USEIrrigation ☒ Yes ☐ No # Stock 0 Domestic # of Homes 0

Other: < >

Change in Purpose of Use? ☐ Yes ☒ No

Method of Determination: Information in the water right file is consistent with aerial photography of the property. If

Yes: From Use _____ To Use _____ Amount _____ CFS _____ AFA _____

H. NARRATIVE/REMARKS/COMMENTS

Permit 81-11998 authorized the use of 0.10 cfs from a spring for fire protection and irrigation water purposes. Based on the information provided in the water right file, this qualifies for an in-office field exam.

There was brief confusion when locating the Rodgers property. The application contained a POU & POD map that outlined the neighbor property to the immediate south. I contacted Mary Rodgers on April 7, 2014 to confirm that there was just a mistake when the map was made, and that the actual property was to the north of the outlined POU. She confirmed that this was a spring diversion that runs through black pvc to a spout near the home. Water was not used in the home and was solely for irrigation and fire protection. However, they recently had to replace the plastic piping due to a forest fire that melted the line.

POU was outlined via ArcMap. I feel I was generous in granting the POU shape that was made. I included all property within the west boundary up to within the trees and slope begins to the east. I removed area of the home and calculated an irrigated area of 2.0 acres. This was less than what was applied for and granted on the permit. However I believe this describes the POU more accurately. Limitation on the flow rate came from Admin Memo #17, allowing 0.03 cfs per acre.

Manning flow calculations were done to prove that the adequate amount of water could be supplied to the home. Rise was taken from a topographic map of the diversion to the home. Run was measured through the use of ArcMap tools. Pipe material and diameter was pvc and 1.5". This resulted in a theoretical flow rate of 0.10 cfs, enough to provide the 0.06 cfs to serve beneficial use.

Have conditions of permit approval been met? ☒ Yes ☐ No**I. RECOMMENDATIONS****1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
Irrigation	03/15 - 11/15	0.06 cfs	
Fire Protection	01/01 - 12/31	0.10 cfs	
	<u>Totals</u>	0.10 cfs	

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

Other: < >

J. AUTHENTICATIONField Examiner's Name Daniel W. [Signature] Date 04/07/2014Reviewer [Signature] Date 4-6-2014

State of Idaho
Department of Water Resources
Field Exam Map
81-11998

This map depicts the FIRE PROTECTION 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 0.05 0.1 0.2 Miles



Manning's Equation Calculator for Flow Rate in a Circular Conduit Flowing Full

S = 0.2500 ft/ft
 n = 0.009 manning's coefficient
 d = 1.5 pipe diameter (inches)
 D = 0.13 pipe diameter (feet)
 r = 0.06 pipe radius (feet)
 A = 0.01 area (ft²)
 WP = 0.39 wetted perimeter (ft)
 R = 0.03 hydraulic radius (ft)

Q = 0.10 flow rate (CFS)

Channel Slope

Slope Options

☐ Manual Entry
 ☒ Slope Calculator

Slope Calculator

Rise = 200 feet

Run = 800 feet

Slope, S = 0.2500 ft/ft

Pipe Material, (n):

plastic (pvc, abs)

Pipe Diameter (inches)

1.5 inches

READ ME

Manning's Equation (1), is an empirical formula that solves for velocity (v) in a open channel under uniform flow. The continuity equation (2) when combined with equation (1) allows for the computation of the flow rate (Q) in an open channel under uniform flow.

In equations (1) and (3), η refers to Manning's Coefficient of Roughness and can be found in tabulated form for many open channel types. R is the hydraulic radius of the open channel and is equal to the area of the open channel divided by the wetted perimeter, $R = A/P$. S is the slope of the energy grade line which is often assumed to be equal to the slope of the channel.

Because Manning's Equation is empirical the units are not arbitrary. To obtain a velocity in ft/s and a flow rate in ft³/s, area must be reported in ft², hydraulic radius must be reported in ft, and S must be reported in ft/ft. Manning's Coefficient of Roughness is a unitless constant.

$$(1) \quad v = 1.49 \left(\frac{1}{\eta} \right) \left(R^{\frac{2}{3}} \right) \sqrt{S}$$

$$(2) \quad Q = vA$$

$$(3) \quad Q = 1.49 \left(\frac{1}{\eta} \right) (A) \left(R^{\frac{2}{3}} \right) \sqrt{S}$$

[illegible]