

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 97-7486

Exam Date: 5/21/2013

1. Current Owner: STEVE BRADBURY
GREG BRADBURY
26605 HWY 57
PRIEST LAKE ID 83856
(208) 443-2212
2. Accompanied by: STEVE BRADBURY
Phone No: (208) 443-2212
Address: SEE ABOVE
Relationship to Permit Holder: PERMIT HOLDER

3. SOURCE TRIBUTARY
SPRINGS SINKS

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:**

SPRINGS (SE¼SW1/4SW1/4) Sec. 31, Twp 60N, Rge 04W, B.M.
BONNER County

Method of Determination: GPS, Site Visit

2. PLACE OF USE: DOMESTIC

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>	
60N	04W	31											X	X					

FIRE PROTECTION

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>	
60N	04W	31											X	X					

Method of Determination: Bing (2011) Aerial Photography w/ 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>Pump Serial No. or Discharge</u>		
<u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Size</u>
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

D. FLOW MEASUREMENTS

1. Measurement
- | <u>Equipment</u> | <u>Type</u> | <u>Make</u> | <u>Model No.</u> | <u>Serial No.</u> | <u>Size</u> | <u>Calib. Date</u> |
|------------------|-------------|-------------|------------------|-------------------|-------------|--------------------|
| <u>N/A</u> | <u>N/A</u> | <u>N/A</u> | <u>N/A</u> | <u>N/A</u> | <u>N/A</u> | <u>N/A</u> |
2. Measurements: Measurement not taken

E. FLOW CALCULATIONS

☒ Additional Computation Sheets Attached

Method: Manning's Equation for circular conduit

1 inch PVC line from cistern in spring, running roughly 440 feet downhill to holding tanks. Roughly 40 feet in elevation change from spring to tanks.

Manning estimated rate: **0.06 cfs**

Permitted Rate: **0.03 cfs**

Proof of Beneficial Use fee paid: \$50.00 = up to **0.2 cfs**

Recommended Rate: 0.03 cfs

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: N/A

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

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

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

2. Volume Calculations for Other Uses: Per Application processing memorandum no. 22, 1.2 acre-feet per annum is recommended for irrigation is included with a household.

G. NARRATIVE/REMARKS/COMMENTS**SYSTEM DESCRIPTION:**

System consists of a 4' tall by 4' diameter cistern where the spring is located. A 1.5 inch pvc pipe then routes the water from the cistern box roughly 440' to two storage tanks. From there, water lines gravity serve the domestic and fire protection uses on the property. Per a February 2, 2014 email from the permit holder, no industrial use was developed under the permit.

Condition no. 4 of the permit limits irrigation under the domestic use to ½ acre. Irrigation/lawn in and around the house/office did not exceed ½ acre.

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>
DOMESTIC	01/01 to 12/31	0.03 CFS	1.2 AF ← Dan
FIRE PROTECTION	01/01 to 12/31	0.03 CFS	2-18-14
<u>Totals:</u>		0.03 CFS	Per Discussions with Nick U.

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 Nicholas Van Dyke Date 2/5/2014
 Reviewer _____ Date _____

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

S = 0.0909 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 = 0.06 flow rate (CFS)

Channel Slope

Slope Options

☐ Manual Entry ☒ Slope Calculator

Slope Calculator

Rise = 40 feet

Run = 440 feet

Slope, S = 0.0909 ft/ft

Pipe Material, (n):

plastic (pvc, abs)

Pipe Diameter (inches)

1.5 inches

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.

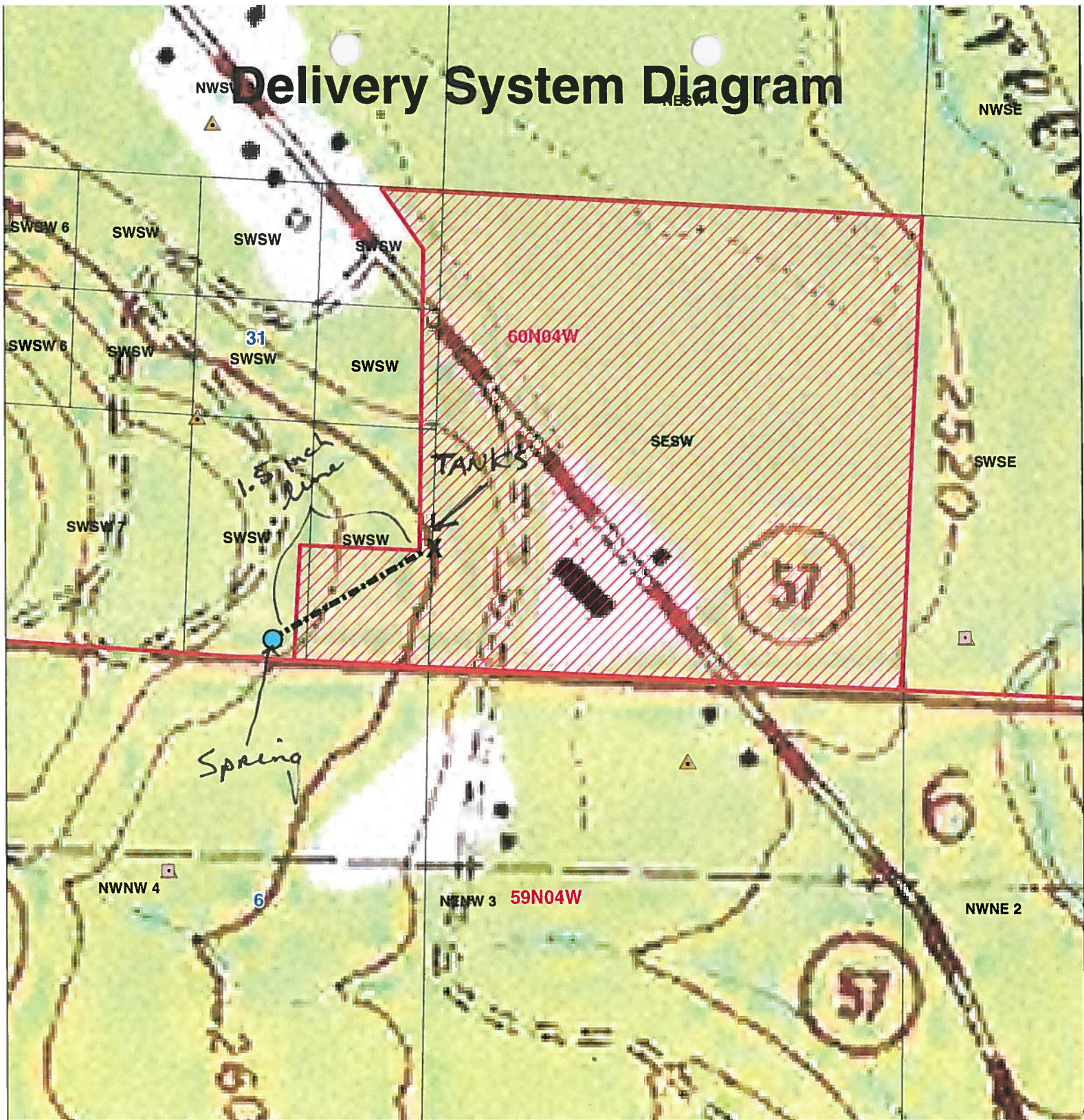
Because Manning's Equation is empirical the units are not arbitrary. To obtain a velocity in ft/s and a flow rate in ft³/s, area must be reported in ft², hydraulic radius must be reported in ft, and S must be reported in ft/ft. Manning's Coefficient of Roughness is a unitless constant.

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

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

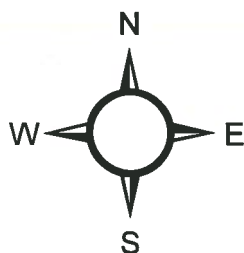
$$(3) \quad Q = 1.49 \left(\frac{1}{\eta} \right) (A) \left(R^{\frac{2}{3}} \right) \sqrt{S}$$

Delivery System Diagram



Legend

-  Bradbury_Place_of_Use
-  Township/Range
-  Sections
-  QQ

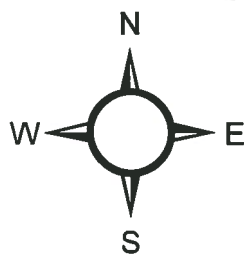


Delivery System Diagram



Legend

-  Bradbury_Place_of_Use
-  Township/Range
-  Sections
-  QQ





- Cistern at spring location



- 1.5 inch PVC line running from the spring to holding tanks



- Spigot at place of use



- Sawmill operation



- Home



- Front yard



- office