

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-13615

Exam Date: 9/9/2016

1. Current Owner:

TINA M BOTAI 1406 E OPEN GATE LN HARRISON ID 83833 707-338-3142

2. Accompanied by: Tina & Keith Botai

3. **SOURCE:**

SPRING

TRIBUTARY:

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 SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

SPRING SW¼SE¼NE¼ Sec. 30, Twp 49N, Rge 03W, B.M. KOOTENAI County

Method of Determination: Map and GPS. POD location at 47° 33.782, 116° 46.149

2.

PLACE OF USE: DOMESTIC

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
49N	03W	30				X													

PLACE OF USE: STOCKWATER

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
49N	03W	30				X													

PLACE OF USE: 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	
49N	03W	30				2.5													2.5

Total Acres: 2.5

Method of Determination: Google Earth and Arc map.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.

X

Indicate weir size/pipe as applicable.

X

Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

X

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

X

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

*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:

E. FLOW CALCULATIONS

Measured Method: MANNING FLOW EQUATION ATTACHED X Additional Computation Sheets Attached
 SHOWING MAXIMUM DIVERSION RATE FROM SPRING IN 2 INCH PIPE IS 0.10 CFS.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 2.5 \text{ AC} \times 3.0 \text{ AF} = 7.5 \text{ AF}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.07 \times 246 \times 1.9835 = 34.2 \text{ AF}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 7.5 \text{ AF}$$

2. Volume Calculations for Other Uses:

$$\text{DOMSTIC FOR 1 HOME AND 1 APARTMENT / SHOP} = 0.6 \text{ AF} \times 2 = 1.2 \text{ AF}$$

$$\text{STOCKWATER FOR 10 HEAD OF MIXED STOCK} = 12 \text{ GPD} \times 10 \text{ STOCK} \times 365 \text{ DAYS} / 325,850 \text{ GAL/AF} = 0.1 \text{ AF}$$

G. NARRATIVE/REMARKS/COMMENTS

Field exam with Keith Botai showed a spring that was piped to a large storage tank. Applicant had buried a 2 inch pipe that ran from the spring house to the storage tank. Manning's flow equation shows the pipe is capable of diverting up to 0.1 cfs from the spring. From the tank, water gravity flowed to pressure tanks to be served to home and shop/apartment and for stockwatering. Applicant had 1.5hp pump that he would use for irrigation around the property from the storage tank.

Applicant had applied for 2 springs and had developed both springs. A phone call on 4/3/2017 from applicant said they abandoned the 2nd spring because the water had been contaminated by a neighbor's new septic system. So at licensing only 1 spring will be put on license.

Applicant had tripod sprinklers around property for irrigation around house and a small piece of pasture. Mr. Botai had hoped to irrigate more than 2.5 acres, but his spring wouldn't produce enough water. Applicant had 10 head of mixed stock instead of the permitted 20. License will be issued for 0.07 cfs for the irrigation of 2.5 acres with annual volume of 7.5 acre feet. Domstic for 1 home and 1 shop/apartment will be issued at 0.06 cfs with annual volume of 1.2 acre feet. Stockwater for 10 head of mixed stock will be issued at 0.02 cfs with annual volume of 0.1 acre feet. Overall diversion rate will be issued at 0.10 cfs with annual volume of 8.8 acre feet.

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	0.06 CFS	1.2 AF
STOCKWATER	01/01 to 12/31	0.02 CFS	0.1 AF
IRRIGATION	03/15 to 11/15	0.07 CFS	

Totals: 0.100 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

I. AUTHENTICATION

Field Examiner's Name Adam Finkert Date 4-6-2017

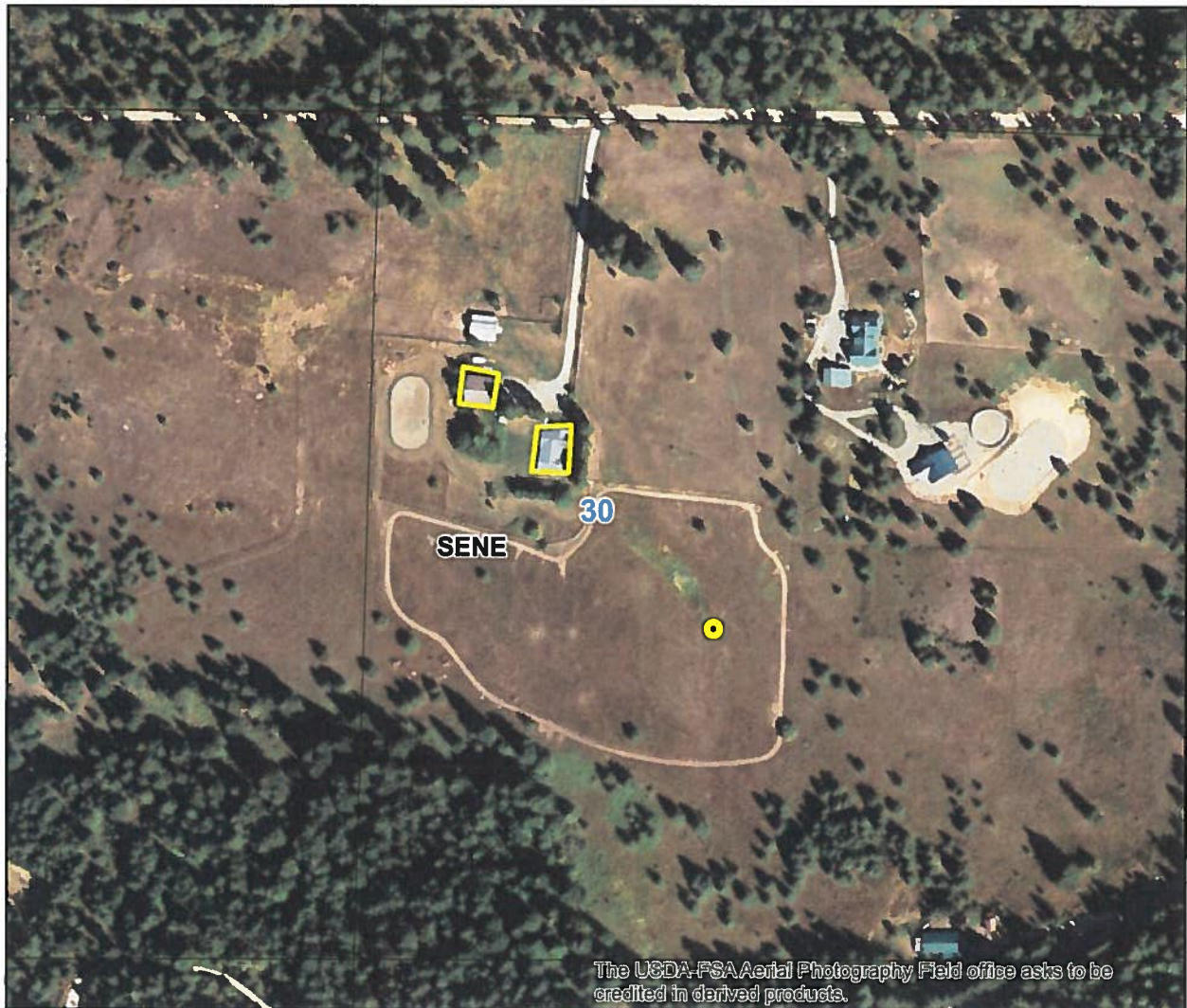
Reviewer Morgan Case Date 4/11/2017

State of Idaho
Department of Water Resources
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DOMESTIC

03W

49N



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

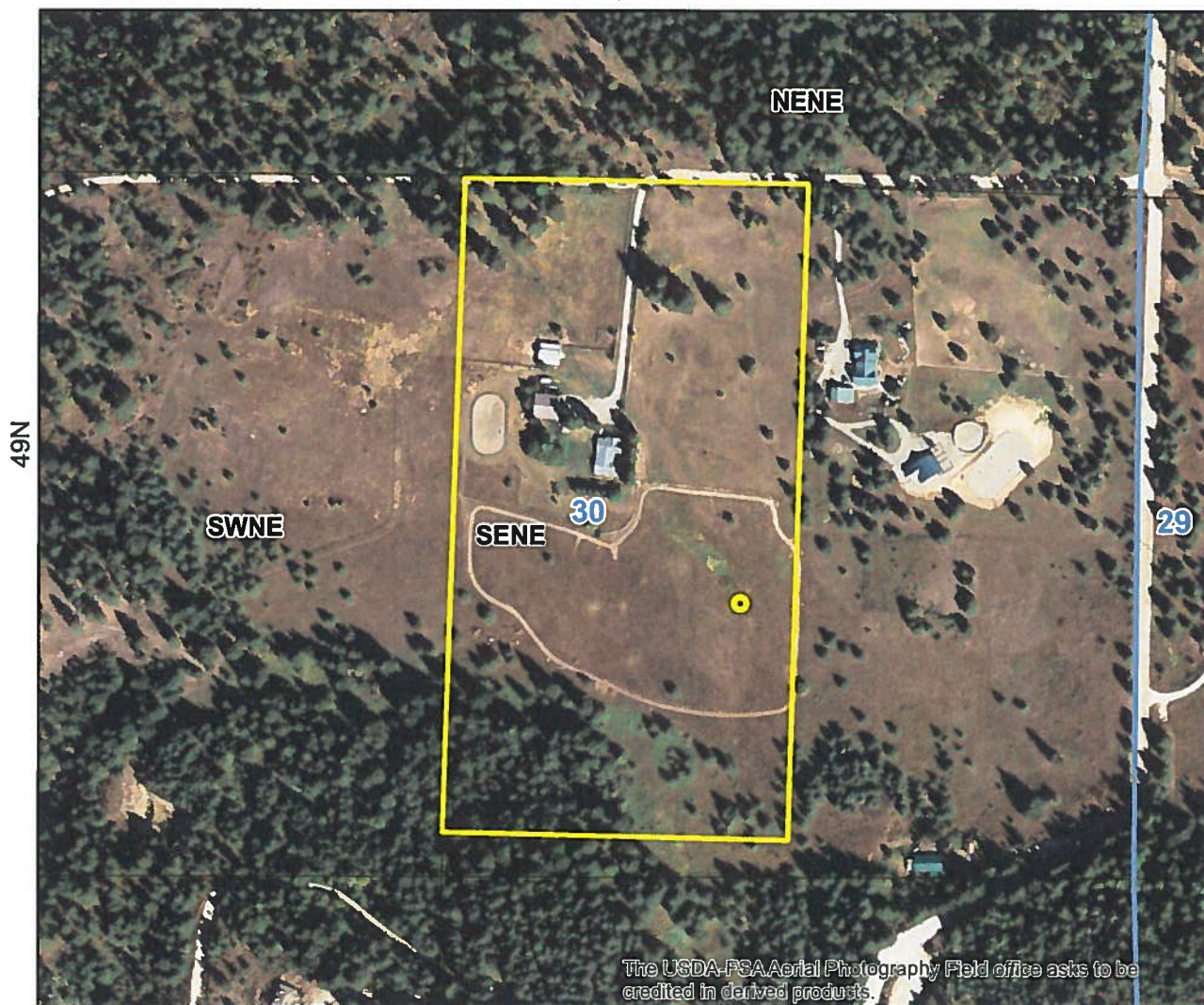
0 0.035 0.07 0.14 Miles



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STOCKWATER

03W



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

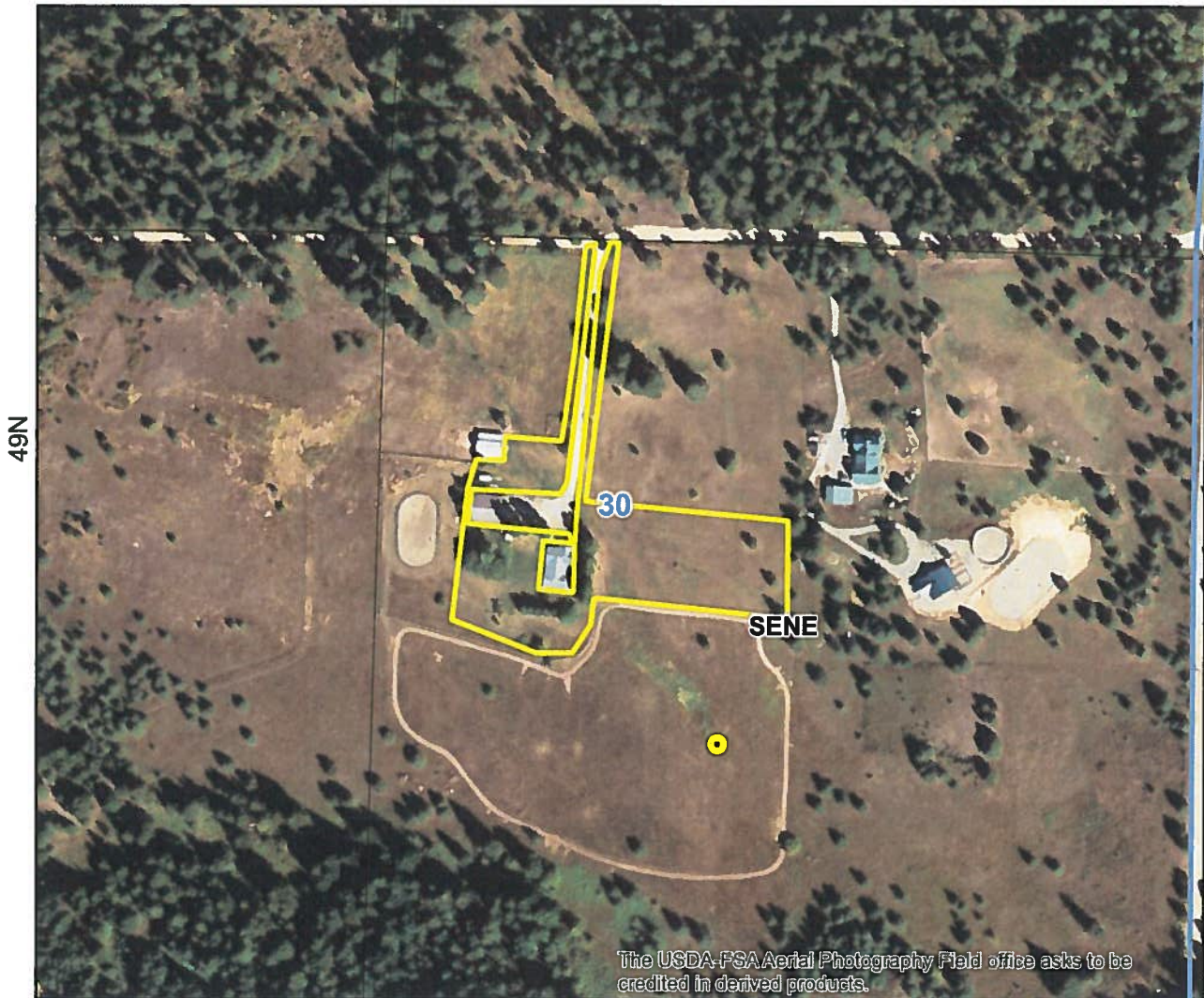
0 0.0425 0.085 0.17 Miles



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IRRIGATION

03W



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

0 0.035 0.07 0.14 Miles



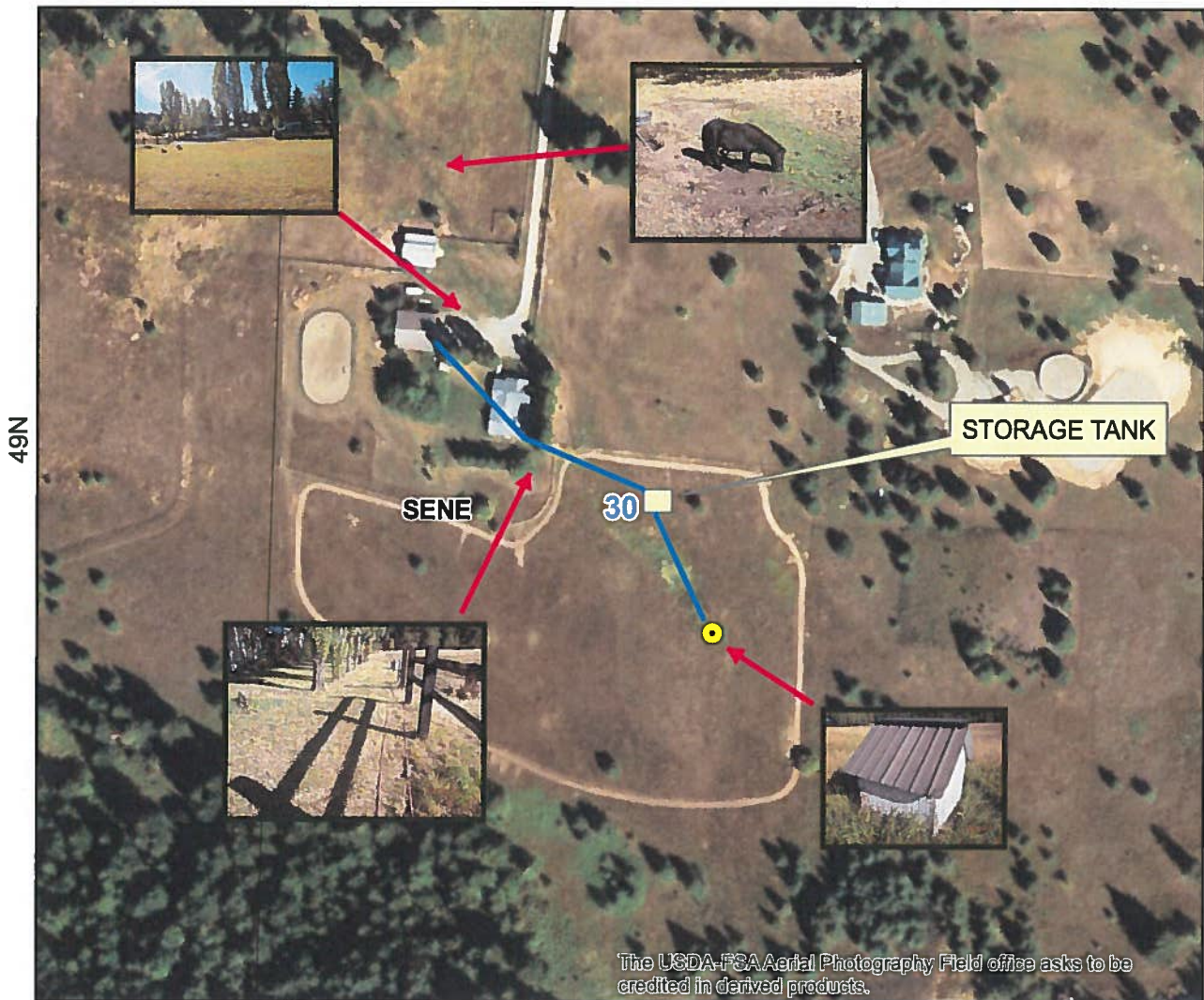


Google Earth image from 4/7/2016 showing the storage tank.

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SYSTEM DIAGRAM

03W



0 0.0275 0.055 0.11 Miles

- Point of Diversion
- Townships
- PLS Sections



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

S = 0.0556 ft/ft
 n = 0.009 manning's coefficient
 d = 2.0 pipe diameter (inches)
 D = 0.17 pipe diameter (feet)
 r = 0.08 pipe radius (feet)
 A = 0.02 area (ft²)
 WP = 0.52 wetted perimeter (ft)
 R = 0.04 hydraulic radius (ft)

Q = 0.10 flow rate (CFS)

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.

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

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

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

Channel Slope

Slope Options

☐ Manual Entry
 ☒ Slope Calculator

Slope Calculator

Rise = 10 feet

Run = 180 feet

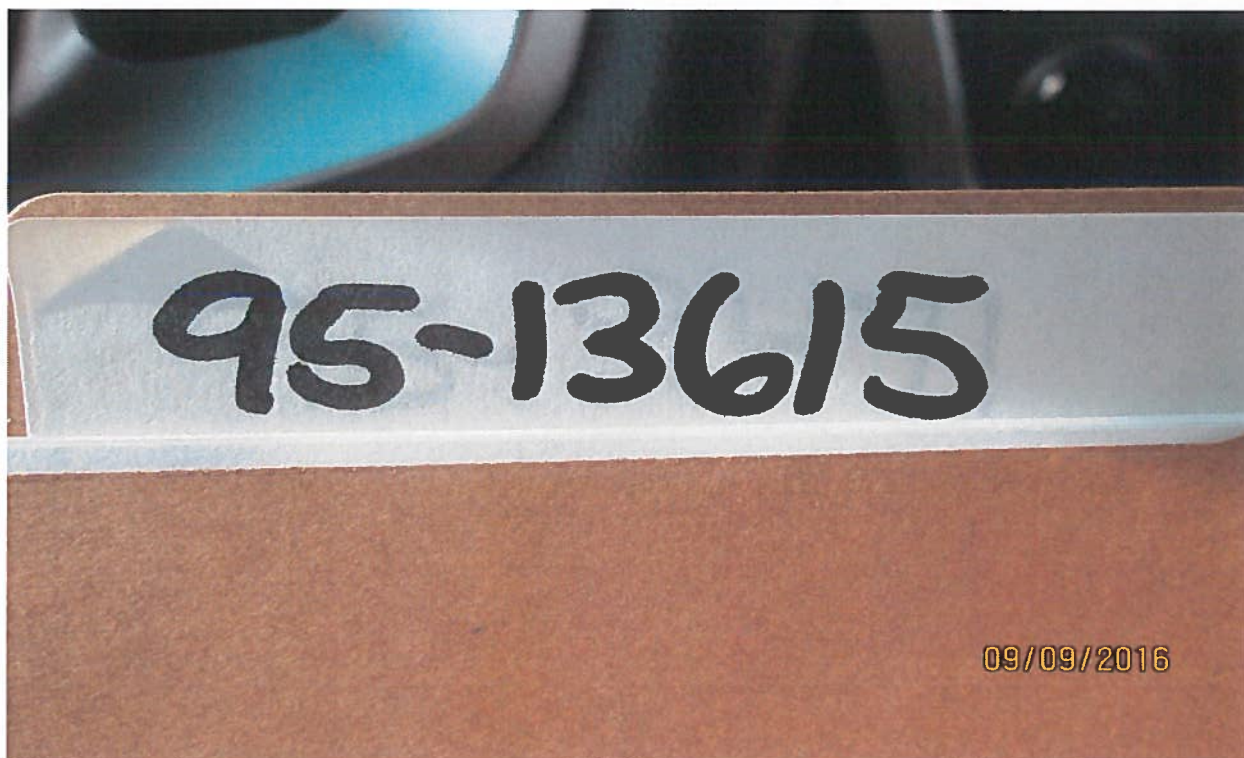
Slope, S = 0.0556 ft/ft

Pipe Material, (n):

plastic (pvc, abs)

Pipe Diameter (inches)

2.0 inches



Spring house.



Inside spring house. Spring box was covered to protect water.



Area of overflow from spring.



View from spring to home. You can see dirt from buried storage tank in upper right of picture.



Storage tank with hoses from portable pump. In upper right you can see spring house.



1.5hp pump used for irrigation from storage tank.



Irrigation hoses going around property along with stockwater tank.



Backyard of home.





Irrigation tripod.



Irrigation in front of home. Shop/apartment in right of photo.



Shop/apartment.



Stockwater tank.



Gravity fed stockwater tank.



