

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 37-20930

Exam Date: 8/19/2008

1. Current Owner: MARK T NICKUM And/Or
PO BOX 1565
HAILEY ID 83333
(208)788-3851

2. Accompanied by:

Phone No:

Address:

Relationship to Permit Holder:

3. SOURCE

SPRING
UNNAMED STREAM

TRIBUTARY

SINKS
SINKS

B. OVERLAP REVIEW

1. Other water rights with the same place of use:
2. Other water rights with the same point of diversion:

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

SPRING SW1/4SW1/4SE1/4 Sec. 19, Twp 02N, Rge 18E, B.M. BLAINE County

SPRING L5 (NW1/4NW1/4NE1/4) Sec. 30, Twp 02N, Rge 18E, B.M. BLAINE County

SPRING L5 (NW1/4NW1/4NE1/4) Sec. 30, Twp 02N, Rge 18E, B.M. BLAINE County

SPRING SW1/4SE1/4 Sec. 19, Twp 02N, Rge 18E, B.M. BLAINE County
(Injection)

SPRING L5 (NW1/4NE1/4) Sec. 30, Twp 02N, Rge 18E, B.M. BLAINE County
(Injection)

SPRING L5 (NW1/4NE1/4) Sec. 30, Twp 02N, Rge 18E, B.M. BLAINE County
(Injection)

SPRING SE1/4SW1/4 Sec. 19, Twp 02N, Rge 18E, B.M. BLAINE County
(Rediversion)

UNNAMED STREAM SE1/4SW1/4 Sec. 19, Twp 02N, Rge 18E, B.M. BLAINE County

Method of Determination: FIELD VISIT

2.

PLACE OF USE: RECREATION STORAGE/WILDLIFE STORAGE/AESTHETIC STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals	
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE		
02N	18E	19																		

Method of Determination: FIELD 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 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 Size</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

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

D. FLOW MEASUREMENTS

1.

<u>Measurement Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

2. Measurements:

E. FLOW CALCULATIONS

Measured Method:

*MANNING EQUATION
(CLOSED CONDUIT)*

☒ Additional Computation Sheets Attached

DIVERSION 1 : 1.42 cfs

DIVERSION 2 : 1.08 cfs

DIVERSION 3 : 0.51 cfs

3.01 cfs

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

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

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

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

2. Volume Calculations for Other Uses: *AESTHETIC / RECREATION / WILDLIFE*

$$\text{STORAGE} = 6.4 \text{ AF}$$

G. NARRATIVE/REMARKS/COMMENTS

License is for aesthetic, recreation, and wildlife storage at a pond west of Hailey in Section 19 T02N R18E. The pond is situated as an on-stream storage impoundment in an unnamed stream tributary to sinks. Pond surface area is 0.8 acres with an average depth of 8 feet yielding 6.4 af storage capacity. Storage volume will be limited to the permitted amount of 5.3 af.

Springs tributary to sinks are also captured by the system as a second source. There are three points of diversion for the springs, each a culvert that intercepts the springs and pipes it underground via three 6 inch pvc pipelines (for each culvert) injecting the water into the unnamed stream at three points. The combined theoretical diversion rate from the three spring sources is 3.01 cfs using the Manning Equation for flow rate in a circular conduit. Flow rate from springs will be limited to permitted amount of 1.5 cfs. The unnamed stream then carries the spring water to the pond and is rediverted at the site of impoundment for the pond. Because this is an in-stream pond, the site of impoundment is considered the back end of the pond (northwest edge of the pond). An overflow structure has been installed at the site of impoundment.

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>
DIVERSION TO STORAGE	01/01 to 12/31	1.500 CFS	
RECREATION STORAGE	01/01 to 12/31		5.30 AF
WILDLIFE STORAGE	01/01 to 12/31		5.30 AF
AESTHETIC STORAGE	01/01 to 12/31		5.30 AF
<u>Totals:</u>		1.500 CFS	5.30 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

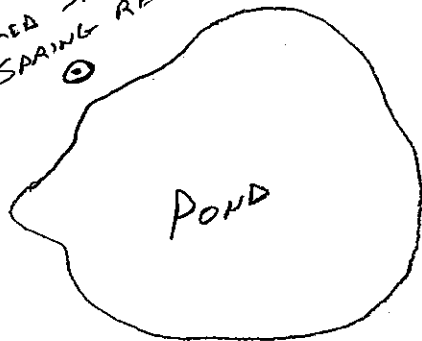
I. AUTHENTICATION

Field Examiner's Name Nick Van Dyke Date 8/19/08

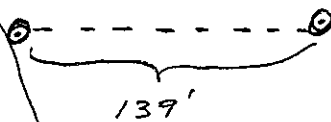
Reviewer Nick Van Dyke Date 4/9/08

SYSTEM DIAGRAM

UNNAMED STREAM DIVERSION;
SPRING REDIVERSION
①



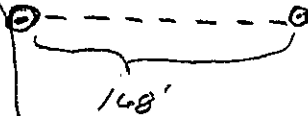
PT OF
INJECTION 1



$$\frac{4'}{139'} = 0.031$$

SPRING DIVERSION 1

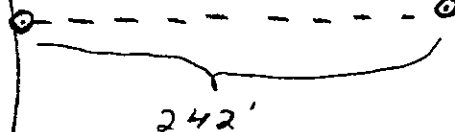
PT OF
INJECTION 2



SPRING DIVERSION 2

$$\frac{3'}{168'} = 0.018$$

PT OF
INJECTION 3



SPRING DIVERSION 3

$$\frac{1'}{242'} = 0.004$$

UNNAMED STREAM

* NOTE THAT 1 FOOT OF
HEAD IN CULVERT ADDED TO
ELEVATION CHANGE. 1 FOOT
CHOSEN PER WATER MARK
IN CULVERT PHOTOS DURING
PRE-PERMIT EXAM



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

S = 0.0310 ft/ft
 n = 0.009 manning's coefficient
 d = 6.0 pipe diameter (inches)
 D = 0.50 pipe diameter (feet)
 r = 0.25 pipe radius (feet)
 A = 0.20 area (ft²)
 P = 1.57 wetted perimeter (ft)
 R = 0.13 hydraulic radius (ft)

Q = 1.42 flowrate (CFS)

Channel Slope

Slope Options

☒ Manual Entry
 ☐ Slope Calculator

Slope Calculator

Rise = 4 feet

Run = 139 feet

Slope, S = 0.0288 ft/ft

Pipe Material

plastic (pvc, abs)

Pipe Diameter (inches)

6.0 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

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

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

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

SPRING DIVERSION I

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

READ ME

$S = 0.0180$ ft/ft
 $n = 0.009$ manning's coefficient
 $d = 6.0$ pipe diameter (inches)
 $D = 0.50$ pipe diameter (feet)
 $r = 0.25$ pipe radius (feet)
 $A = 0.20$ area (ft²)
 $P = 1.57$ wetted perimeter (ft)
 $R = 0.13$ hydraulic radius (ft)

$Q = 1.08$ flowrate (CFS)

Channel Slope

Slope Options

☒ Manual Entry ☐ Slope Calculator

Slope Calculator

Rise = 4 feet

Run = 139 feet

Slope, $S = 0.0288$ ft/ft

Pipe Material

plastic (pvc, abs)

Pipe Diameter (inches)

6.0 inches

Manning's Equation (1), i velocity (v) in a open cha equation (2) when combi computation of the flow r flow.

In equations (1) and (3), Roughness and can be f channel types. R is the h is equal to the area of the perimeter, $R = A/P$. S is is often assumed to be e

Because Manning's Equa arbitrary. To obtain a vel must be reported in ft², h S must be reported in ft/ft

$$(1) \quad v = 1.4$$

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

$$(3) \quad Q = 1.4$$

SPRING DIVERSION 2

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

$$S = 0.0040 \text{ ft/ft}$$

n = 0.009 manning's coefficient

d = 6.0 pipe diameter (inches)

D = 0.50 pipe diameter (feet)

$r = 0.25$ pipe radius (feet)

A = 0.20 area (ft²)

P = 1.57 wetted perimeter (ft)

R = 0.13 hydraulic radius (ft)

Q = 0.51 flowrate (CFS)

READ ME

Manning's Equation (1), i
velocity (v) in a open cha
equation (2) when combi
computation of the flow r
flow.

In equations (1) and (3), Roughness and can be for different channel types. R is the hydraulic radius, which is equal to the area of the flow divided by the wetted perimeter, $R = A/P$. S is the channel slope, which is often assumed to be equal to the bed slope.

Because Manning's Equation is arbitrary. To obtain a velocity, V , must be reported in ft^2/s , h must be reported in ft^2/s , and S must be reported in ft/ft .

Channel Slope

Slope Options

☒ Manual Entry ☐ Slope Calculator

Slope Calculator

(1) $\frac{1}{2} = 1 - \frac{1}{2}$



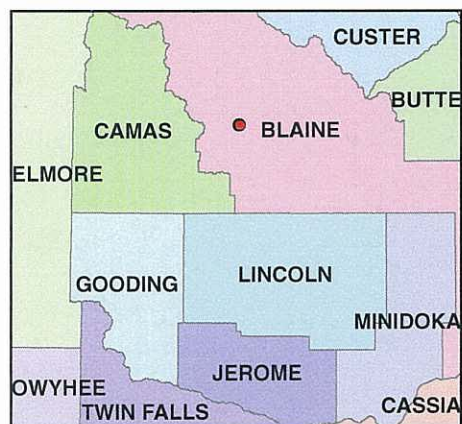
Idaho Department of Water Resources

Water Right
37-20930

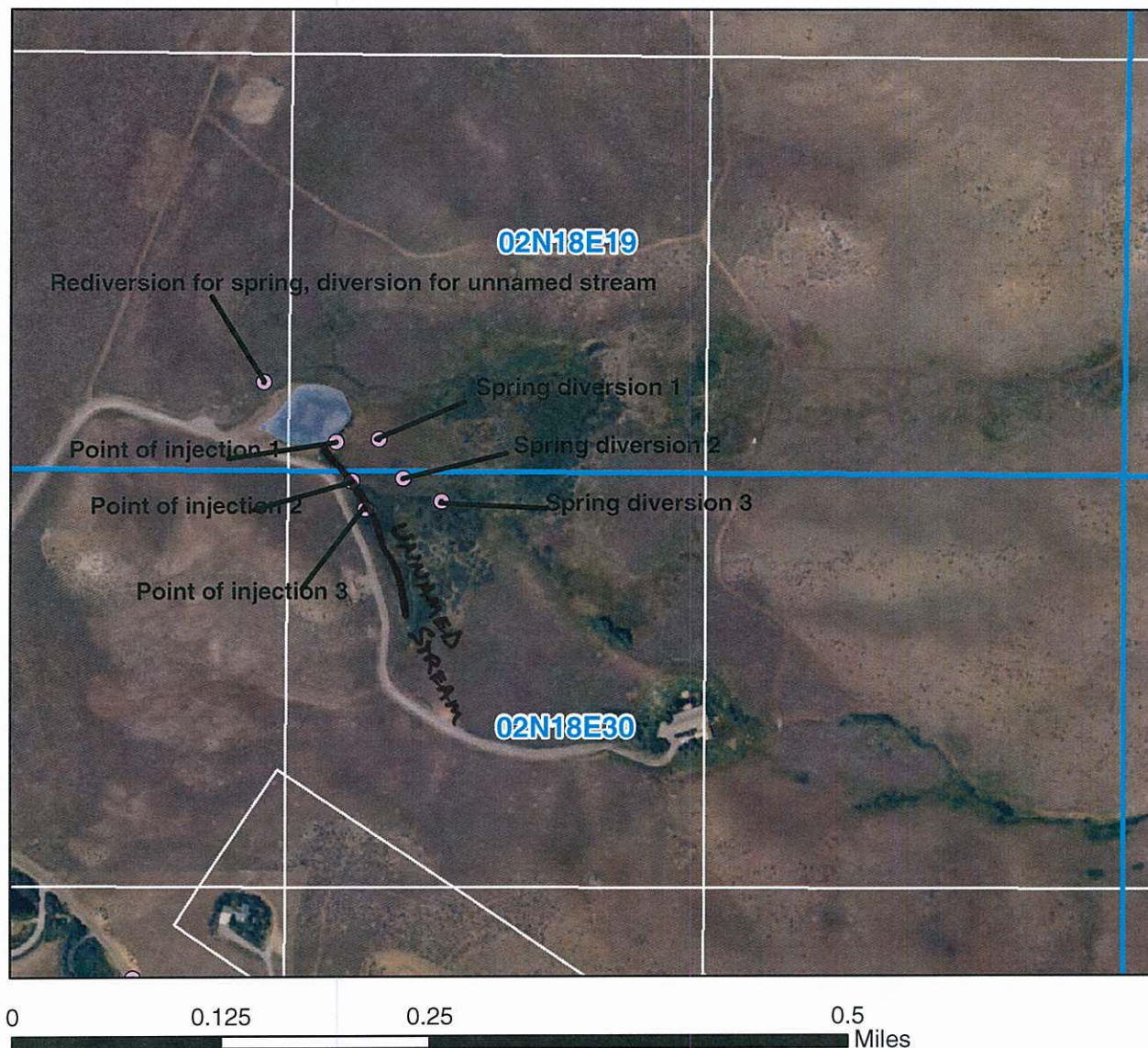
(AESTHETIC STORAGE)
(RECREATION STORAGE)
(WILDLIFE STORAGE)

Legend

- ⊙ Right POD
- pond
- Townships
- PLS Sections
- Quarter Quarters



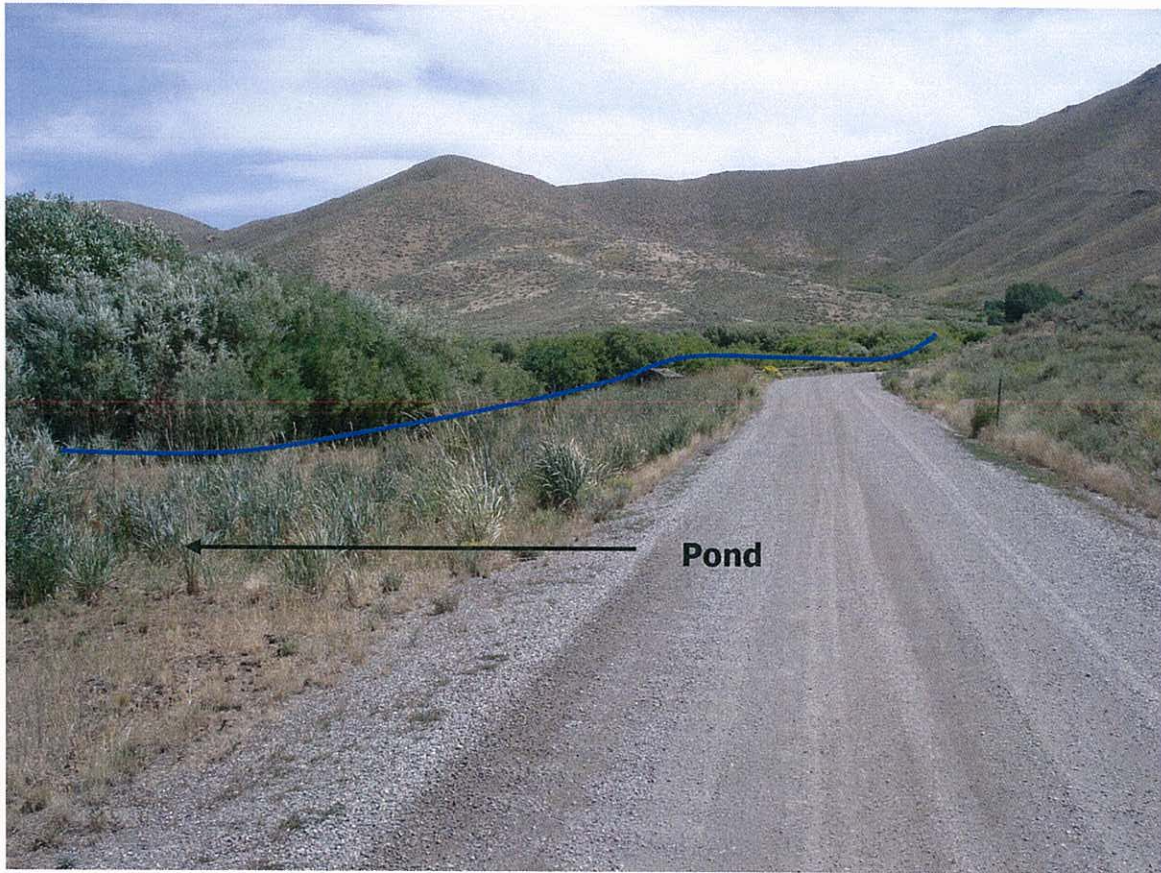
Blaine County
IDWR Basin 37



Prepared by Nick Van Dyke
On April 03, 2009
2004 Aerial Photography



- The pond, looking west.



- Looking southeast up the unnamed stream (general location denoted by blue line). Pond immediately to the left.



- Stream heavily covered by brush. Looking southeasterly, pond directly behind where photo is taken from.



- Overflow/pond outlet.