

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 65-13962

Exam Date: 10/9/2012

1. Current Owner: SIDNEY E SMITH III And
KRISTINE A SMITH
3792 W HOUSELAND CT
EAGLE ID 83616
(208)938-0355
2. Accompanied by: Sidney "Sandy" Smith and Kristine Smith
Phone No: Same
Address: Same
Relationship to Permit Holder: Same
3. SOURCE TRIBUTARY
UNNAMED STREAM ROUND VALLEY CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: Unrecorded internal domestic ground water (well) use for cabin. No other water rights/uses on property.
2. Other water rights with the same point of diversion: None.

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

UNNAMED STREAM SE1/4NE1/4 Sec. 30, Twp 12N, Rge 04E, B.M.
VALLEY County

Method of Determination: GPS Location N44° 20.720' W116° 01.415' Garmin model GPSmap 76 Datum NAD 83

2. PLACE OF USE: IRRIGATION

Twp	Rge	Sec	NE				NW				SW				SE				Totals
12N	04E	30	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	0.5
Total Acres:																			0.5

PLACE OF USE: AESTHETIC STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
12N	04E	30	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	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. Well or Diversion

<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 Size</u>
13245333 -	Honda WX10	1.5	GCAG-1285954AY2*	Honda	WZBR-1027654 – 1 in discharge

WR Accounting Site ID

D. FLOW MEASUREMENTS

1. Measurement Equipment

<u>Type</u>	<u>Make/Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
5 Gallon Bucket & Stop watch	N/A	N/A	N/A	N/A

2. Measurements: 1 Gallon in: #1 = 5.5 sec
 #2 = 5.7 sec
 #3 = 5.8 sec
 #4 = 6.0 sec
 #5 = 5.8 sec

Piping from river not suitable (insufficient straight pipe length and diameter) for polysonic measurement.

E. FLOW CALCULATIONS

_____Additional Computation Sheets Attached

Measured Method: 5 Gallon Bucket:

1 Gallon in {avg time [(5.5 + 5.7 + 5.8 + 6.0 + 5.8)/5]} 5.8 sec

$$Q = (1 \text{ gal}/5.8 \text{ sec}) \times (60 \text{ sec}/1 \text{ min}) = 10.3 \text{ gpm} \times 1 \text{ cfs}/448.8 \text{ gpm} = \mathbf{0.02 \text{ cfs}}$$

Measured Method: Theoretical HP Equation:

$$HP = 1.5$$

PSI = 60 (est. for closed system irrigation)

Z = 14 ft (Elevation change from creek up to well in lawn irrigated per GPS recording)

$$Q = (8.8 \times 0.7 \times HP) / [Z + (2.31 \times PSI)] = (8.8 \times 0.7 \times 1.5) / [14 + (2.31 \times 60)] = \mathbf{0.06 \text{ cfs}}$$
 est. capacity of pumping system

Measured Method: Pump Curve (attached):

$$Q = @ 15 \text{ ft head } Q \approx 27 \text{ gpm} = \mathbf{0.06 \text{ cfs}}$$

Measured Method: Pipe Diameter Flow Estimation:

Discharge Pipe Dia = 1 in = 0.083 ft

$$A = \pi r^2 = 3.14 \times (1/2 \text{ Dia})^2 = \pi \times (0.0417)^2 \text{ ft}^2 \approx 0.005 \text{ ft}^2$$

V = 5 ft/sec (est. for well designed closed pipe system)

$$Q = AV = 0.005 \text{ ft}^2 \times 5 \text{ ft/sec} = \mathbf{0.03 \text{ cfs}}$$
 est. flow through discharge pipe

5 Gallon Bucket measurement = **0.02 cfs**

Theoretical HP Equation est. capacity of pumping system = **0.06 cfs**

Pump Curve estimation = **0.06 cfs**

Pipe diameter flow estimation = **0.03 cfs**

Permitted Rate for Irrigation Use = **0.60 cfs**

Beneficial Use Limit for Irrigation Use = 0.5 ac x 0.03 cfs/ac = **0.02 cfs**

Proof of Beneficial Use fee paid = \$100.00 = up to **1.00 cfs**

Recommend Beneficial Use Limit Rate = 0.02 cfs for irrigation use

Highest rate allowable based on beneficial use limit 0.02 cfs recommended.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation (not required for irrigation from stream, but other use requires volume so volume recommended for irrigation use also):

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 0.5 \text{ ac} \times 3.0 \text{ af/ac} = 1.5 \text{ af}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.02 \text{ cfs} \times 200 \text{ days} \times 1.9835 = 7.9 \text{ af}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 1.5 \text{ af} < 7.9 \text{ af} = \textbf{Recommend 1.5 af}$$

2. Volume Calculations for Aesthetic Storage:

Capacity based on general shape, surface area (SA) @ normal water level (WL) elevation, & depth data.

Pond Capacity: General Shape = Flat Bottomed

SA @ normal WL = 1.0 ac

Depth (maximum) = 5 ft

$$1.0 \text{ ac} \times 5 \text{ ft} = \textbf{5.0 af}$$

Evaporative Losses: SA @ normal WL = 1.0 ac

Consumptive standard for irrigation in area = 3.0 af/ac

$$1.0 \text{ ac} \times 3.0 \text{ af/ac} = \textbf{3.0 af}$$

Aesthetic Storage Use = 5.0 af (capacity) + 3.0 af (evaporative losses) = 8.0 af

Calculated Pond Volume = **8.0 af**

Permitted Volume for Storage Use = **20.0 af**

Proof of Beneficial Use fee paid = \$100.00 = up to **100.0 af**

Recommend Calculated Pond Volume for Storage Use = 8.0 af

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

The irrigation system consists of a portable gas powered 1.5 hp Honda motor and pump with a 1 in discharge line that splits to 2 lines with connections for 2 garden hoses with Gilmour oscillating lawn sprinklers. Both sprinklers are used simultaneously and moved around to water the 0.5 ac yard around the cabin. The on-stream pond formed as the result of the original permit owner damming the natural channel with construction of the drive way. However, the pipe underneath the driveway was overrun with water and the driveway ultimately was washed out. The current owners have since dug out the channel to allow for more natural flow to continue on downstream while still maintaining a pond.

USES RECOMMENDED FOR LICENSING:

Considering the pond will likely decrease in size with time (since the owners partially dug out the dam across the natural channel), storage of water and related uses will in turn diminish. Also, considering the owner is pumping water directly from the natural channel (where it has been cleaned out at the PD) and not depleting the storage water/pond level when irrigating, I have recommended only a natural flow component for irrigation rather than both natural flow irrigation and irrigation from storage. Aesthetic storage use is recommended based on the presence of a pond during licensing.

PD RECOMMENDATION FOR LICENSING:

A single PD is being recommended for this right despite the potential to recommend 2 PDs (one PD for the on-stream storage and another for the natural flow irrigation use). The point where water is checked up for storage purposes is coincidentally where the pump is placed to divert water from the stream for irrigation. Therefore, it seems reasonable to recognize the single PD for both uses under this right.

COMPLIANCE WITH PERMIT CONDITIONS:

Permit conditioned that measuring devices (reservoir inflow & outflow and diversion) and a lockable controlling works are to be installed and maintained. To date no measuring devices or lockable controlling works have been installed. However, correspondence on file confirms the Bs 65 watermaster visited the property and was not concerned with measurement and/or lockable devices for this diversion. Therefore, it seems reasonable to recommend modification of condition R43 for licensing that: "Upon notification, the right holder shall install and maintain measuring devices and/or lockable controlling works of a type approved by the Department that will provide the watermaster suitable control over storage and/or natural flow diversion(s)." To the best of my knowledge, owners have complied with all other permit conditions.

Have conditions of permit approval been met? X 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	04/15 to 10/31	0.02 CFS	1.5 AF
AESTHETIC STORAGE	01/01 to 12/31		8.0 AF
	<u>Totals:</u>	0.02 CFS	9.5 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

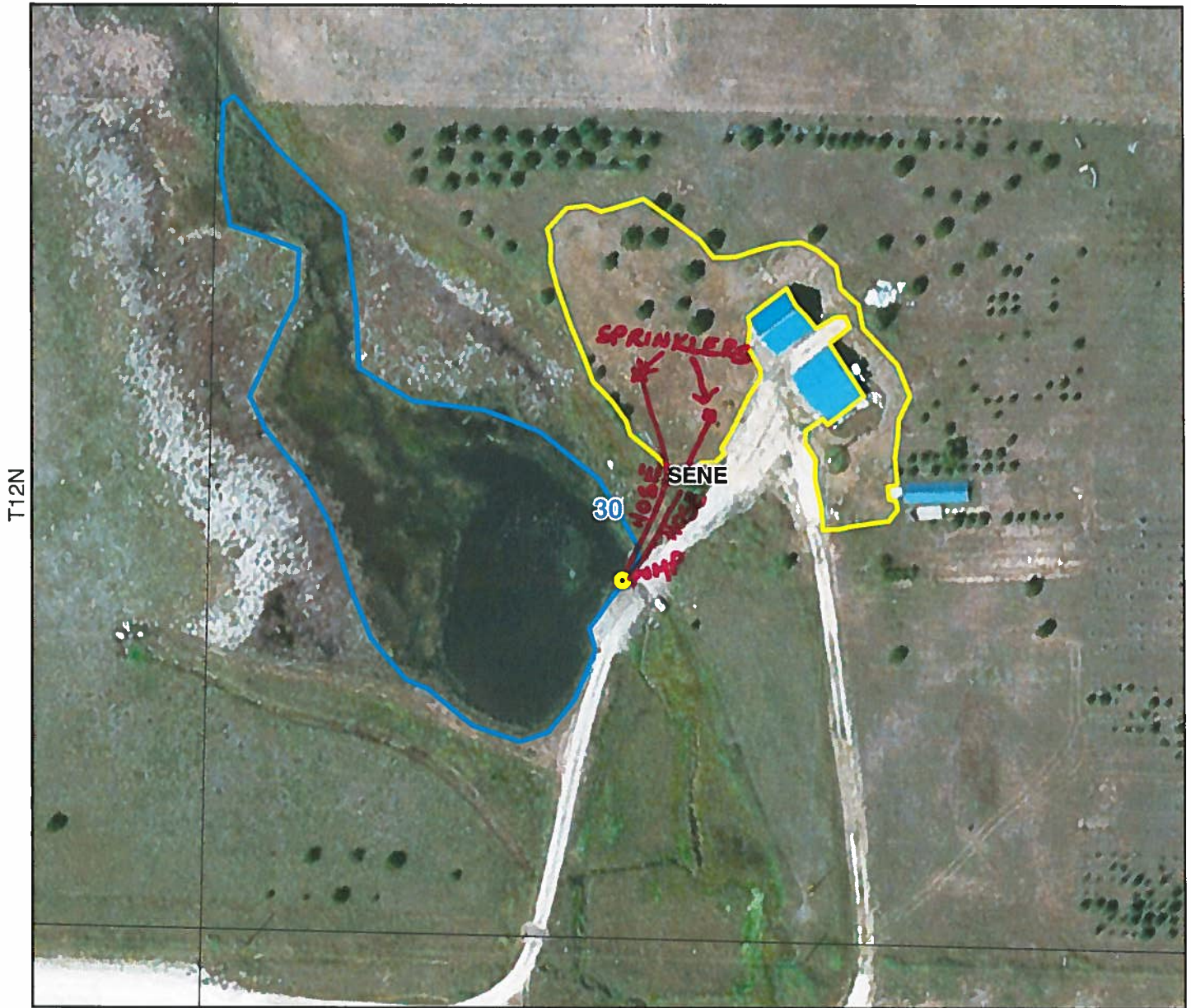
Field Examiner's Name Angela M. Quinn Date 10/15/2012

Reviewer _____ Date _____

State of Idaho
Department of Water Resources

Beneficial Use Field Report System Diagram & Map 65-13962

R04E



Bing (2011) Aerial Photo

0 0.0125 0.025 0.05 Miles

-  Point of Diversion
-  Irrigation POU
-  Aesthetic Storage POU
-  Townships
-  PLS Sections
-  Quarter Quarters



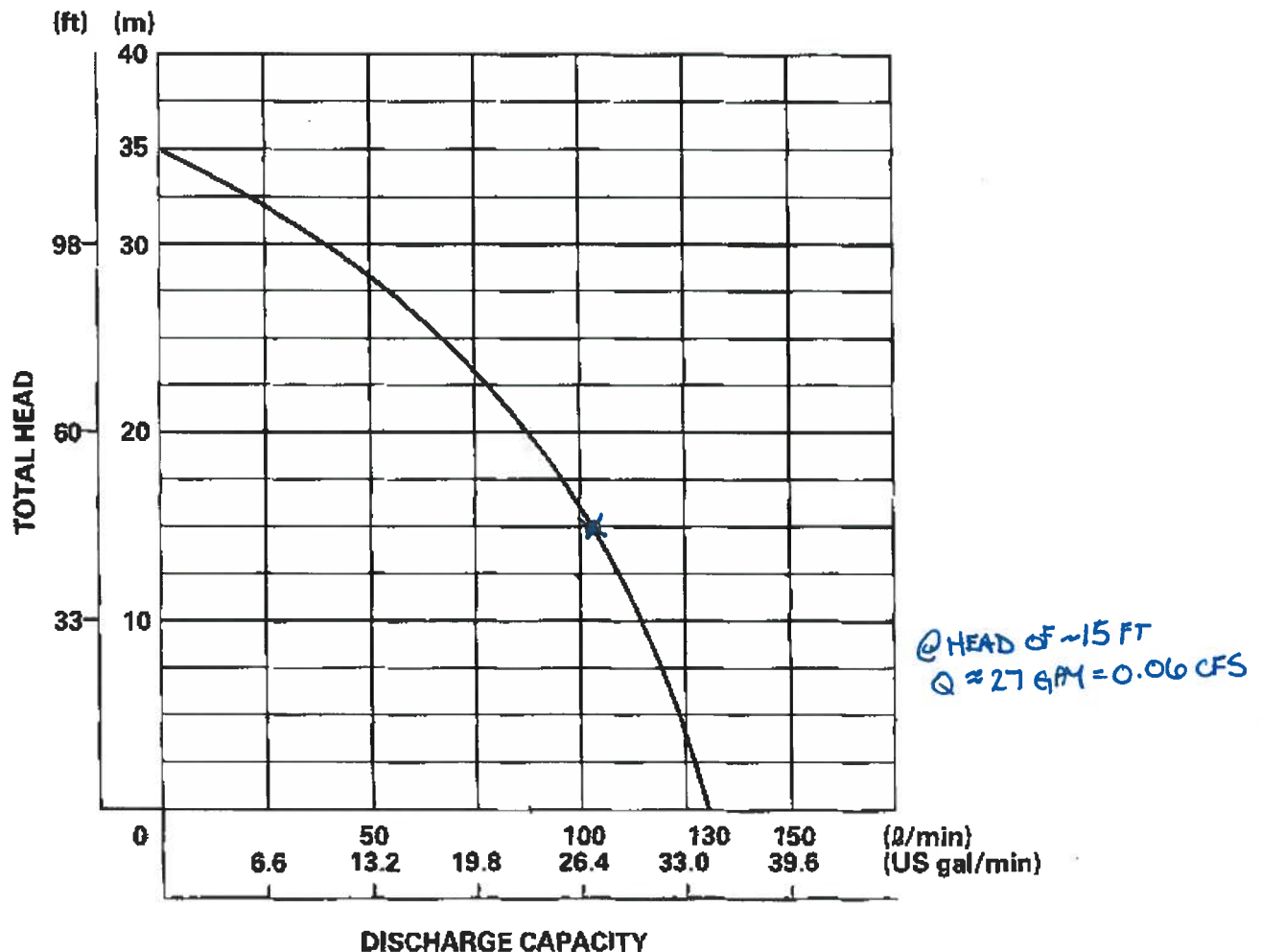
TECHNICAL & CONSUMER INFORMATION

Pump

Suction port diameter	1.0 in (25 mm)
Discharge port diameter	1.0 in (25 mm)
Total head (maximum)	115 ft (35 m)
Suction head (maximum)	23 ft (7 m)
Discharge capacity (maximum)	34.3 US gal (130 l , 28.6 Imp gal) per minute
Self-priming time	120 seconds at 16.4 ft (5 m)
Pressure (maximum)	43 psi (299 kPa , 3.05 kgf/cm ²)
Continuous running time	Approximately 65 min (actual time varies with pump load)

Pump performance curve

As total head increases, discharge capacity decreases. The following graph shows the relationship between pump discharge capacity and total head, while pumping clear water at sea level.



65-13962 Beneficial Use Field Report Photos



65-13962 Exam 10/9/2012: P/D pump. 1 in diameter suction hose through pump split into 2 connections for 2 garden hoses for sprinklers.



65-13962 Exam 10/9/2012: P/U facing south. Aesthetic pond in photo center. Portion of irrigation P/U in front of cabin in photo foreground.