

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 65-23587
Exam Date: 09/20/2019

1. Current Owner:
KAREN C BRUNER
9650 BROWNLEE LIBERTY RD
SWEET, ID 83670
2. Accompanied by: Karen Bruner (permit holder)
Phone No: (208) 584-3380

3. **SOURCE:**
GROUND WATER

Method of Determination: Site visit

B. OVERLAP REVIEW

1. Other water rights with the same place of use: NO Overlap

Comments: License 65-13767 covers adjacent lawn, house, and trees, but not the pasture. That portion of the property is covered by this current permit (65-23587).

2. Other water rights with the same point-of-diversion: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
65-13767	Ground Water	Irrigation, Domestic	License

Comments: Both water rights use same well (D0000537)

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**
GROUND WATER
SW¼ SE¼, Sec. 27, Twp 08N, Rge 01E, B.M.
GEM County

Method of Determination: GPS, site visit

PLACE OF USE: IRRIGATION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
08N	01E	27															2.7		2.7

Total Acres: 2.7

Method of Determination: Site visit, aerial imagery

3.

 x Delivery System Diagram Attached (required). Indicate all major components and distances between components. 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 ID No.	Motor Make	HP	Motor Serial No.	Pump Make	Pump Serial No.
D0000537	CentriPro	5	M40321/500C313	Goulds Water Technology	55GS50

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Pressure gauge	Glycerin-filled; orifice insertable	"Tube & Socket"	316SS	n/a	1/8 inch	n/a

2. Measurements: The water user typically runs two lines at a time. Each line has eight sprinklers on it. Pressure reading were taken at every other sprinkler location on each line for a total of eight readings. The readings were: 29, 30, 30, 30, 26, 26, 28, and 25 PSI. The average pressure reading was 28 PSI. All sprinklers were WeatherTec brand with 1/8" diameter nozzle.

E. FLOW CALCULATIONS

 x Additional Computation Sheets Attached

1/8" sprinkler at 28 PSI = 2.47 GPM

16 sprinklers x 2.47 GPM/sprinkler = 39.5 GPM = 0.09 cfs

2.7 acres x 0.03 cfs = 0.08 cfs - Apr 10/31/19

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 2.7 \text{ acres} \times 4.5 \text{ afa} = 12.2 \text{ AF}$

$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.08 \text{ cfs} \times 260 \text{ days} \times 1.9835 = 41.3 \text{ AF}$

$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 12.2 \text{ AF}$

2. Volume Calculations for Other Uses:

G. NARRATIVE/REMARKS/COMMENTS

Permit 65-23587 has a priority date of 6/4/2014 and authorized the diversion of up to 0.12 cfs to provide ground water irrigation to 4 acres. The water user (Karen Bruner) provided proof of beneficial use on 7/18/2019. On 9/20/2019, I (Amy Steimke), along with Alex Moody, visited the site to complete a beneficial use field examination. Karen Bruner was also present for the field examination.

Karen holds a license (65-13767) for her lawn and trees (0.03 cfs for irrigation) and domestic use (0.02 cfs). When she applied for that license, she misunderstood the process and had handlines ready to go for her pasture, but had not used them yet. This permit in question addresses her water use for her pasture, which she leases out to pasture animals on.

Karen has a 4" mainline that perimeters the pasture in a square. Flow runs clockwise from her well. Driplines service the trees on the perimeter of the pasture. At the southern end of the mainline square, there are 8 handlines that run north along the pasture. Each of these handlines is equipped with 8 sprinklers. All of the sprinklers are WeatherTec brand and 1/8" nozzles. There were a few different models present (e.g. 10-20, 10-20L). Her normal operation is to run 2 handlines at a time. During the examination, she ran two lines and I took pressure readings at every other sprinkler and ended up with an average pressure of 28 PSI per sprinkler head. Using sprinkler charts, this amounts to 0.09 cfs.

At the office, I outlined the size of the pasture using aerial imagery and came up with 2.7 acres. Given that the maximum rate allowed per acre is 0.03 cfs, this amounts to 0.08 cfs. **I recommend to license this permit for 0.08 cfs.** The annual volume I recommend for this license is 12.2 AF, which is the product of the number of irrigated acres developed and the headgate requirement of 4.5 afa.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
IRRIGATION	03/01 to 11/15	0.08 CFS	12.2 AF
<u>Totals:</u>		0.08 CFS	12.2 AF

2. Recommended Amendments

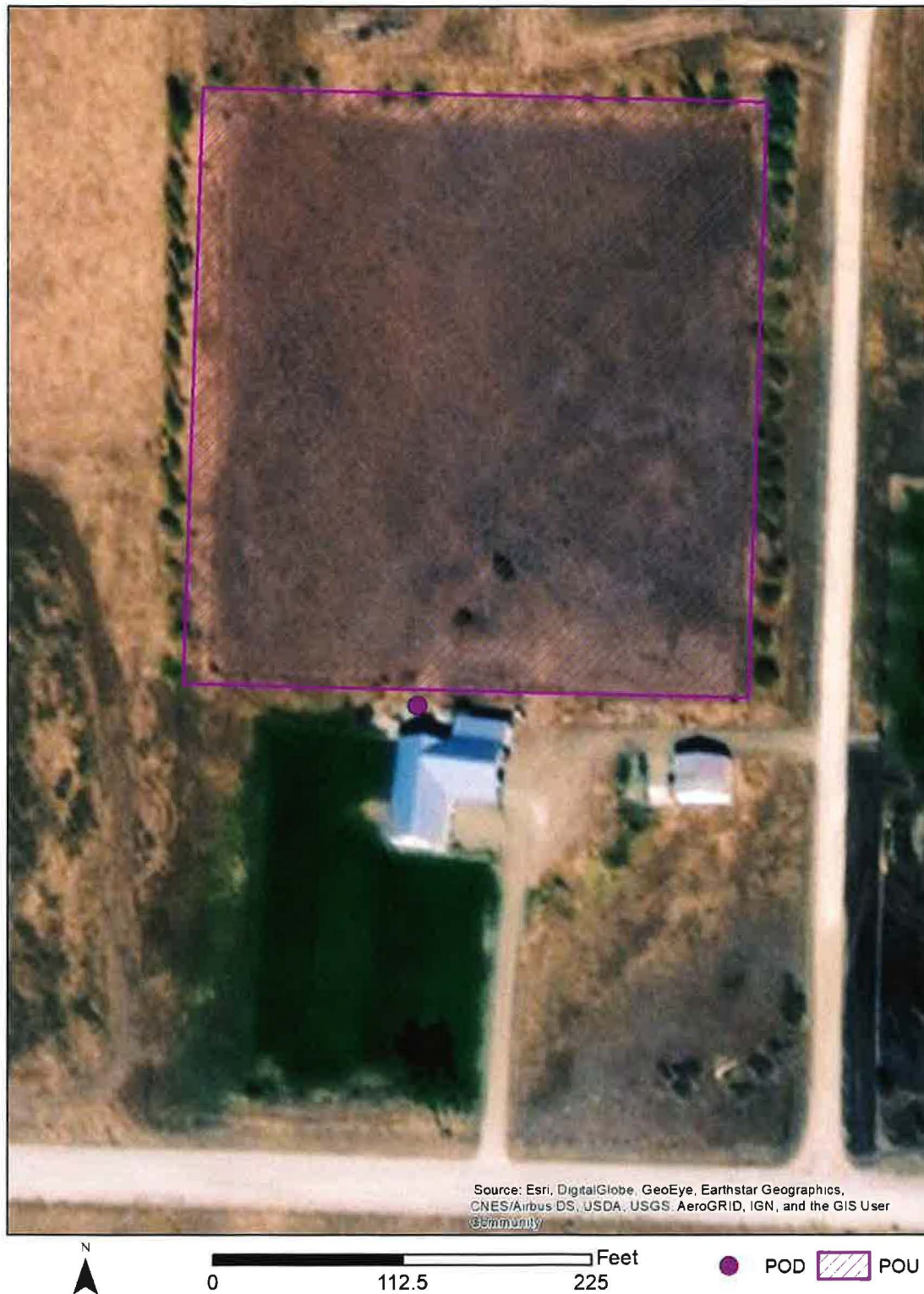
☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☒ None

I. AUTHENTICATION

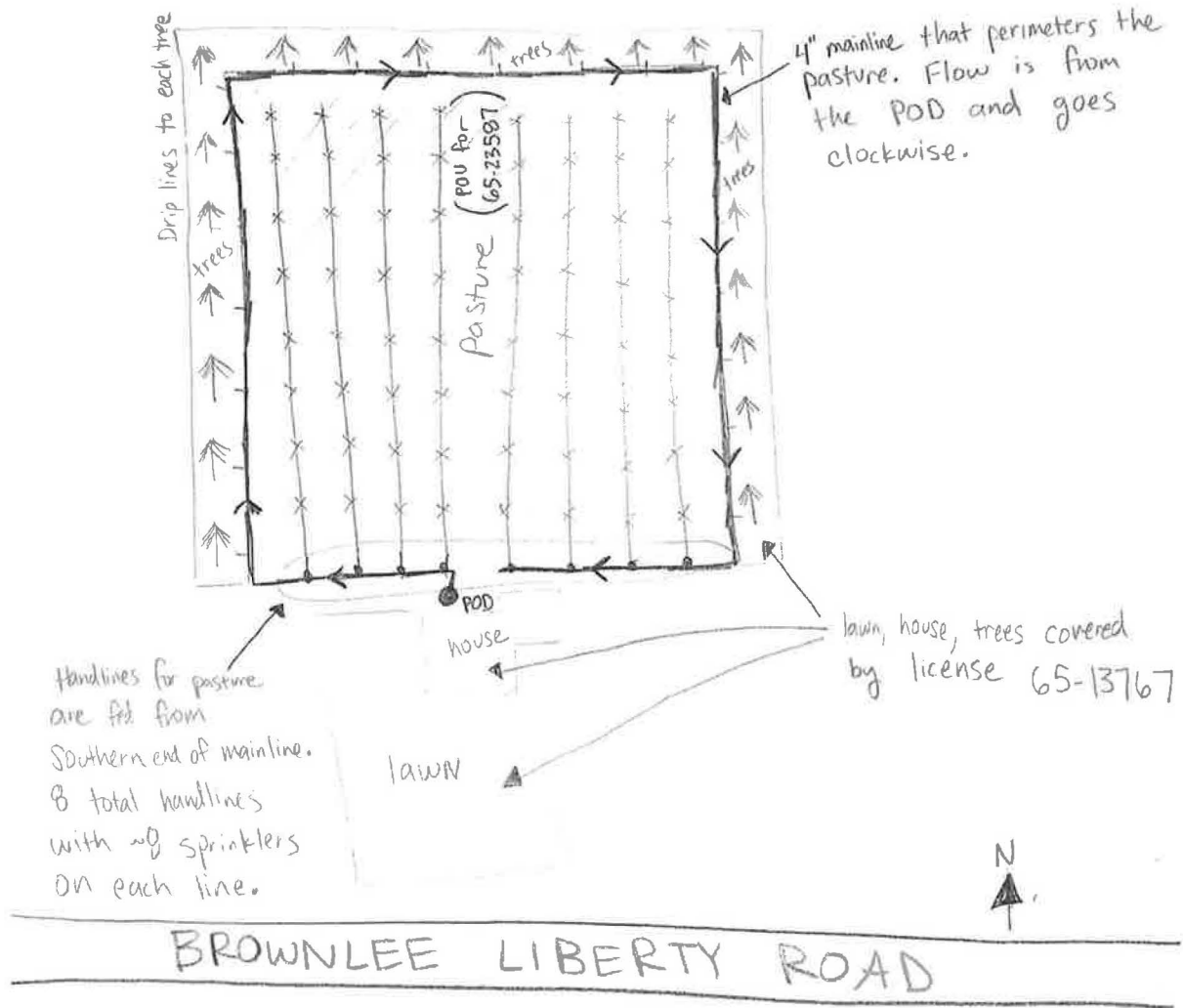
Amy Steimke - Hydrogeologist, Staff

Field Examiner's Name Amy Steimke Date 9/24/2019
 Reviewer Daniel J. Mohr Date 9-25-19

Map showing place of use (POU) and point of diversion (POD) for water right 65-23587



System diagram for water right 65-23587



Sprinkler Calculator

Flow Rate Calculator Summary Sprinkler Nozzle Flow Rate Calculator

Summary of Methodology

This spreadsheet tool supports the estimation of the flow rate from a sprinkler nozzle or series of sprinkler nozzles. The user can specify up to three different sprinkler nozzle types, and the total number of each of the three types of nozzles. The equation used to calculate the flow rate(s) is a simplified form of the Bernoulli Equation, which along with several supporting relationships, were developed from Hagan et. al. 1987, Jensen 1983, and Lindeburg 1999.

Summary of User Input

	Nozzle Type 1	Nozzle Type 2	Nozzle Type 3
C Value:	1	1	1
Nozzle Press.:	28	0	0
Nozzle Diam.:	0.125	0	0
No. of Nozzles:	16	0	0

Summary of Results and Output

Type 1 Nozzle(s):	0.09	cfs
Type 2 Nozzle(s):	0.00	cfs
Type 3 Nozzle(s):	0.00	cfs
Combined:	0.09	cfs

References

Hagan, R.M., Haise, H.R., & Edminster, T.W., *Irrigation of Agricultural Lands*, Agronomy No. 11, 5th Printing. American Society of Agronomy, Madison, WI, USA, 1987.
 Jensen, M.E., *Design and Operation of Farm Irrigation Systems*, Revised Printing. American Society of Agricultural Engineers, 1983.
 Lindeburg, Michael R., *Civil Engineering Reference Manual*. Professional Publications, Belmont, CA, 1999.

Applicant: Karen Bruner

Field Exam Date: 9/20/2019

WR Number: 65-23587

Notes: The water user typically runs two lines at a time. Each line has eight sprinklers on it. Pressure readings were taken at four locations on each line for a total of eight readings. The readings were: 29, 30, 30, 30, 26, 26, 28, and 25 PSI. The average pressure reading was 28 PSI. All sprinklers were WeatherTec brand with 1/8" diameter nozzle.

Pictures



Figure 1: Point of diversion (POD)



Figure 2: Pasture place of use (POU)