



Method of Determination: Field exam and Arcmap.

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 ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D0072061	GOULDS	5 HP			

**D. FLOW MEASUREMENTS**

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
NONE						

2. Measurements: Unable to perform flow measurement because system pumped directly into storage tank and pressure tanks.

**E. FLOW CALCULATIONS**

Additional Computation Sheets Attached

Measured Method: Theoretical pumping equation estimates flow at 32.7 gpm or **0.07 cfs** with pump installed at depth of approximately 350 ft and operating at 58 PSI. See attached theoretical pumping equation worksheet.

**F. VOLUME CALCULATIONS**

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 3.2 \text{ acres} \times 3.0 \text{ afa} = 9.6 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.07 \text{ cfs} \times 214 \text{ days} \times 1.9835 = 29.7 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = \mathbf{9.6 \text{ af}}$$

2. Volume Calculations for Other Uses:

$$\text{Domestic component annual volume} = 1 \text{ home without irrigation} = \mathbf{0.6 \text{ af}}$$

$$\text{Maximum annual diversion volume} = 0.6 \text{ af (domestic component)} + 9.6 \text{ af (irrigation component)} = \mathbf{10.2 \text{ af}}$$

**G. NARRATIVE/REMARKS/COMMENTS**

Field exam performed on 7/28/2020 with the applicant, Charles Maile, showed a well using groundwater for domestic and irrigation purposes. Piping from the well (D0072061) ran direct to a pump house where it fed into a 2,500 gallon concrete subsurface storage tank. The well used a 5 HP Goulds pump to divert water to the storage tank, and as such I was unable to perform flow measurements. A theoretical pumping equation was used to derive a diversion rate of 0.07 cfs with pump installed at depth of approximately 350 ft and operating at 58 PSI. Applicant permitted for a diversion rate of 0.20 cfs, but is limited to the combined domestic and irrigation component diversion rate of the well pumps performance, **0.07cfs**, which will be applied to the water right license as the irrigation component diversion rate and the maximum diversion rate. The domestic component's diversion rate equals the department standard for 1 home, which equals **0.04 cfs**.

Groundwater from the well joined spring water associated with WR 96-9486 (domestic use) in the 2,500 gallon storage cistern. Applicant used a ½ HP pump to route water from the storage tank to pressure tank prior to distribution for domestic and irrigation uses. The storage tank has an automatic shutoff float that turned off well production once the storage tank reached capacity, and it would not turn on until manually selected by applicant, or the systems automatic low level sensing float activated the well pump. As such, applicant utilized spring water as their first source of water for domestic, and at times of irrigation when the tank drew down, the well would compensate the loss of storage volume with groundwater, causing the majority of water used for irrigation being replaced by well water production.

Applicant permitted for domestic purposes for 1 home, and during field exam 1 home was seen on applicant's property. The annual volume applied to license equals **0.6 af** which will be applied to license, as the irrigation occurring falls under the irrigation component of this water right.

Applicant permitted for 8.5 acres of irrigation; during field exam, irrigated acreage was identified walking the boundary of the automatic sprinkler system, and sketched out on a paper map for reference. The edges of the irrigated area are on sloped side hills, and applicant stated typically the reach of the sprinklers would not maintain green grass all summer. During licensing review, arcmap year 2019 aerial imagery clearly denoted irrigated area, and was used to trace out irrigated acreage equal to 3.2 acres. The annual volume for irrigation component equals 3.2 acres x 3.0 afa = **9.6 af**, which will be applied to the license. Applicant outsourced to a sprinkler company to install a system that is designed to produce 30 gpm, with 16 zones total split into program A & B. The programs ran on alternating days with program A running 6.0 hrs per day, and program B running 6.5 hrs per day.

Conditions 26A and 046 were removed from permit. Condition R62 was replaced with R66 to describe no more than 0.03 cfs per acre nor more than 3.0 afa per acre at the field head gate for irrigation of the POU. WR 96-9486 uses spring water for domestic purposes by the same applicant for same home as this right. Condition X35 was applied to this license in order to mitigate overlap concerns, and limits WRs 96-9486 and 96-9632 when combined shall not exceed a total maximum diversion rate of 0.11 cfs, a total annual volume for domestic use for 1 home of 0.6 af, a total maximum diversion volume of 10.2 af, and the irrigation of 2.3 acres. There are no other overlap concerns for this water right.

Condition X35 was applied to license with a maximum diversion rate of 0.11, based on how the applicant's system interacts between spring water from 96-9486 and ground water from 96-9632. Applicant's storage cistern captures continuous diversion from a spring, and during times of peak use when spring water does not keep up with draw down, ground water from the well is activated via a low level sensor to supplement recharge of the storage cistern. In this fashion, there are times primarily during summer and late fall months that the applicant is diverting from both the spring and well simultaneously to fill the cistern to capacity. As a result, condition X35 is drafted in order to enable applicant to operate system fully at peak draw down periods.

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	04/01 to 10/31	0.07 CFS	9.6 AF
DOMESTIC	01/01 to 12/31	0.04 CFS	0.6 AF

**Totals:**                      0.07 CFS                      10.2 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                      Luke Bates - Water Resource Agent

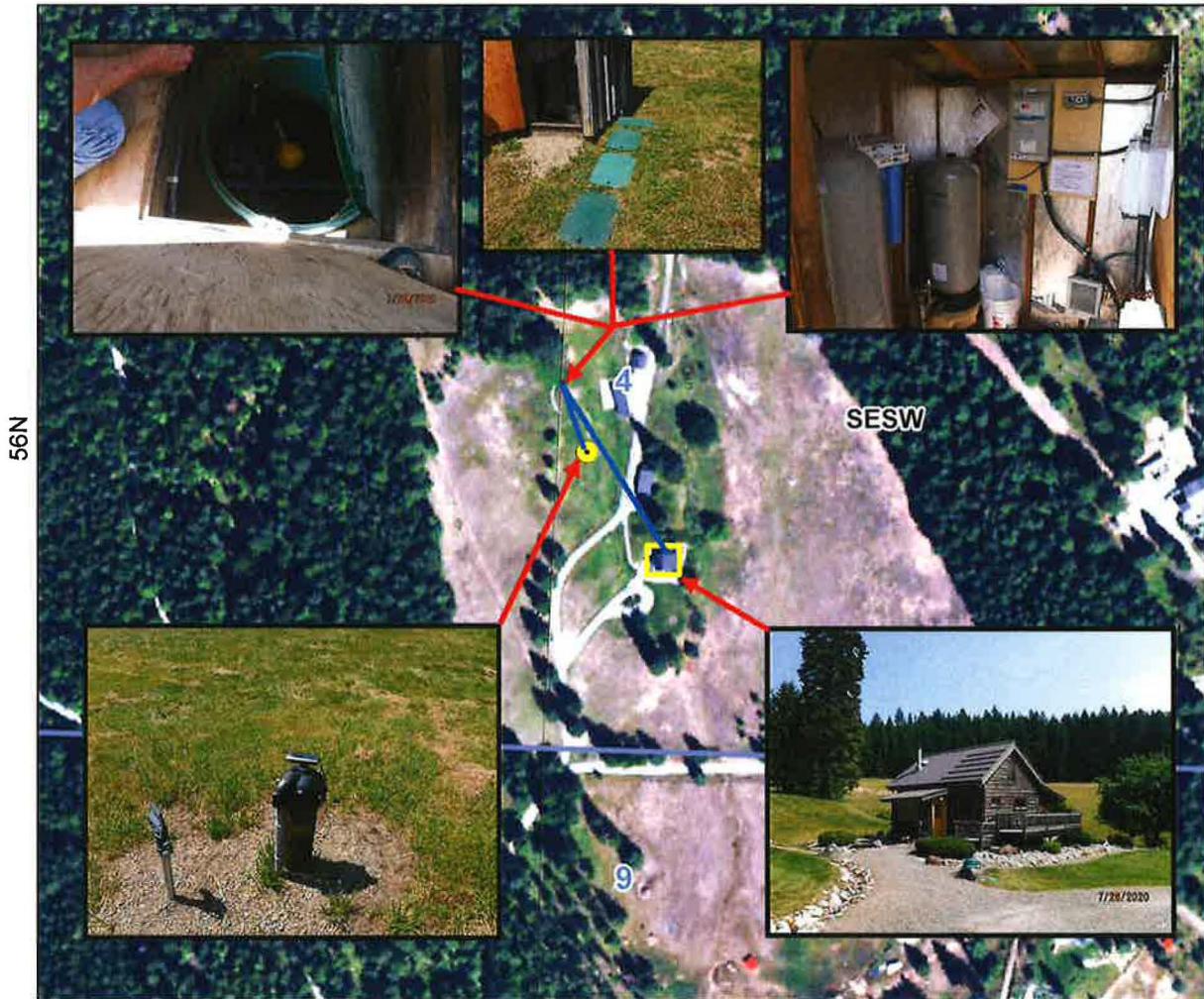
Field Examiner's Name                       Date 7/29/2020

Reviewer                       Date 8/4/2020

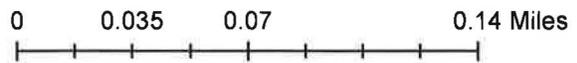
State of Idaho  
Department of Water Resources  
**Attachment to Field Exam**  
96-9632

DOMESTIC system diagram.

01W



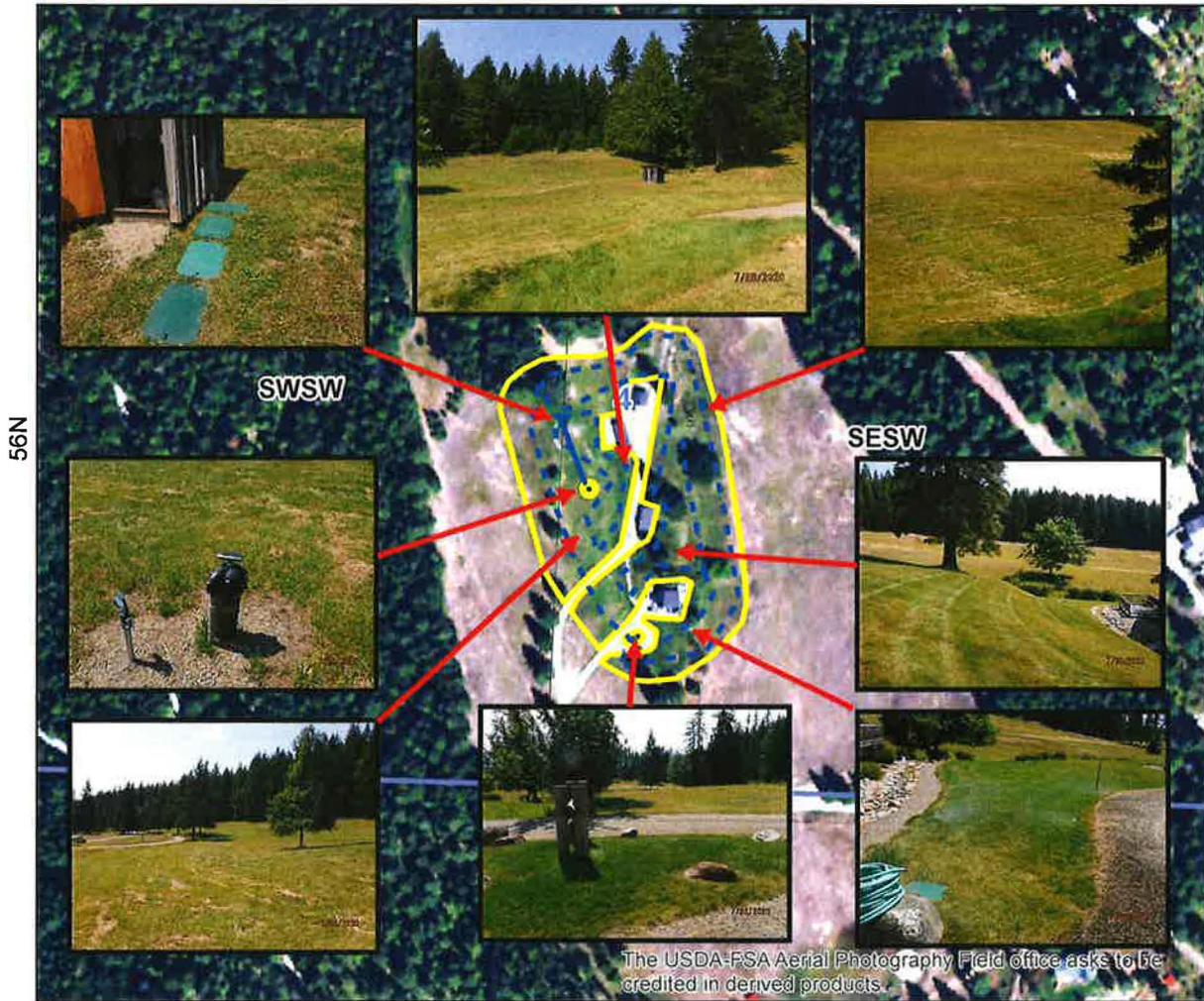
-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters



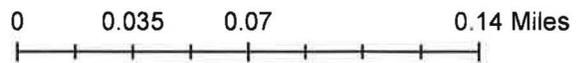
State of Idaho  
 Department of Water Resources  
**Attachment to Field Exam**  
 96-9632

IRRIGATION system diagram.

01W



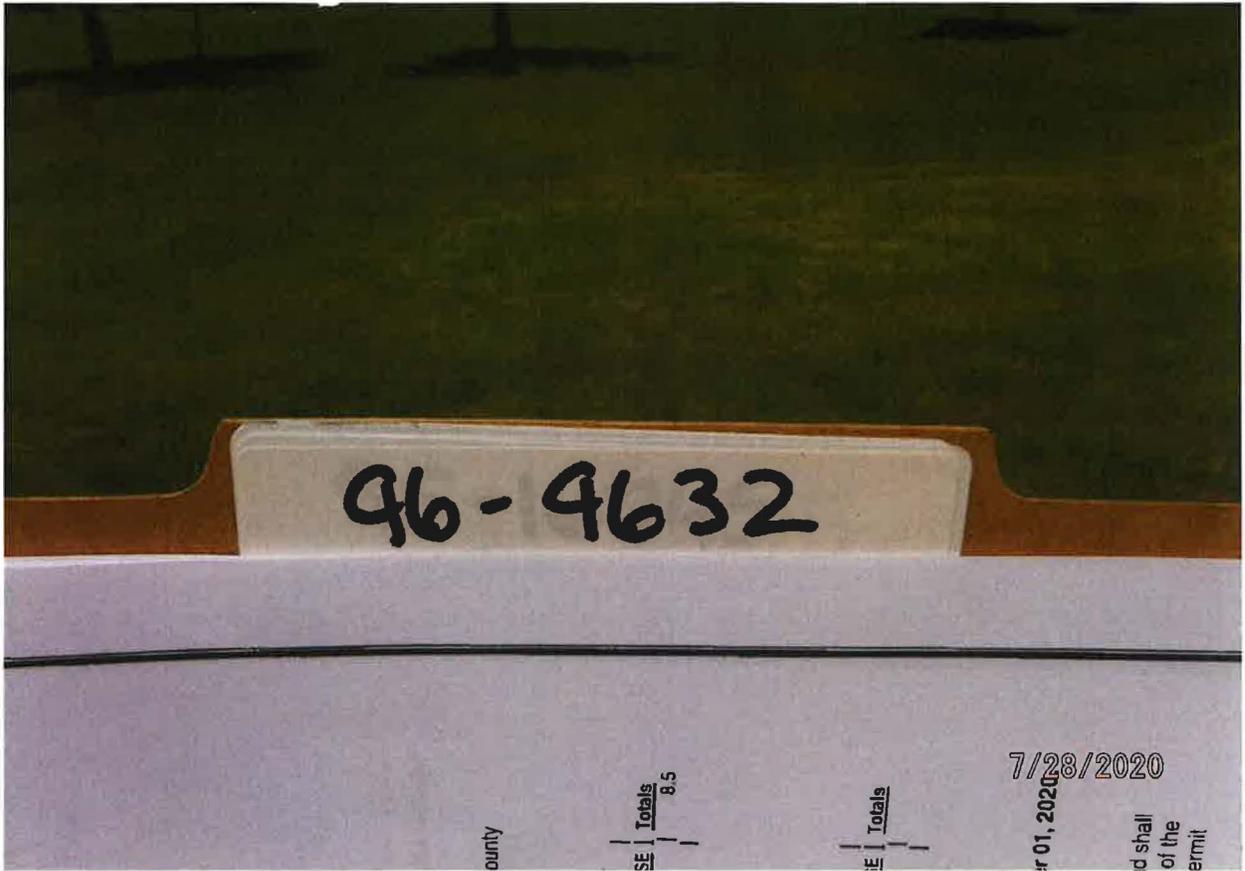
-  Point of Diversion
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THEORETICAL PUMPING EQUATION FOR WR# 96-9632

Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to be at 350 ft, and running at 58 psi.

<b><u>PUMP EQUATIONS</u></b>						
<b>WATER RIGHT No.</b>		<b>96-9632</b>				
	<b>HP</b>	<b>H in feet</b>	<b>Efficiency as a decimal</b>	<b>Pumping lift in feet</b>	<b>System pressure in PSI</b>	
<b>Q =</b>	<b>HP*8.8*Eff/H</b>	<b>5</b>	<b>484.1497</b>	<b>0.8</b>	<b>350</b>	<b>58</b>
<b>Q =</b>		<b>0.073 cfs</b>	<b>32.7 gpm</b>			



POD – WELL D0072061



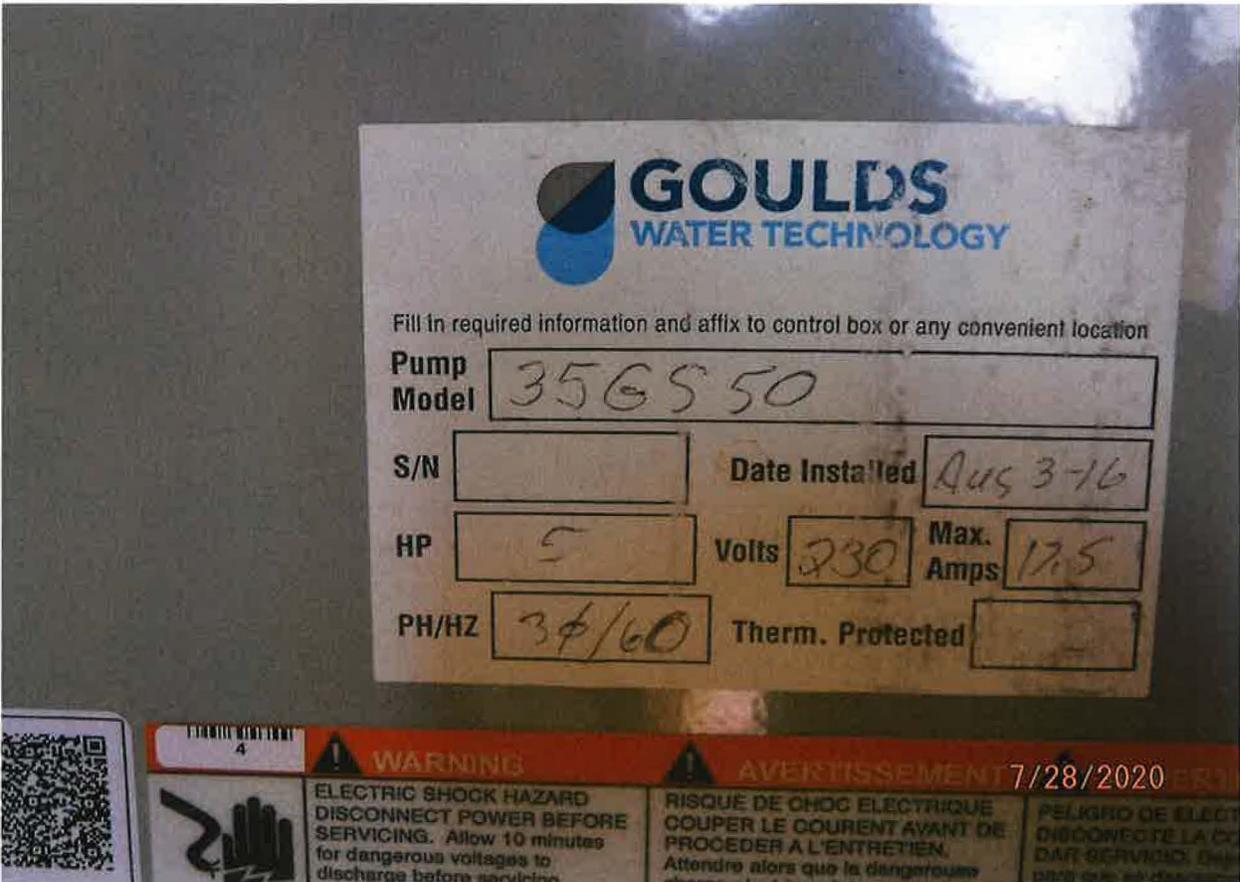
POD – WELL D0072061



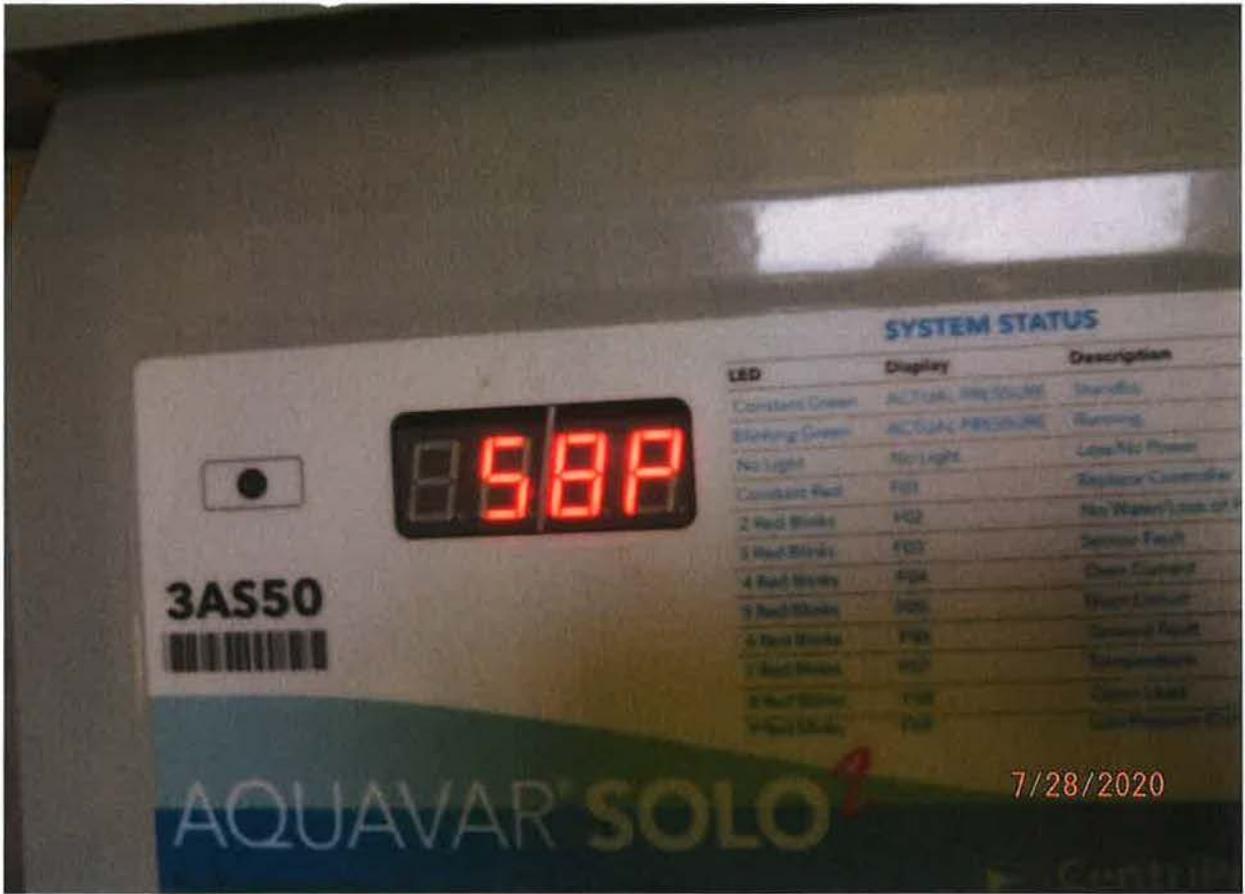
PUMP HOUSE



PUMP HOUSE – WATER SYSTEM



GOULDS 5 HP PUMP IN WELL



58 PSI OPERATING PRESSURE





2,500 GAL STORAGE CISTERN





IRRIGATION CONTROL PANEL

**MR. & MRS. CHARLES MAILE**  
**223 SKY MEADOW LANE**  
**SAGLE, ID**

B&B Sprinklers, Inc. will install an automatic irrigation system to cover areas as outlined by customer. Areas included are approximately 100-foot radius out from structures to include cabin, out buildings and pump house. Design to provide full coverage out to and including these borders.

System based on well-pump system providing 30 GPM @ 50psi. System to be zoned into 12-14 circuits set to run automatically off multi-program controller.

In addition, a separate watering system with a separate controller to be installed to cover outside walls of cabin and storage building. System to be set to run constantly as long as pump supplies water. Customer to activate in case of fire. No guarantee expressed or implied as to making building fire proof.

System to consist of the following components:

1. From pump house, pvc mainline (approx. 500') to supply water to valve manifolds. Mainline to be set "grade to drain".
2. Valves to be Rainbird PEB with flow control
3. Sprinkler heads to be Rainbird 5004 Stainless Steel Rotors (165-170)
4. Lateral line piping to be union carbide "freeze proof" polyethylene
5. Controllers to be Rainbird ESP-ME (2) Programmable located in pump house

System to be designed for grade to drain. First year winterization and next spring turn-on included.

All work will have a 3 year parts and labor warranty.

Terms to be 20% down upon start of work. Balance due upon completion.

7/28/2020

IRRIGATION SYSTEM INSTALLATION DATA



RAIN BIRD 5000 PLUS PRESSURIZED SPRINKLERS



DOMESTIC POU



IRRIGATION POU





IRRIGATION POU





IRRIGATION POU

