

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-17096
Exam Date: 06/22/2021

1. Current Owner:
MARCUS G SMITH PO BOX 270 HARRISON ID 83833-0270
CATHIE BIGGER-SMITH PO BOX 270 HARRISON ID 83833-0270
2. Accompanied by: Marcus Smith
Phone No: 209-598-9901
Address: Same as above
Relationship to permit Holder: Permit holder.

3. **SOURCE:**
GROUND WATER

Method of Determination: Arcmap and DRG.

B. OVERLAP REVIEW

1. Other water rights with the same place of use: NO Overlap
2. Other water rights with the same point-of-diversion: NO Overlap

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER L3 (NE¼ SE¼), Sec. 17, Twp 48N, Rge 03W, B.M. KOOTENAI County

Method of Determination: GPS; POD located at -116°44.5443, 47°30.2356 well D-Tag D0061511

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	
48N	03W	17													0.8 L3	0.2			1.0

Right Acre Limit: 1.0

Total Acres: 1.0

PLACE OF USE: STOCKWATER and DOMESTIC

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
48N	03W	17													X L3				

Method of Determination: Field exam and Arcmap aerial imagery.

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
D0061511	FRANKLIN	1.5			

D. FLOW MEASUREMENTS

1.

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

2. Measurements: Unable to perform flow measurements due to inadequate pipe requirements. Main service pipe routes direct to storage tank and transfer pump prior to distribution to use(s). A Theoretic Pump Equation derives a diversion rate of 6.7 gpm or **0.02 cfs** considering department rounding standards with the 1.5 HP pump installed at 705 ft with a 45 PSI operating pressure.

E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method: Theoretic Pump Equation – 1.5 HP pump installed at 705 ft with a 45 PSI operating pressure results in a diversion rate of 6.7 gpm or 0.02 cfs considering department rounding standards

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.0 \text{ ac} \times 3.0 \text{ afa} = 3.0 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.02 \text{ cfs} \times 246\text{-days} \times 1.9835 = 9.8 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = \mathbf{3.0 \text{ af}}$$

2. Volume Calculations for Other Uses:

- Stockwater annual volume = 25 chickens x 2.5 gpd x 365-days = 22,813 gal per year / 325,850 gal per af = **0.1 af** considering department rounding standards.
- Domestic annual volume = 1 home and shop bathroom = **0.6 af** for in-home use only.
- Maximum diversion volume = 3.0 af (irrigation) + 0.1 af (stockwater) + 0.6 af (domestic) = **3.7 af**.

G. NARRATIVE/REMARKS/COMMENTS

Field exam conducted on 6/22/2021 with the applicant, Marcus Smith, shows a groundwater well supplying water for irrigation, stockwater, and domestic uses. At the POD, well D0061511 has a 1.5 hp pump and main service line to two 3,000-gal storage tanks prior to distribution using a separate 1.5 HP transfer pump. I was unable to perform flow measurements due to inadequate pipe requirements. Main service pipe routes direct to storage tank and transfer pump prior to distribution to use(s). A Theoretic Pump Equation derives a diversion rate of 6.7 gpm or **0.02 cfs** considering department rounding standards with the 1.5 HP pump installed at 705 ft with a 45 PSI operating pressure which is recommended as the maximum diversion rate & each beneficial use diversion rate (irrigation, domestic, stockwater) for licensing purposes. The permit authorized a larger diversion rate for domestic use and maximum diversion rate, but the applicant is limited by pump performance verified during the field exam.

The domestic POU was observed as a primary residence and a shop with bathroom facilities. Following the exam, Armap aerial imagery was used to designate the domestic POU, and the annual volume recommended for licensing purposes

equals **0.6 af** (in-home use). The applicant had chickens on the property at time of exam, and the number fluctuates throughout the year up to 25 chickens. The stockwater POU is a fenced chicken coop where the stock are watered from a nearby frost-free hydrant. The stockwater POU was designated as a circular area encompassing the chicken coop and buffer ground using Arcmap aerial imagery during licensing review. The stockwater annual volume equals 25 chickens x 2.5 gpd x 365-days = 22,813 gal per year / 325,850 gal per af = **0.1 af** considering department rounding standards.

The irrigation POU was walked with the applicant and sketched out on field maps during the examination. Arcmap aerial imagery was used to accurately trace out the irrigation POU equaling 1.0 acres during licensing review. The irrigation annual volume equals 1.0 ac x 3.0 afa = **3.0 af**. The applicant's irrigation system incorporates multiple frost-free hydrants to-hose & sprinklers on timers, and multiple soaker hoses used in a large fenced in garden. The applicant was irrigating during the exam, and photos were taken showing active irrigation. Mr. Smith asserts timers set at each frost-free hydrant enable the well to keep up during summer months with a rotating water schedule. Due to the mostly south facing exposure, the lawn spaces don't get to lush green, but the grass is kept alive during the hottest months of summer. The maximum diversion volume recommended to license this water right equals **3.7 af**, or the sum of the three beneficial use's annual volume.

At time of licensing, the irrigation component was found extend into a quarter-quarter which was not permit approved for, see below:

POU: authorized on permit = Irrigation 48N03W17NESE3 (1.0 ac).
POU: verified at time of licensing = Irrigation 48N03W17NESE3 (0.8 ac) and **48N03W17NWSE** (0.2 ac).

An Application for Amendment was initiated and mailed with cover letter to applicant on 11/3/2021 and received back from the applicant with amendment fee on 11/10/2021. Condition 26A and X02 were removed from the permit during licensing review. Condition X59 was added to describe the POD location within a named subdivision lot. All other permit conditions have been carried forward to the license. There are no overlap concerns for this water right.

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	03/15 to 11/15	0.02 CFS	3.0 AF
STOCKWATER	01/01 to 12/31	0.02 CFS	0.1 AF
DOMESTIC	01/01 to 12/31	0.02 CFS	0.6 AF

Totals: 0.02 CFS 3.7 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

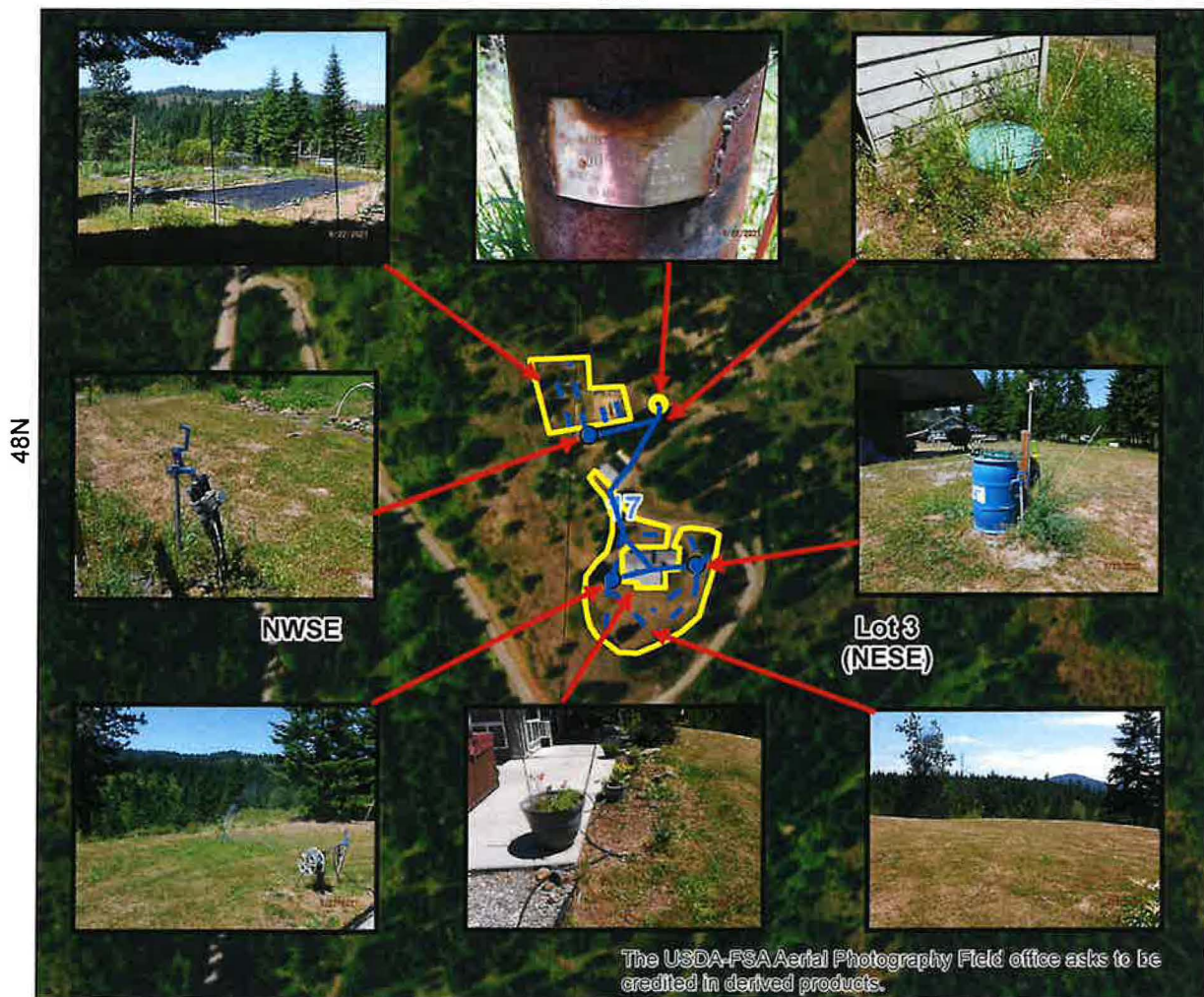
I. AUTHENTICATION Luke Bates -

Field Examiner's Name  Date 11/10/2021
Reviewer  Date 1/31/2022

State of Idaho
Department of Water Resources
Attachment to Field Exam
95-17096

IRRIGATION system diagram.

03W



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

0 0.035 0.07 0.14 Miles



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STOCKWATER system diagram.

03W



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

0 0.035 0.07 0.14 Miles



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DOMESTIC system diagram.

03W

48N



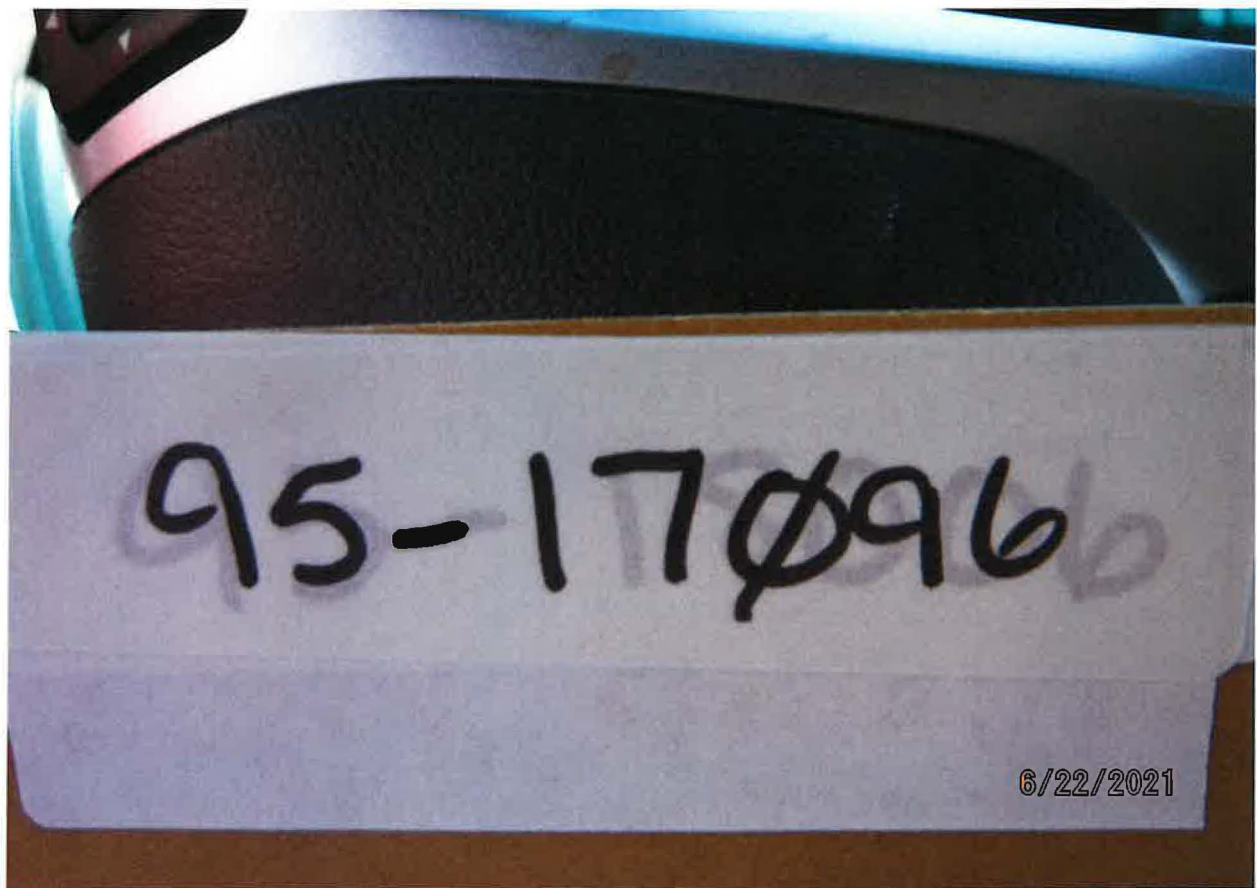
- Point of Diversion
- Place Of Use Boundary
- Townships
- PLS Sections
- Quarter Quarters

0 0.035 0.07 0.14 Miles



THEORETICAL PUMPING EQUATION(S) FOR WR# 95-17096

Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to lift 705 ft, and running at 45 psi.					
<u>PUMP EQUATIONS</u>					
WATER RIGHT No. 95-17096					
D0061511	HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI
Q = HP*8.8*Eff/H	1.5	809.0816	0.8	705	45
Q = 0.015 cfs 6.7 gpm					



FIELD EXAM DATE 6/22/2021



POD – GROUNDWATER WELL



WELL D-TAG D0061511



PUMP CONTROL PANEL

BEFORE WORKING ON OR AROUND THE BOX, THE
PUMP OR MOTOR. DO NOT USE OR TOUCH THE
CABLE, PUMP OR MOTOR UNLESS ALL
METAL PARTS HAVE BEEN PROPERLY GROUNDING
ACCORDING TO APPLICABLE CODES.

150001101 REV. 0



Franklin Electric
MILWAUKEE, WISCONSIN 53219



CONTROL BY **Franklin Electric**

UL LISTED

DO NOT EXCEED MAXIMUM USE (ENCL. 3)

HP 1/1.5 VOLT 230 S.F. MAX AMP 8.0/11.5

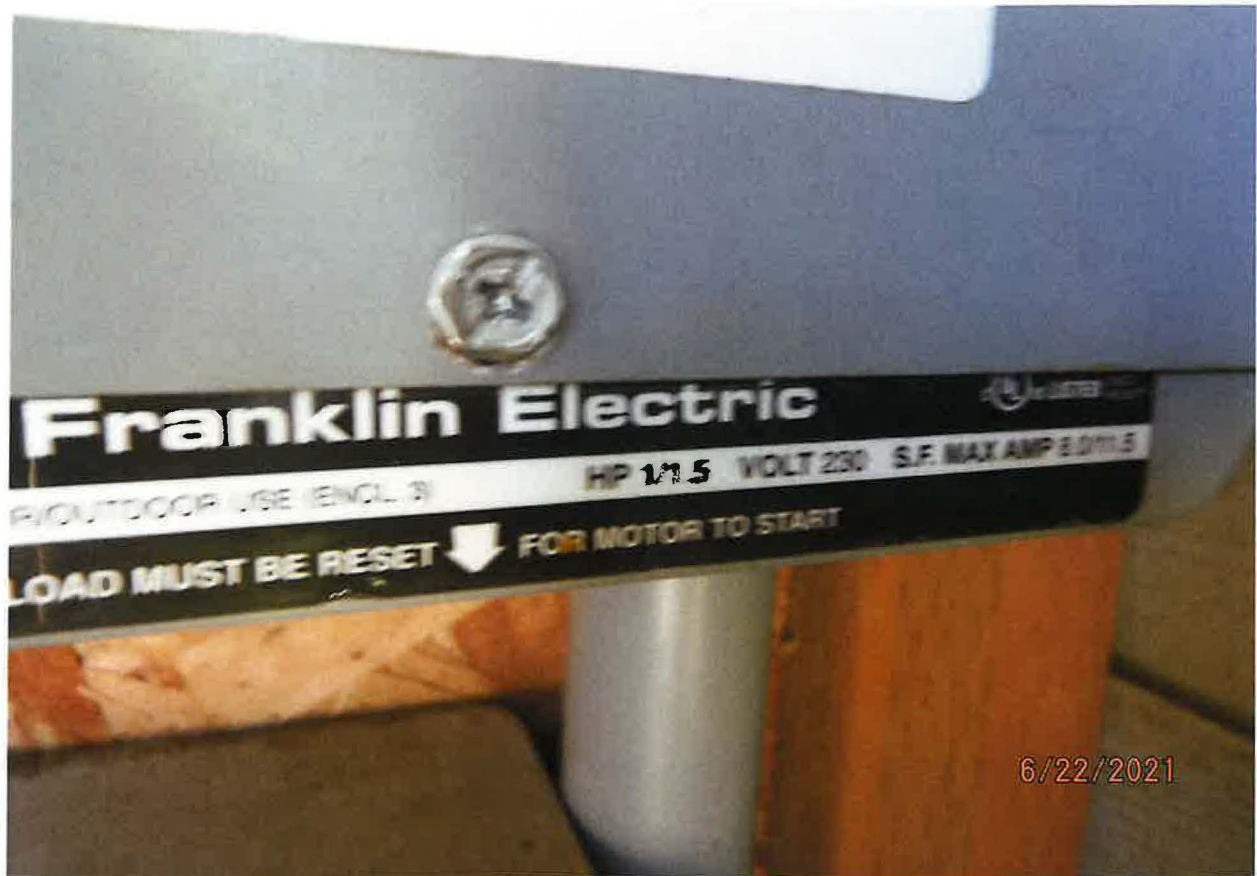
OVERLOAD MUST BE RESET FOR MOTOR TO START

6/22/2021

1.5 HP WELL PUMP INSTALLED IN SYSTEM



3,000 GALLON STORAGE TANK RECEIVES WATER DIRECT FROM WELL



1.5 HP TRANSFER PUMP FROM STORAGE TANK TO SERVICE PIPES



DOMESTIC POU – MAIN HOME



DOMESTIC POU – DETACHED GARAGE WITH FULL BATHROOM AND STORAGE ROOM



IRRIGATION POU

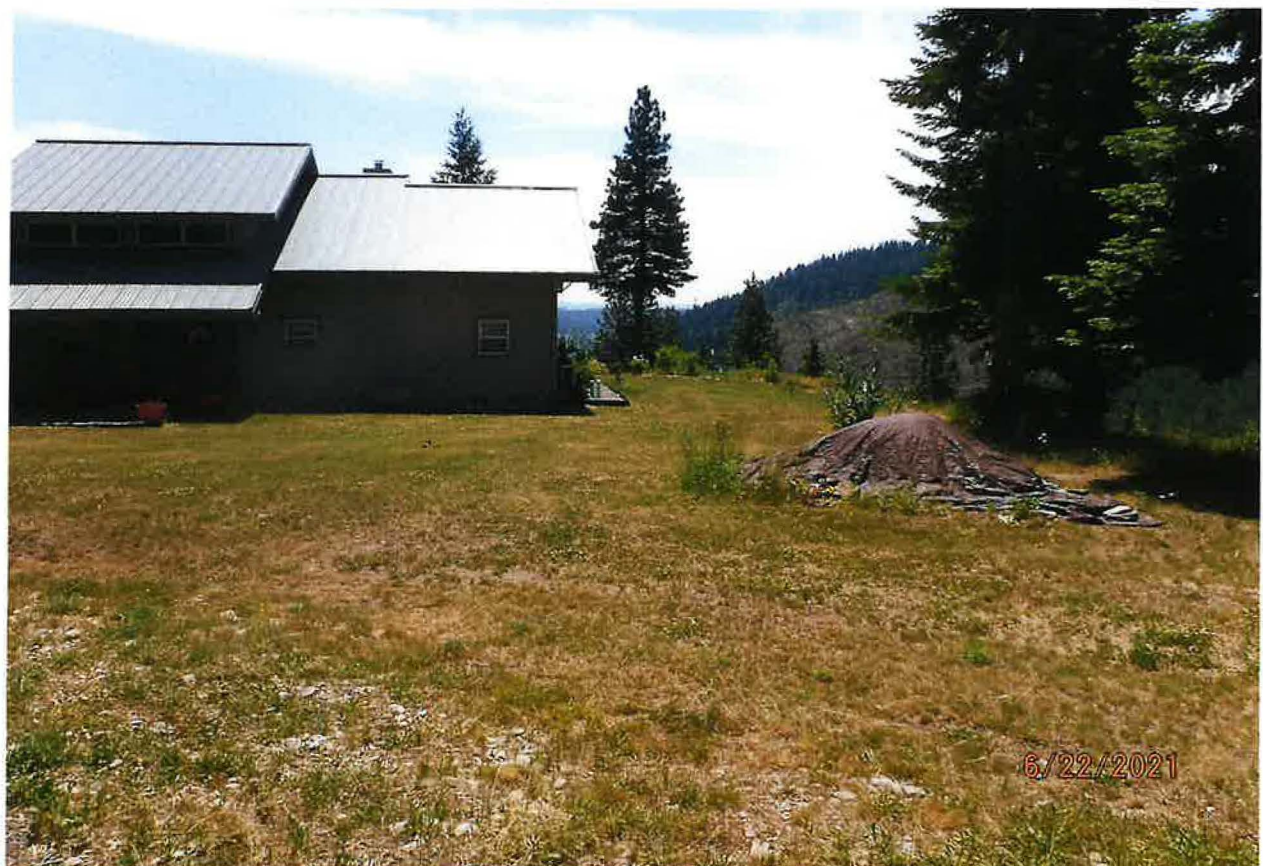


IRRIGATION POU





IRRIGATION POU – FENCED GARDEN IRRIGATED USING DRIP LINE SYSTEM



IRRIGATION POU



IRRIGATION POU



IRRIGATION POU – DRIP LINES ROUTED FOR PLANTS AROUND MAIN HOUSE



IRRIGATION POU



STOCKWATER POU