

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-9738
Exam Date: 09/24/2020

1. Current Owner:
MARC BRINKMEYER PO BOX 220 LACLEDE ID 83841-0220
2. Accompanied by: Ryan Fobes, Foresite Engineering
Phone No: 208-714-6866
Address: 418 E Lakeside Ave. #01, Coeur D'Alene ID 83814
Relationship to permit Holder: representative; project engineer.

3. SOURCE:
GROUND WATER

Method of Determination: Arcmap and DRG.

B. OVERLAP REVIEW

1. Other water rights with the same place of use: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
96-4431	HORNBY CREEK, SPRING	Irrigation, stockwater, and domestic	STATUTORY CLAIM

Comments: Statutory claim 96-4431 overlaps this permit's POU, and uses spring water & Hornby Creek water sources for domestic & irrigation uses. The applicant's representative asserts the water system associated with 96-4431 is interconnected with the watery system infrastructure associated with this permit, but due to 96-4431 being a statutory claim, the system has not been validated by the Department. Condition X35 is not recommended for inclusion toward licensing permit 96-9738; future adjudication for Basin 96 shall serve as the mechanism to validate any historic use of water that may occur under statutory claim 96-4431, to include any overlap requirements with this

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

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER NE¼ SW¼, Sec. 24, Twp 57N, Rge 03W, B.M. BONNER County
Owen well located at -116°38.571, 48°16.371; 96-91-N-61.
GROUND WATER NE¼ NW¼, Sec. 24, Twp 57N, Rge 03W, B.M. BONNER County
D0054541 located at -116°38.755, 48°16.665.
GROUND WATER NE¼ NW¼, Sec. 24, Twp 57N, Rge 03W, B.M. BONNER County
Old well located at -116°38.761, 48°16.647; no tag information available.
GROUND WATER NW¼ SE¼, Sec. 24, Twp 57N, Rge 03W, B.M. BONNER County
Murphy well located at -116°38.519, 48°16.273; 96-91-N-69.

Method of Determination: well locations validated using GPS. See above for detailed well NAME and GPS coordinates.

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	
57N	03W	24			0.3					3.0	0.1					0.1			3.5

Total Acres: 3.5

PLACE OF USE: 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	
57N	03W	24								X	X								

Method of Determination: Field exam and Arcmap 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 or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
OWEN WELL - 96-91-N-61		5			
D0054541		5			
OLD WELL - NO TAG		UNKNOWN			
MURPHY WELL - 96-91-N-69		1.5			

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
5 GAL BUCKET MEASUREMENT(S) & THEORETIC PUMP EQUATION(S)						

2. Measurements: well(s) D0054541 and the Murphy well (96-91-N-69) had inadequate pipe requirements to facilitate flow measurements; theoretic pumping equations were used to derive the flow measurements for these wells. 5 gallon bucket measurements were captured from frost free hydrants co-located with the Owen well (96-91-N-61) and the old well without identification nor HP pump data. The results are listed below:

- Owen well (96-91-N-61) – 29.7 gpm
- D0054541 – 24.4 gpm
- Old well no tag – 19.9 gpm
- Murphy well (96-91-N-69) – 15.0 gpm
- TOTAL GPM = 89.0 gpm = 0.2 cfs considering department rounding standards.

E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method:

- Owen well (96-91-N-61) – 5 gal bucket / 10.10 sec x 60 sec/min = 29.7 gpm
- D0054541 – 24.4 gpm – T.P.E with 5 HP pump lifting 545 ft at 45 PSI operating pressure = 24.4 gpm
- Old well no tag – 5 gal bucket / 15.07 sec x 60 sec/min = 19.9 gpm
- Murphy well (96-91-N-69) – T.P.E with 1.5 HP pump lifting 212 ft at 45 PSI operating pressure = 15.0 gpm
- TOTAL GPM = (29.7 + 24.4 + 19.9 + 15.0) = 89.0 gpm = 0.2 cfs considering department rounding standards.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{I.R} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 3.5 \text{ acres} \times 3.0 \text{ afa} = 10.5 \text{ af}$$

$$V_{D.R} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.2 \text{ cfs} \times 214 \text{ day} \times 1.9835 = 84.9 \text{ af}$$

$$V = \text{Smaller of } V_{I.R} \text{ and } V_{D.R} = \mathbf{10.5 \text{ af}}$$

2. Volume Calculations for Other Uses:

$$\text{Domestic annual volume for 2 homes (in home use only)} = 2 \text{ homes} \times 0.6 \text{ af} = \mathbf{1.2 \text{ af}}$$

$$\text{Maximum diversion volume} = 10.5 \text{ af (irrigation component)} + 1.2 \text{ af (domestic component)} = \mathbf{11.7 \text{ af}}$$

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 9/24/2020, and subsequent follow-up exam conducted on 4/20/2021 with the applicant's representative, Ryan Fobes, show four (4) groundwater wells diverting water for domestic and irrigation uses. The 4ea PODs are located in various locations throughout the applicant's property, and a mixture of flow measurements and theoretic pump equations were used to derive diversion rates. Well D0054541 and the Murphy well (96-91-N-69) had inadequate pipe requirements to facilitate flow measurements; theoretic pumping equations were used to derive the flow measurements for these wells. 5 gallon bucket measurements were captured from frost free hydrants co-located with the Owen well (96-91-N-61) and the old well without identification nor HP pump data. The results are listed below:

- Owen well (96-91-N-61) – 29.7 gpm (5HP pump motor)
- D0054541 – 24.4 gpm (5HP pump motor)
- Old well no tag – 19.9 gpm (unkown HP)
- Murphy well (96-91-N-69) – 15.0 gpm (1.5HP pump motor)
- TOTAL GPM = 89.0 gpm = 0.2 cfs

Flowmeters are installed on the system, but Mr. Fobes asserts they are installed on piping coming out of the 3K and 9K tanks, and do not identify direct flow from each respective well; the flowmeters were not used to obtain flow measurements based on this information.

The total diversion rate validated during the field exam is 0.03 cfs larger than the permit approved maximum diversion rate of **0.17 cfs**, which is being recommended for licensing purposes for this permit. The irrigation beneficial use diversion rate accounts for 3.5 acres of irrigation, which has a standard Department diversion rate allowance of 0.03 cfs per acre x 3.5 acres = **0.11 cfs** considering Department rounding standards. 0.11 CFS is recommended for licensing the irrigation component of this WR. The domestic beneficial use diversion rate accounts for water serviced of two homes, with standard diversion rate equal to **0.06 cfs**, which is recommended for licensing the domestic component of this WR. Following the follow up exam in April 2021, the applicant has applied for an additional 3.5 acres of irrigation under WR 96-9883, which will use the same water system infrastructure as 96-9738; the excess 0.03 cfs diversion rate observed during this permit's field exam is mitigated when combining the two WRs, and the overlap will be assessed in the future when licensing 96-9883.

During the field exam, the applicant's irrigation POU and domestic POU were observed and shapes sketched out on field maps. Mr. Fobes asserts the two wells (D0054541 & Old well) located in the northern part of the property each deliver water to a 3,000 gallon vaulted storage tank, which then uses transfer pumps to route water to a larger 9,000 gallon reservoir tank located west of the main home near an access road using a 4 inch pipeline. The Murphy well diverts water directly to the 9K tank. The Owen well diverts water to the caretaker's house as well as pumping to the 9K tank. From the 9K tank water is distributed by transfer pumps servicing the domestic POU. Additionally, water from the 9K tank services the large pressurized irrigation system on the property.

Arcmap aerial imagery was used during licensing review to trace out the domestic POU that consists of the main residence, a caretaker home, and bathroom facilities within the shop to the north of the main residence. The annual volume for domestic equals 2 homes x 0.6 af = **1.2 af**. The bathroom located in the shop is incorporated into this volume, as it is primarily used by the caretaker and family members.

Arcmap aerial imagery was used to trace out the irrigation POU, equaling 7.0 acres as a permissible place of use. Permit 96-9738 was approved to develop 3.5 acres, and will be the limiting factor in recommending 3.5 acres for licensing purposes. Following the exam, the Mr. Fobes was notified about the discrepancy in acreage, resulting in a new application for permit submitted by the applicant on 7/19/2021 (96-9883) to account for the other half of the 7.0 acres of total irrigation occurring on the property. Additionally, there is an active statutory claim WR 96-4431 that uses Hornby Creek & Spring water sources for irrigation of 7.0 acres on the property. Mr. Fobes asserts the creek and spring source system can be interconnected to the pressurized irrigation system via an inter-connector valve, but that the primary irrigation practice is the new groundwater source side of the system.

The pressurized sprinkler system was observed during the field exam on 9/21/2020, and again in April of 2021 during a follow-up exam in order to better clarify the POU. In April, the property caretaker had installed locator flags at each of the sprinkler heads throughout the POU, making it easy to identify the boundary of the irrigation POU. There are a portions of greenspace on the eastern fringes past the 7.0 acre POU that benefit from sub-irrigation, but sprinklers are not installed and thus this area was excluded from the total acreage for licensing purposes. The irrigation annual volume equals 3.5 acres x 3.0 afa = **10.5 af**, which is recommended for licensing purposes. The maximum diversion volume recommended for licensing equals 1.2 af (domestic) + 10.5 af (irrigation) = **11.7 af**. The POU shape covers the entire 7.0 acres as a permissible place of use, as it is not possible to designate which 3.5 acres to limit this permit to, only that permit 96-9738 authorizes the irrigation of 3.5 acres. The new application for permit No. 96-9883 shall cover the remaining 3.5 acres, with the 7.0 acre POU shape serving as a permissive place of use for licensing this right.

Condition 046 was removed from the permit during licensing review. Condition X27 was added designating the maximum irrigation of 3.5 acres annually covered under this right. All other conditions on the permit are carried forward to the license. Overlap concerns: Statutory claim 96-4431 overlaps this permit's POU, and uses spring water & Hornby Creek water sources for domestic & irrigation uses. The applicant's representative asserts the water system associated with 96-4431 is interconnected with the watery system infrastructure associated with this permit, but due to 96-4431 being a statutory claim, the system has not been validated by the Department. Condition X35 is not recommended for inclusion toward licensing permit 96-9738; future adjudication for Basin 96 shall serve as the mechanism to validate any historic use of water that may occur under statutory claim 96-4431, to include any overlap requirements with this permit. There are no other overlap concerns for this water right.

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>Rate of Diversion</u>	<u>Annual Volume</u>
IRRIGATION	04/01 to 10/31	0.11 CFS	10.5 AF
DOMESTIC	01/01 to 12/31	0.06 CFS	1.2 AF
<u>Totals:</u>		0.17 CFS	11.7 AF

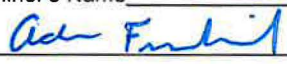
2. Recommended Amendments

____ Change P.D. as reflected above ____ Add P.D. as reflected above X None

____ Change P.U. as reflected above ____ Add P.U. as reflected above X None

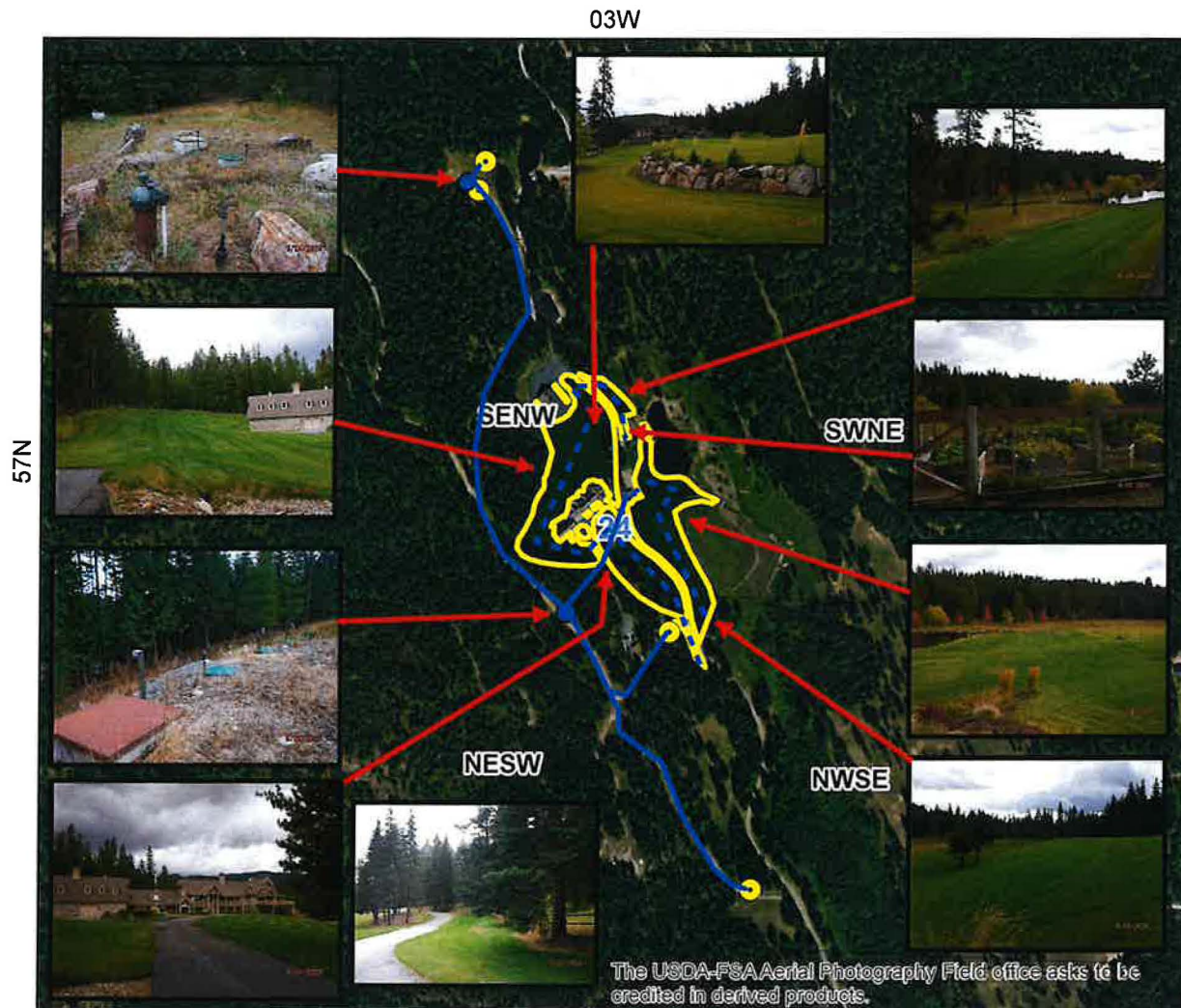
I. AUTHENTICATION Luke Bates - Water Resource Agent

Field Examiner's Name  Date 8/25/2021

Reviewer  Date 8/27/2021

State of Idaho
Department of Water Resources
Attachment to Field Exam
96-9738

IRRIGATION system diagram.



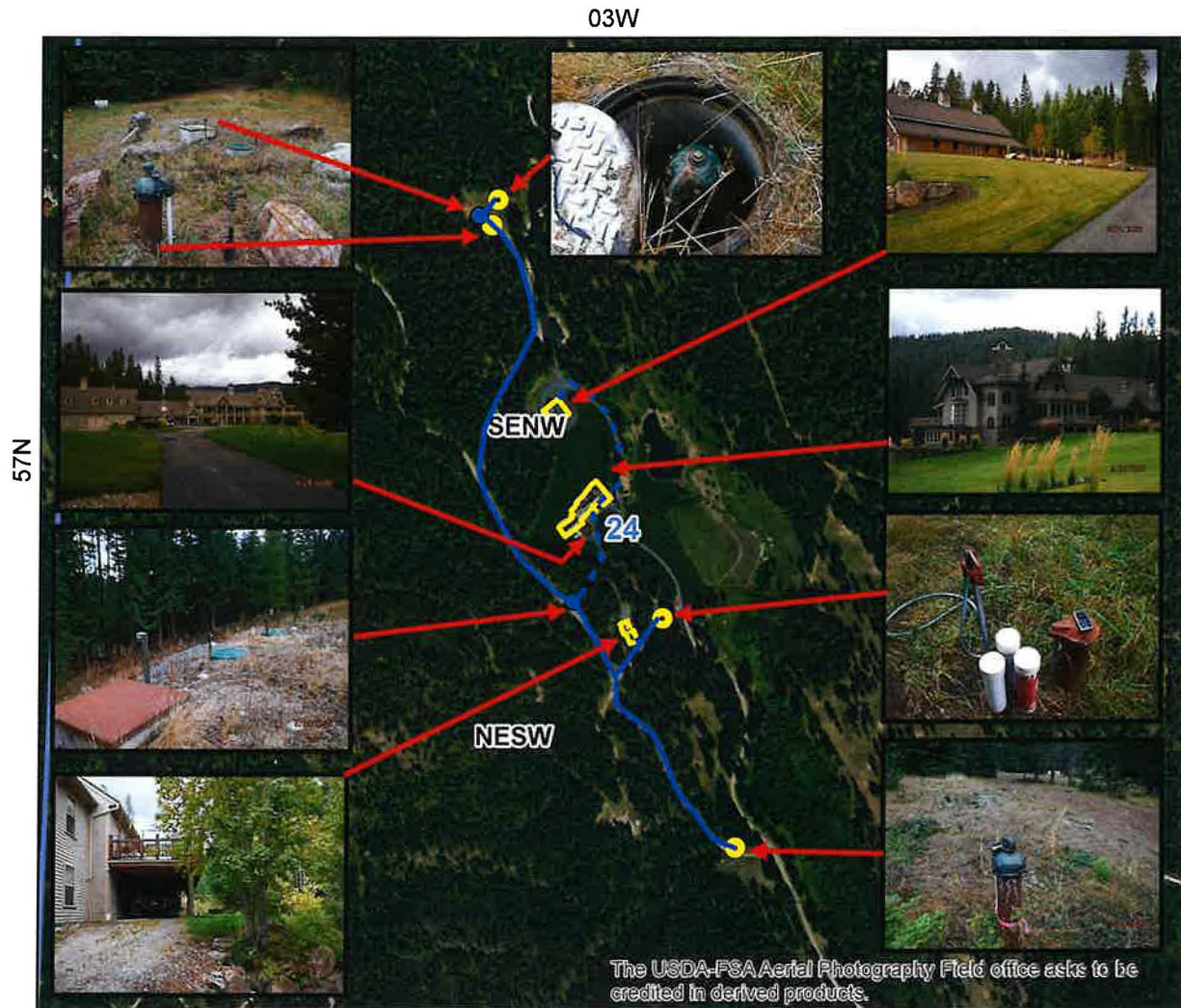
- Point of Diversion
- Place Of Use Boundary
- Townships
- PLS Sections
- Quarter Quarters

0 0.075 0.15 0.3 Miles



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DOMESTIC system diagram.



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

0 0.075 0.15 0.3 Miles



THEORETICAL PUMPING EQUATION FOR WR# 96-9738

Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to be at 545 ft, and running at 45 psi.

PUMP EQUATIONS

WATER RIGHT No. 96-9738

D0054541		HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI
Q =	HP*8.8*Eff/H	5	649.0816	0.8	545	45
Q = 0.054 cfs 24.4 gpm						

Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to be at 212 ft, and running at 45 psi.

PUMP EQUATIONS

WATER RIGHT No. 96-9738

96-91-N-69		HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI
Q =	HP*8.8*Eff/H	1.5	316.0816	0.8	212	45
Q = 0.033 cfs 15.0 gpm						



FIELD EXAM DATE – 9/24/2021



POD – WELL 96-91-N-69 LOCATED IN NW¼SE¼



1 HP PUMP IN WELL 96-91-N-61



POD – WELL D0054541 LOCATED IN NE¼NW¼



5 HP PUMP IN WELL D0054541



POD – WELL LOCATED IN NE¼NW¼



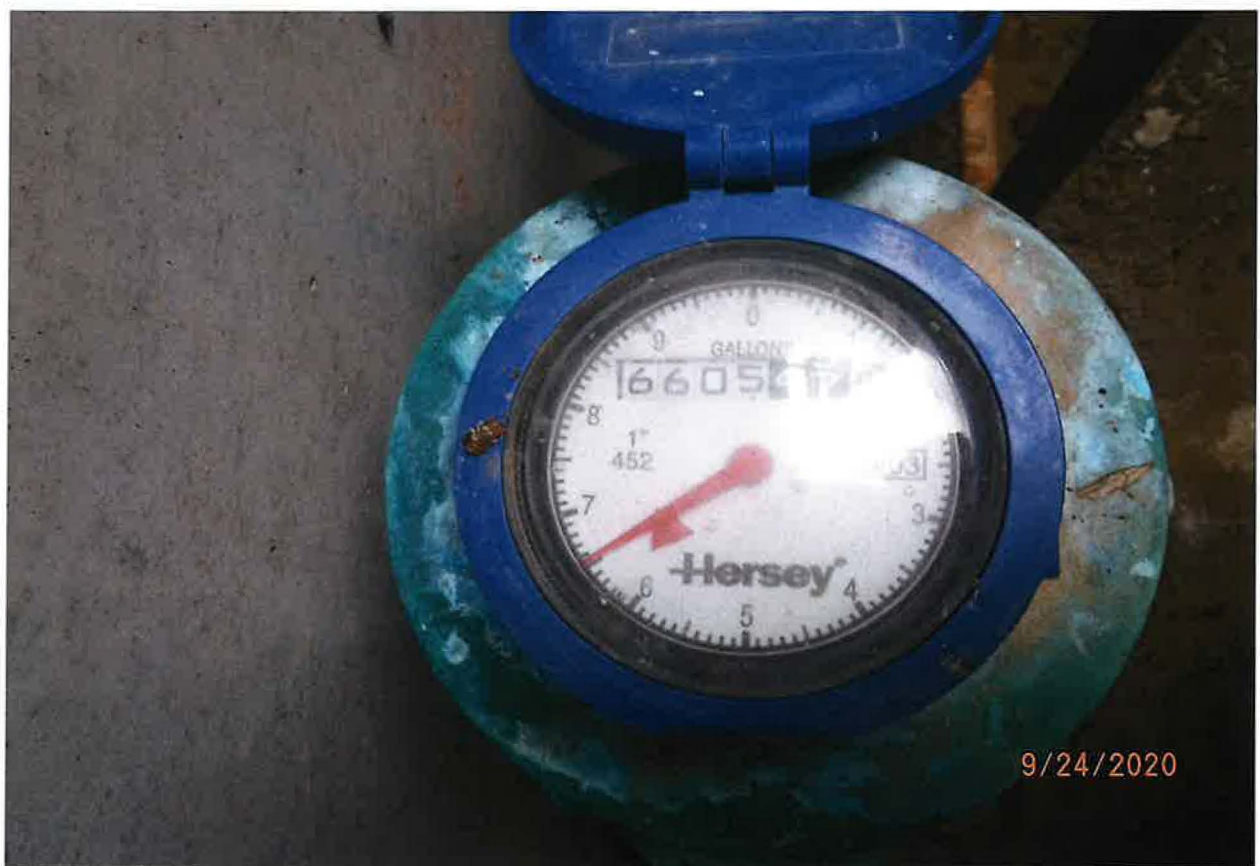
5 HP PUMP IN WELL WITHOUT TAG



3,000 GAL STORAGE TANK LOCATED IN NE¼NW¼



FLOWMETERS INSTALLED CAPTURING VOLUME DATA FROM 3,000 GALLON TANK TRANSFERRED TO 9,000 GALLON TANK PRIOR TO SYSTEM USE.





9,000 GALLON STORAGE RESERVOIR – CO-MINGLES WATER FROM 4EA WELLS



VAULTED 9,000 GALLON STORAGE RESERVOIR WATER WORKS



2EA FLOW METERS INSTALLED TO CAPTURE VOLUME READINGS IN PUMP CONTROL VAULT



DOMESTIC & IRRIGATION POU – SHOP WITH BATHROOM FACILITY



DOMESTIC & IRRIGATION POU – MAIN RESIDENCE





DOMESTIC POU – CARETAKER'S HOUSE



IRRIGATION POU



IRRIGATION POU





IRRIGATION POU





IRRIGATION POU





IRRIGATION POU





IRRIGATION POU – PRESSURIZED SPRINKLER HEADS FLAGGED





IRRIGATION POU – LANDSCAPE AREAS





WELL 96-91-N-61 – MAIN LINE TO RESERVOIR FILL AND CARETAKER HOUSE



CARETAKER HOUSE PRESSURE TANK AND PUMP CONTROLLER