

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-9659
Exam Date: 07/16/2024

1. Current Owner:
THUNDER RANCH LAND & CATTLE CO LLC 7095 BOTTLE BAY RD SAGLE ID 83860-9041
2. Accompanied by: Tucker Hathaway
Phone No: 208-603-1595
Address: Same as above
Relationship to permit Holder: Permit Holder's representative

3. **SOURCE:**
PEND OREILLE LAKE

Tributary
PEND OREILLE RIVER

Method of Determination: ArcMap and DRG layer.

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:**

PEND OREILLE LAKE L2 (SE¼ NE¼), Sec. 32, Twp 57N, Rge 01W, B.M. BONNER County
PEND OREILLE LAKE L2 (SE¼ NE¼), Sec. 32, Twp 57N, Rge 01W, B.M. BONNER County

Method of Determination: GPS; two (2) intake pipelines with pump(s) are located at -116°27.516, 48°14.646.

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	01W	32	0.2 L1			9.8 L2													10.0

Total Acres: 10.0

Method of Determination: Beneficial use field exam and ArcMap aerial imagery.

3. X 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 Model No.	Pump Make	Pump Model No. or Discharge Size
Lake Pump intake #1	FRANKLIN	10	FEC2261128020	GRUNDFOS	85S100-9 – 2-inch poly-pipe
Lake Pump intake #2	FRANKLIN	10	FEC2261128020	GRUNDFOS	85S100-9 – 2-inch poly-pipe

D. FLOW MEASUREMENTS

1.

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

2. Measurements: I was unable to take flow measurements at time of field examination; water system storage was full and off cycle for irrigation & the representative was unable to manually override system. The water system installation company, RC Worst & Company, provided the pump(s) manufacturer's pump curve demonstrating the pump capacity for each 10 hp pump is equal to 84.3 gpm or 0.19 cfs considering department rounding standards.

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method: Pump motor manufacturer pump curve derives a flow rate of 84.3 gpm or 0.19 cfs.

Department standard rate for 10.0 acres irrigation = 0.02 cfs x 10 ac = 0.20 cfs.

Recommended maximum diversion rate for licensing purposes = pump capacity = 0.19 cfs

- Water system operates in a lead/lag with only one lake pump diverting at a time. The water system is limited to a single pump's capacity for licensing purposes.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 10.0 \text{ ac} \times 3.0 \text{ afa} = 30.0 \text{ afa}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.19 \text{ cfs} \times 214\text{-day} \times 1.9835 = 80.6 \text{ af}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 30.0 \text{ af}$$

2. Volume Calculations for Other Uses: The irrigation beneficial use from the Lake Pend Oreille water source is exempt from the volume reporting requirements in accordance with IDAPA 37.03.02, Section 035.

G. NARRATIVE/REMARKS/COMMENTS

Beneficial use field exam performed on 7/16/2024 with the Permit Holder's representative, Tucker Hathaway, showed water being diverted from Lake Pend Oreille for irrigation uses. At the POD, the water system diverting works include two (2) submersible 10-hp Franklin motors paired with Grundfos pumps in the lake. The submersed pumps were installed with fish screens of ¼ inch or less on initial install by the contractor – RC Worst & Company. I wasn't able to validate the fish screens, but the Permit Holder asserts by declaration on the Statement of Completion submission that fish screens are installed.

From the two pumps, two 2-inch poly-pipe runs route uphill approximately 40 ft before entering a common single pipeline conveyance pipe that routes the remainder of the approximately 350 ft elevation gain from intake to storage tank(s). Under normal operating conditions the system is lead/lag with only one pump 'on' at a given time. I've recommended a Maximum Diversion Rate = **0.19 cfs** based on manufacturer pump curve data supplied by the pump(s) installation company. 0.19 cfs is 0.01 cfs less than the department standard diversion rate for the 10.0 acres recommended for licensing this Permit.

The water system incorporates 3-ea 1,500-gal storage reservoirs that are interconnected along with two 7.5 hp Grundfos booster pump(s), model 85S750-5, used to transfer water from 24-hr impoundment to the numerous pressurized sprinkler zones served by the irrigation system. At time of exam the SJE Rhombus Control Panel and pressure gage had a 75 PSI static pressure. Mr. Hathaway asserts there are numerous, to many to count, individual sprinkler zones which primarily use Hunter style rotary sprinklers with 7 -10 sprinklers per zone. Numerous zones operate at a time and run from early a.m. to 10:00 a.m. daily during the irrigation season of use.

During the exam Mr. Hathaway provided a tour of the irrigation POU; I used field maps to sketch the irrigation system boundaries and observed pressurized rotary style sprinklers on riser pipes attached to fencing at intervals for lawn & field irrigation, soaker hose and ground-level rotary sprinklers for landscape and lawn watering around structures. During licensing review, I used ArcMap aerial imagery, Bonner County GIS map software, and Google Earth aerial imagery to accurately trace out the irrigation POU, which equals 10.0 acres. The Permit authorized development of 15.1 acres, but the license recommendation reduces this value to the acreage observed following development of the water system concluding with the field examination. As this is a surface water source irrigation system, there is no annual volume nor maximum diversion volume assigned to the face of the license, but the Right Holder is authorized 3.0 acre-feet per acre as described by conditions of approval.

During licensing review, I verified that a single POD was applied for by the applicant and the Permit approval authorized development of a single POD. The Permit Holder developed two separate PODs (pipes with pumps in lake), and during licensing review I prepared an Amendment to Permit (for licensing purposes) which were mailed to the Permit Holder on 8/15/2024. The Department received the signed Amendment with fees on 9/3/2024 detailing two separate PODs for licensing purposes. The additional POD has the same legal description as the first POD.

All conditions from the Permit are being carried forward to licensing. There is no overlapping water right concerns toward licensing 96-9659.

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>
IRRIGATION	04/01 to 10/31	0.19 CFS

Totals: 0.19 CFS

2. Recommended Amendments

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

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

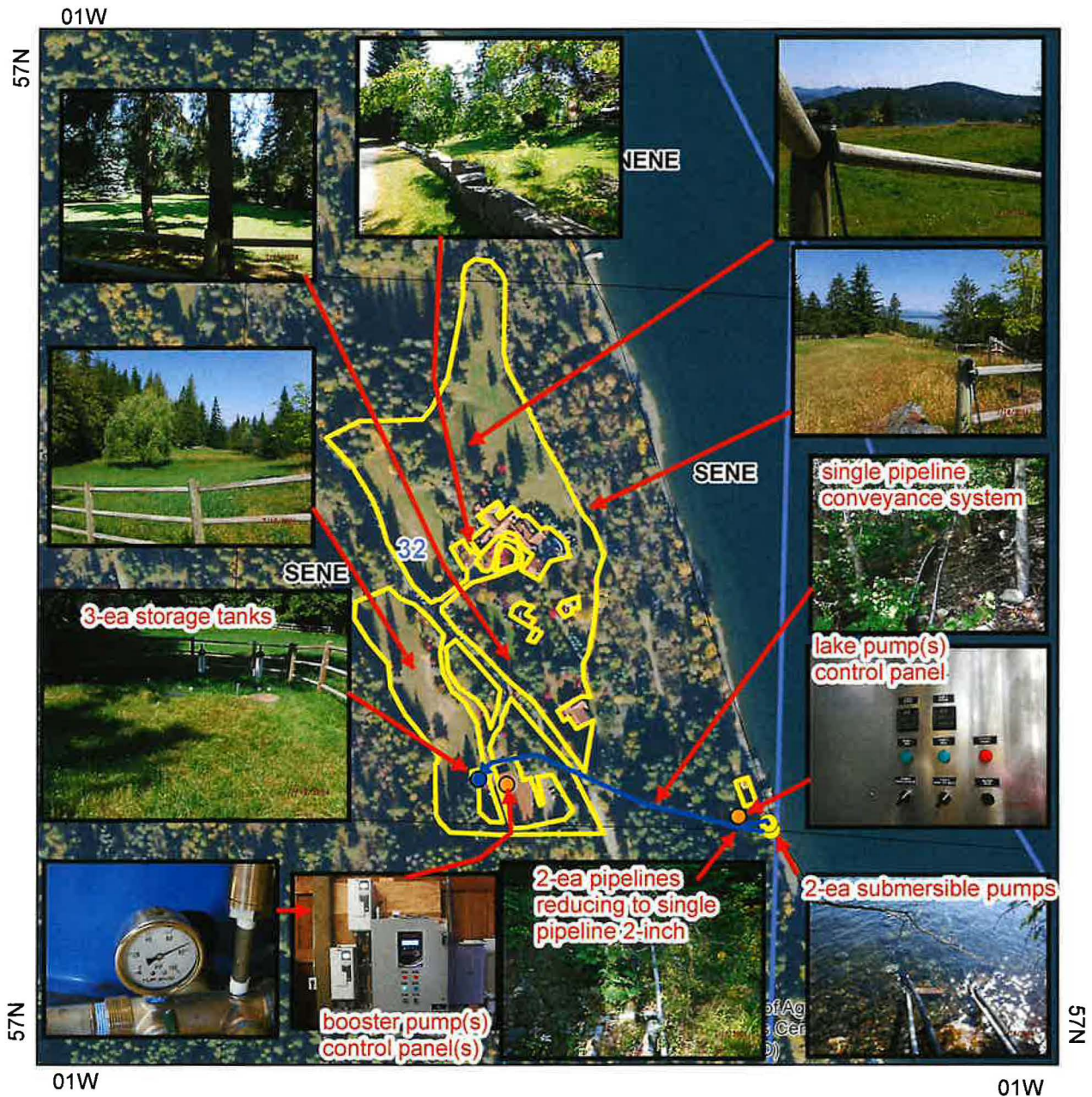
I. AUTHENTICATION Luke Bates – Sr Water Resource Agent

Field Examiner's Name *L. Bates* Date *9/24/2024*

Reviewer *Chad Burt* Date *10/23/24*

State of Idaho
Department of Water Resources
Attachment to Field Exam
96-9659

This map depicts the IRRIGATION system diagram.



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

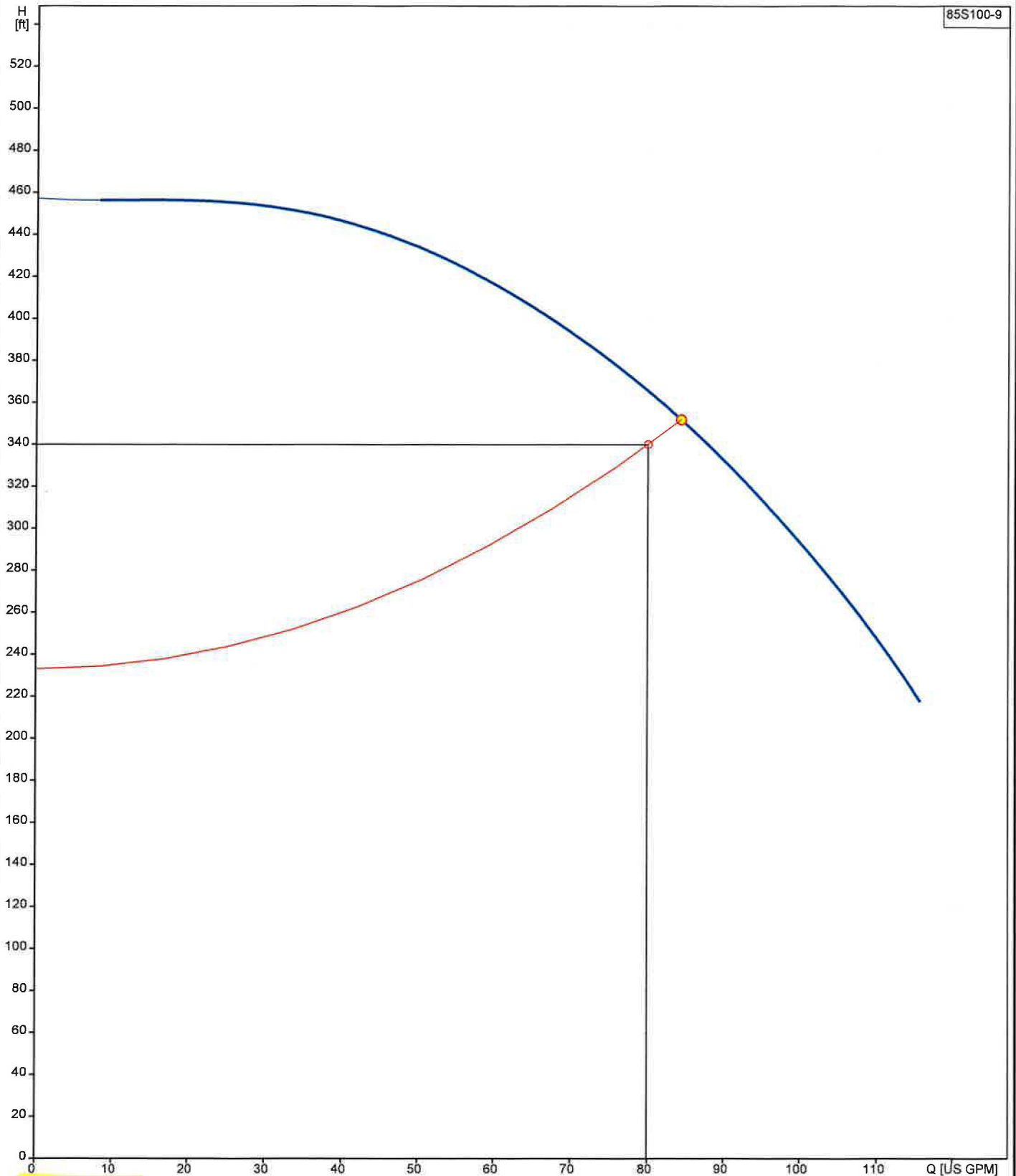
0 0.0475 0.095 0.19 Miles





Company name: Worst & Company
Created by: Scott Jessick
Phone: 208.664.2133
Email: scott.jessick@rcworst.com
Date: 31/07/2024

12B60009 85S100-9 60 Hz



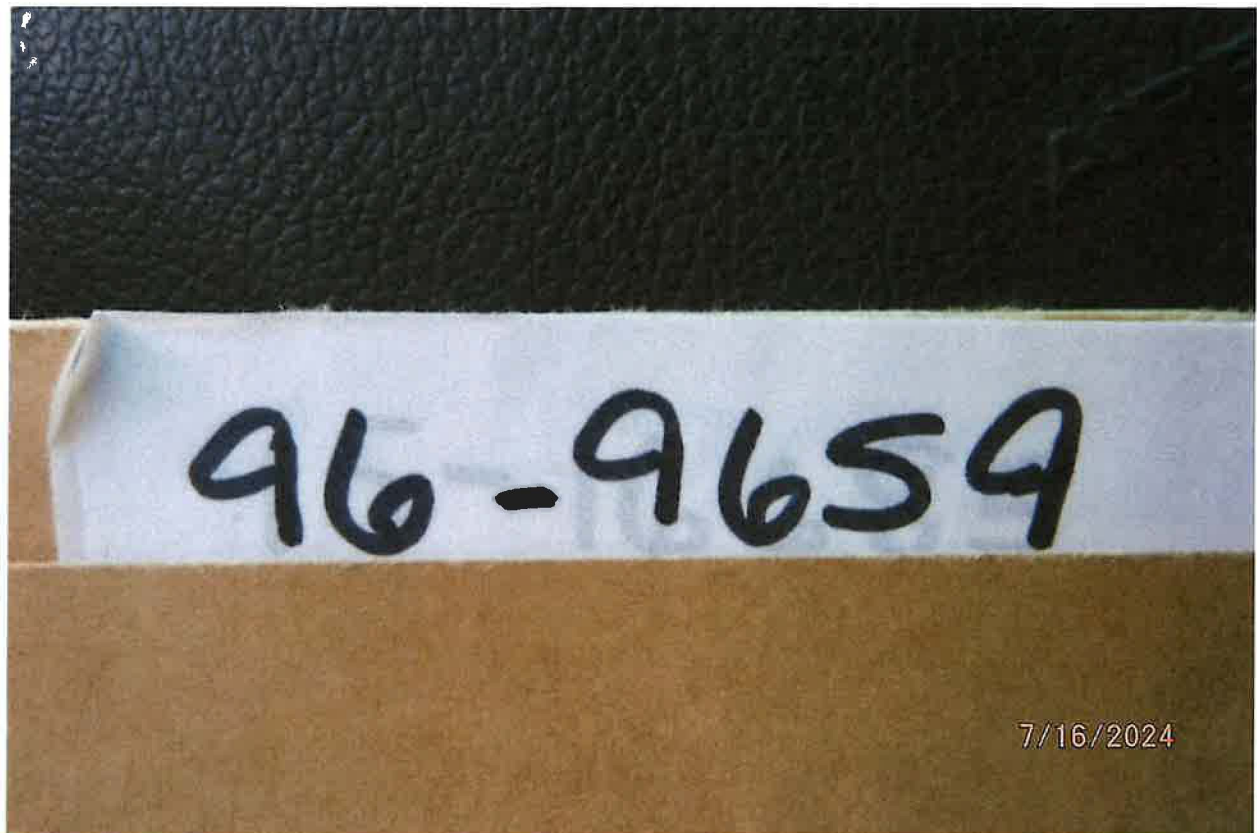
Q = 84.3 US GPM

H = 351.8 ft

Pumped liquid = Water

Liquid temperature during operation = 68 °F

Density = 62.29 lb/ft³



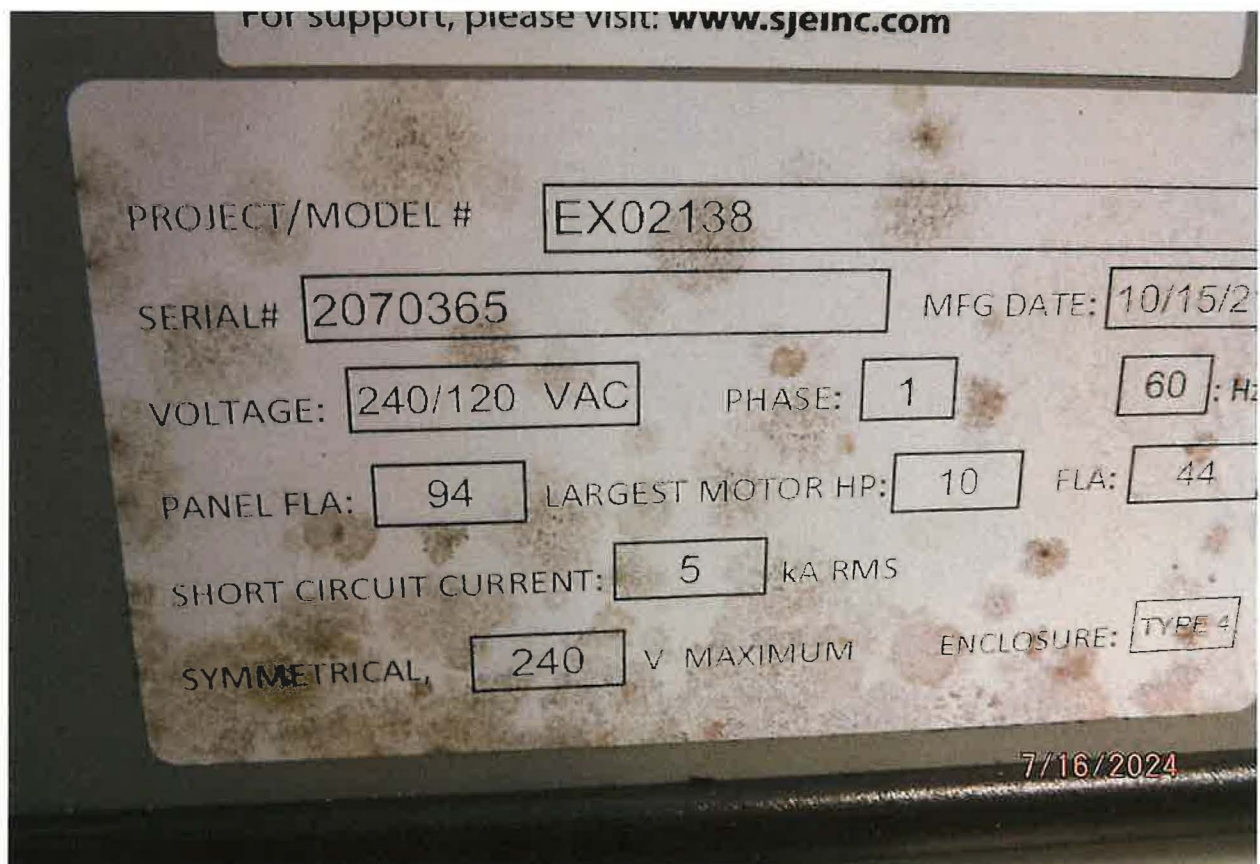
BENEFICIAL USE FIELD EXAM DATE 7/16/2024



POD – 2EA INTAKE PIPES WITH 2EA SUBMERSIBLE PUMPS IN LAKE PEND OREILLE



DIVERTING WORKS – PUMP CONTROL PANEL – LOCATED NEAR SHORE LINE ON ACCESS ROAD



POD – 2EA 10 HP FRANKLIN MODEL FEC2261128020 PUMP MOTORS ATTACHED TO GRUNDFOS MODEL 85S100-9 PUMP ENDS IN THE LAKE



CONVEYANCE SYSTEM – 2 EA POLY-PIPE INTAKE LINES SET UP TO USE PUMPS IN A LEAD-LAG NORMAL OPERATION CONVERGING TO A SINGLE PIPELINE ROUTED UP-GRADE TO STORAGE TANKS PRIOR TO IRRIGATION DISTRIBUTION



TWO INTAKE PIPES NECKING DOWN TO A SINGLE POLY-PIPE LINE



CONVEYANCE PIPELINE ROUTES UP STEEP GRADE APPROXIMATELY 340-FT
ELEVATION GAIN TO STORAGE TANKS



3-EACH 1,500 GAL STORAGE TANKS WITH 7.5 HP BOOSTER PUMPS USED TO
DISTRIBUTE WATER TO IRRIGATION POU



BOOSTER PUMP(S) CONTROL PANEL LOCATED WITHIN SHOP NEARBY STORAGE TANKS



SJE RHOMBUS CONTROL PANEL WITH 75 PSI OPERATING PRESSURE OF PRESSURE TANKS SERVE AS PUMP CONTROLS FROM STORAGE TANKS (24HR IMPOUNDMENT)



2EA 7.5 HP GRUNDFOS BOOSTER PUMPS MODEL 85S750-5 TRANSFER WATER FROM STORAGE TANK FOR IRRIGATION AT THE POU





75 PSI STATIC PRESSURE ON IRRIGATION SYSTEM





IRRIGATION POU – BY ZONE PRESSURIZED IRRIGATION SYSTEM USING ASSORTED SPRINKLER(S) WITH VARYING NOZZLE SIZES



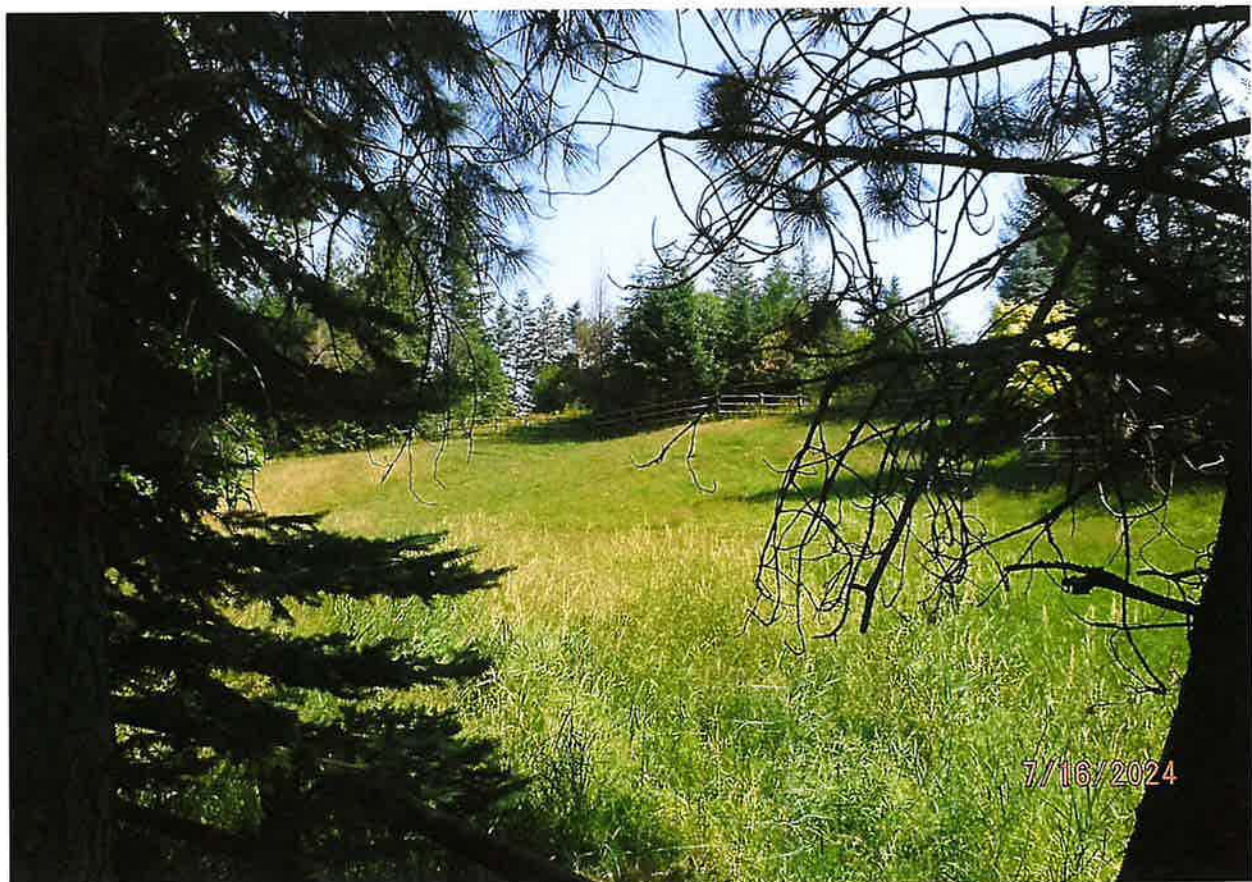


IRRIGATION POU





IRRIGATION POU



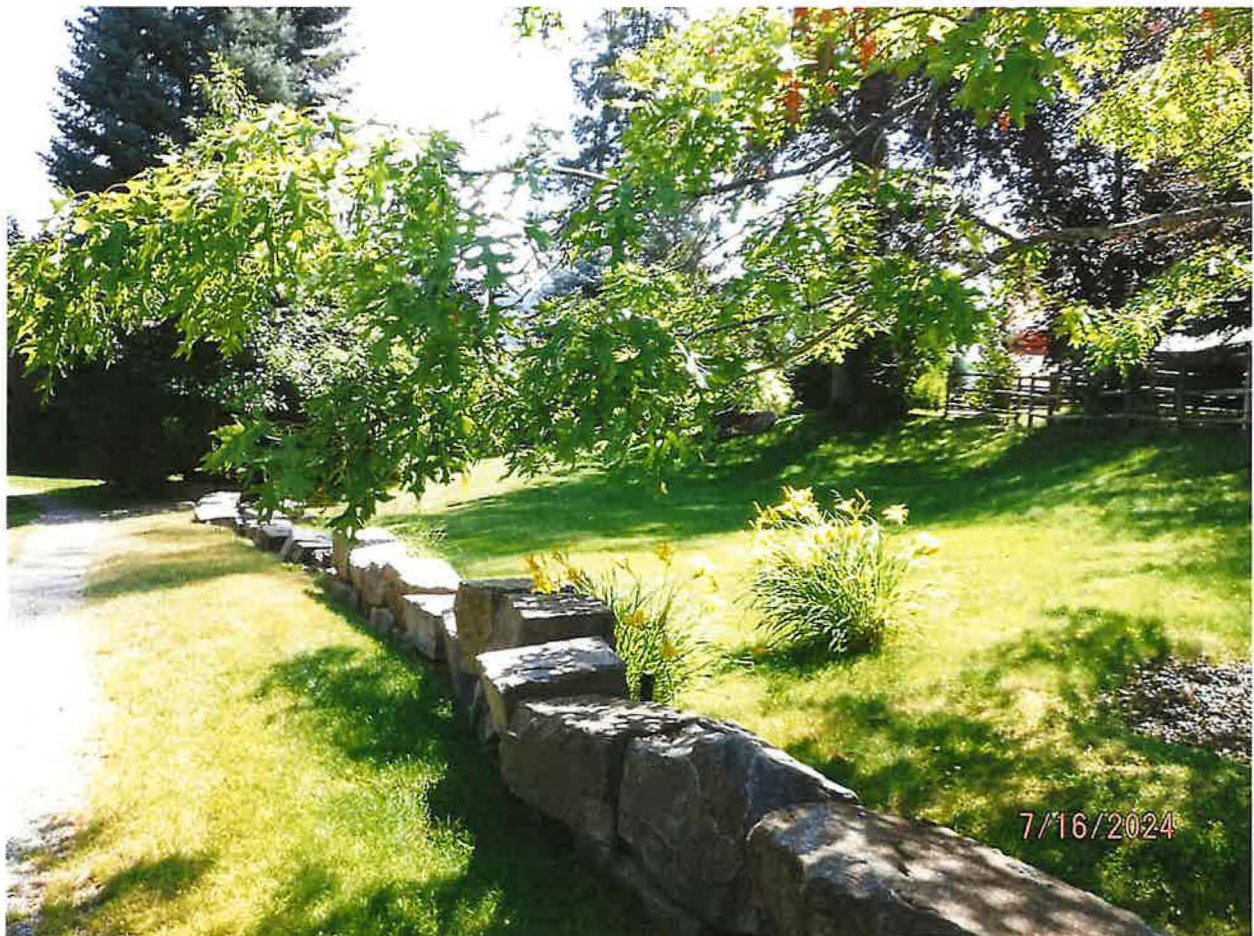


IRRIGATION POU – OPEN FIELDS NORTH OF RESIDENCE





IRRIGATION POU





IRRIGATION POU – HUNTER SPRINKLERS & SOAKER HOSES ZONE WATERING
AROUND STRUCTURES THROUGHOUT POU





IRRIGATION POU

