

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 97-7579
Exam Date: 07/01/2021

1. Current Owner:
LOEL FENWICK 100 WATERBIRD LNDG COOLIN ID 83821-9796
2. Accompanied by: Loel Fenwick
Phone No: 208-610-2589
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: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
97-7580	GROUNDWATER	Domestic, Domestic storage, Domestic from Storage, Irrigation, Irrigation storage, Irrigation from Storage	PERMIT, active status

Comments: Permit 97-7580 uses Groundwater from the same source and POD(s) as this permit for Cougar Creek Water Users Association. The water system infrastructure for both 97-7580 and this permit are the same common system, to include the storage reservoir.

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER NE¼ SE¼, Sec. 27, Twp 60N, Rge 04W, B.M. BONNER County [WELL # 2]
GROUND WATER L4 (SE¼ NE¼), Sec. 27, Twp 60N, Rge 04W, B.M. BONNER County [WELL # 1]

Method of Determination: GPS. PODs are two wells located at -116° 49.934, 48° 31.346 (97-93-N-31-000, WELL # 2) and -116° 49.7503, 48° 31.3185 (D0028727, WELL # 1).

PLACE OF USE: IRRIGATION and IRRIGATION FROM STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
60N	04W	27		3.0 L1	1.0	3.0													7.0

Total Acres: 7.0

PLACE OF USE: IRRIGATION STORAGE and DOMESTIC STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
60N	04W	23												X L4					

PLACE OF USE: DOMESTIC and DOMESTIC FROM STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
60N	04W	27		X L1		X L4													

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.

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

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
97-93-N-31-000		3			
D0028727		7/7.5			

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
WELL #1 – FLOWMETER		KENT	170			
WELL #2 – FLOWMETER		RECORDALL				

2. Measurements: Flow measurements were taken from the main service line of each well by flowmeters installed. Each well was turned on and allowed to operate for 5 minutes to stabilize before timing the instantaneous flow in 1 minute's time. Each flow meter was observed over multiple 1 minute periods to ensure the gallons per minute had stabilized. Well # 1 with 3 HP pump had a pumping capacity of 35 gpm, and well #2 with 7/7.5 HP pump had a pumping capacity of 50 gpm. The total flow rate measured equals 85 gpm, or 0.19 cfs considering department rounding standards.

E. FLOW CALCULATIONS

Measured Method: Flow meters installed in each well

- Well # 1 (97-93-N-31-000) Kent flowmeter = 35 gpm
- Well # 2 (D0028727) Recordall flowmeter = 50 gpm
- Total flow measurement = 85 gpm = 0.19 cfs

F. VOLUME CALCULATIONS**1. Volume Calculations for irrigation:**

$$V_{I.R} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 7.0 \text{ acres} \times 3.0 \text{ afa} = 21.0 \text{ af}$$

$$V_{D.R} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.13 \text{ cfs} \times 214 \text{ days} \times 1.9835 = 55.2$$

$$V = \text{Smaller of } V_{I.R} \text{ and } V_{D.R} = \mathbf{21.0 \text{ af}}$$

2. Volume Calculations for Other Uses:

$$\text{Domestic Storage \& from Storage use volume} = \mathbf{2.0 \text{ af}}$$

$$\text{Domestic \& Domestic from Storage combined use volume} = 4 \text{ homes} \times 0.6 \text{ af} = \mathbf{2.4 \text{ af}}$$

$$\text{Irrigation Storage \& from Storage use volume} = \mathbf{14.0 \text{ af}}$$

$$\text{Irrigation \& Irrigation from Storage combined use volume} = 7.0 \text{ acres} \times 3.0 \text{ afa} = \mathbf{21.0 \text{ af}}$$

$$\text{Maximum diversion volume} = 2.4 \text{ af domestic} + 21.0 \text{ af irrigation} = \mathbf{23.4 \text{ af}}$$

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 7/1/2021 with the applicant, Loel Fenwick, showed two groundwater wells serving the applicant's water system. The permit was approved for 3ea PODs, but one POD in the NE¼ SE¼, Sec 27, Twp 60N, Rge 04W was not developed and removed during licensing review. The applicant has developed two groundwater PODs, Well #1 (97-93-N-31-000) and & Well #2 (D0028727). The two wells provide water to the applicant and too Cougar Creek Water Users Assn (permit 97-7580) via common water system infrastructure. During the exam, each well was operated independently, with flowmeters installed at each well providing flow measurements. Each well was turned on and allowed to operate for stabilization before timing the instantaneous flow in 1 minute's time. Each flowmeter was observed over multiple 1 minute periods to ensure accuracy in derived gallons per minute flow rates. Well # 1 with 3 HP pump has a pumping capacity of 35 gpm, and well #2 with 7/7.5 HP pump has a pumping capacity of 50 gpm. The total flow rate measured equals 85 gpm, or 0.19 cfs considering department rounding standards.

The permit approved maximum diversion rate equals 0.13 cfs; the 0.19 cfs diversion rate observed during the field exam demonstrates an excess of 0.06 cfs rate of diversion, but is not a concern for enlargement of the permit. The excess in flow is covered under permit 97-7850, which was permit approved on 4/14/2021 with a maximum diversion rate of 0.20 cfs. As such, the maximum diversion rate for this permit recommended for licensing purposes is limited to the permit approved rate equal to **0.13 cfs**. The irrigation beneficial use diversion rate shall remain at **0.13 cfs** for licensing, as permit approved, despite the department standard diversion rate for 7.0 acres of irrigation equaling 0.14 cfs. The domestic beneficial use diversion rate shall remain at **0.09 cfs** for licensing, as permit approved, despite the department standard diversion rate for 4 households equaling 0.10 cfs. The diversion to storage component of the permit is recommended as **0.13 cfs** for licensing purposes, limited by the permit approved same value.

Permit 97-7579 pumps water from the two wells along a common pipeline east of the applicant's property to a 120,000 gallon storage reservoir, in a loop system providing service back down-hill to the POU(s) for use. The system is set up to allow direct flow from the well(s) to beneficial uses, as well as receiving water from the storage reservoir for use(s). As such, this permit is recommended to retain both direct flow domestic & irrigation beneficial uses as well as the storage/from storage components for each. A site visit of the storage reservoir was completed during the field exam, and a GPS point was taken of the concrete reservoir, which correlates with Arcmap aerial imagery that shows the storage reservoir location.

The domestic POU was toured with Mr. Fenwick during the field exam, and consists of 2 main homes with connecting glassed in breeze way, an apartment located within a sea-plane hangar, and a cabin. These four households were identified on field maps, and during licensing review Arcmap aerial imagery was used to trace out the domestic & domestic from storage POU. The two main homes are not easily identifiable from aerial imagery, due to dense tree canopy in the POU. The diversion volume associated with the domestic direct flow beneficial use equals 4 households x 0.6 af per home = **2.4 af**, which is recommended for the annual volume for licensing purposes. The initial application designated 2.4 af for domestic storage beneficial use, and 2.0 af for domestic from storage beneficial use. During licensing review, it is identified that storage in shall equal from storage value, and the recommended annual diversion volume for both domestic storage/from storage uses equals **2.0 af** for licensing purposes. The excluded 0.4 af for domestic storage use is captured under the domestic direct flow component of this water right.

The irrigation POU was toured with Mr. Fenwick during the field exam, and consists of a variety of sprinkler applications throughout the property. A pressurized sprinkler system operates around the 2 main households, in addition to multiple frost free hydrants with hose-to-sprinklers to irrigate green space. Mr. Fenwick asserts he has methodical cleared the understory and irrigation has been developed with the intent to increase grasses and fern type plants on the property. This process takes considerable time to come to fruition, and current irrigation practices observed show irrigation of forest ground with dense tree canopy making aerial imagery insufficient to validate. Field maps were used to sketch out the POU, which consists of the main area around the homes, and corridors of irrigation from either frost free hydrants placed at intervals & a dedicated irrigation line with irrigation riser pipes to rainbird sprinkler heads on both sides of the road moving NW from the main house.

Continuing NW along the road, frost free hydrants were observed and actuated to demonstrate active flow working toward the sea-plane hangar/apartment located in the NW¼ NE¼ Government Lot 1. Mr. Fenwick asserts irrigation occurs along narrow bands of the parcel on either side of the road, and the system was observed in place to irrigate. Often pressurized sprinklers on riser pipes were seen on top of the road grade for irrigation purposes. At the hangar location, a pressurized sprinkler control with eight stations is set up. Irrigation occurs by soaker hoses on both sides of the hangar doors, as well as a garden located on the east side of the hangar roof in order to keep deer away from crops. Additionally, pressurized pop up sprinklers watered green space around the hanger.

From the sea plane hangar, another pressurized sprinkler system with numerous zones is set up to continue irrigation along each side of the road north beyond the last home on the property, a small cabin. Irrigation by hose and tripod sprinklers from hydrants, pressurized sprinklers, and irrigation riser pipes to sprinklers were observed on each side of the roadway to a point just north of the cabin. In total, the irrigation acreage that was sketched out on field maps and validated using Arcmap aerial imagery during licensing review equates to 7.0 acres. The diversion volume associated with irrigation of 7.0 acres equals 7.0 ac x 3.0 afa = **21.0 af**, which is recommended as the irrigation direct flow beneficial use annual volume for licensing purposes. The permit approved development for up to 14.0 af for irrigation storage beneficial use, and 14.0 af for irrigation from storage beneficial use. During licensing review, the recommended annual diversion volume for both irrigation storage/from storage use(s) equals **14.0 af** for licensing purposes, which is not additive. The license incorporates direct flow and from storage irrigation uses, but the combined use for irrigation is capped at 21.0 af for licensing purposes, which is detailed in licensing conditions for approval. The maximum diversion volume recommended for licensing purposes equals 2.4 af (domestic uses) + 21.0 af (irrigation uses) = **23.4 af**.

Condition 046 was removed from the permit during licensing review. Condition F06 was updated to reflect 2 shared PODs between rights 97-7579 & 97-7580. Condition WB7 was added to accurately describe domestic and irrigation combined use limitations for all respective components on the face of the license. Condition 220 was added in order to describe the storage reservoir capacity. Condition 259 was updated designating the total storage and from storage volume for all domestic and irrigation beneficial uses. All other conditions on the permit shall be carried forward to licensing. There are no overlap concerns for this water right. A government lot designator was added identifying the beneficial use of water for multiple components occurring in the NW¼NE¼ Government Lot 1; no amendment to permit is recommended for inclusion of the government lot for licensing purposes.

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	0.13 CFS	21.0 AF
IRRIGATION STORAGE	01/01 to 12/31		14.0 AF
IRRIGATION FROM STORAGE	04/01 to 10/31		14.0 AF
DOMESTIC	01/01 to 12/31	0.09 CFS	2.4 AF
DOMESTIC STORAGE	01/01 to 12/31		2.0 AF
DOMESTIC FROM STORAGE	01/01 to 12/31		2.0 AF
DIVERSION TO STORAGE	01/01 to 10/31	0.13 CFS	

Totals: 0.13 CFS 23.4 AF

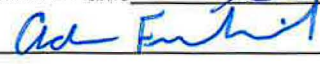
2. Recommended Amendments

☐ 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 8/13/2021

Reviewer  Date 8/13/2021

State of Idaho
Department of Water Resources
Attachment to Field Exam
97-7579

IRRIGATION STORAGE and DOMESTIC STORAGE system diagram.



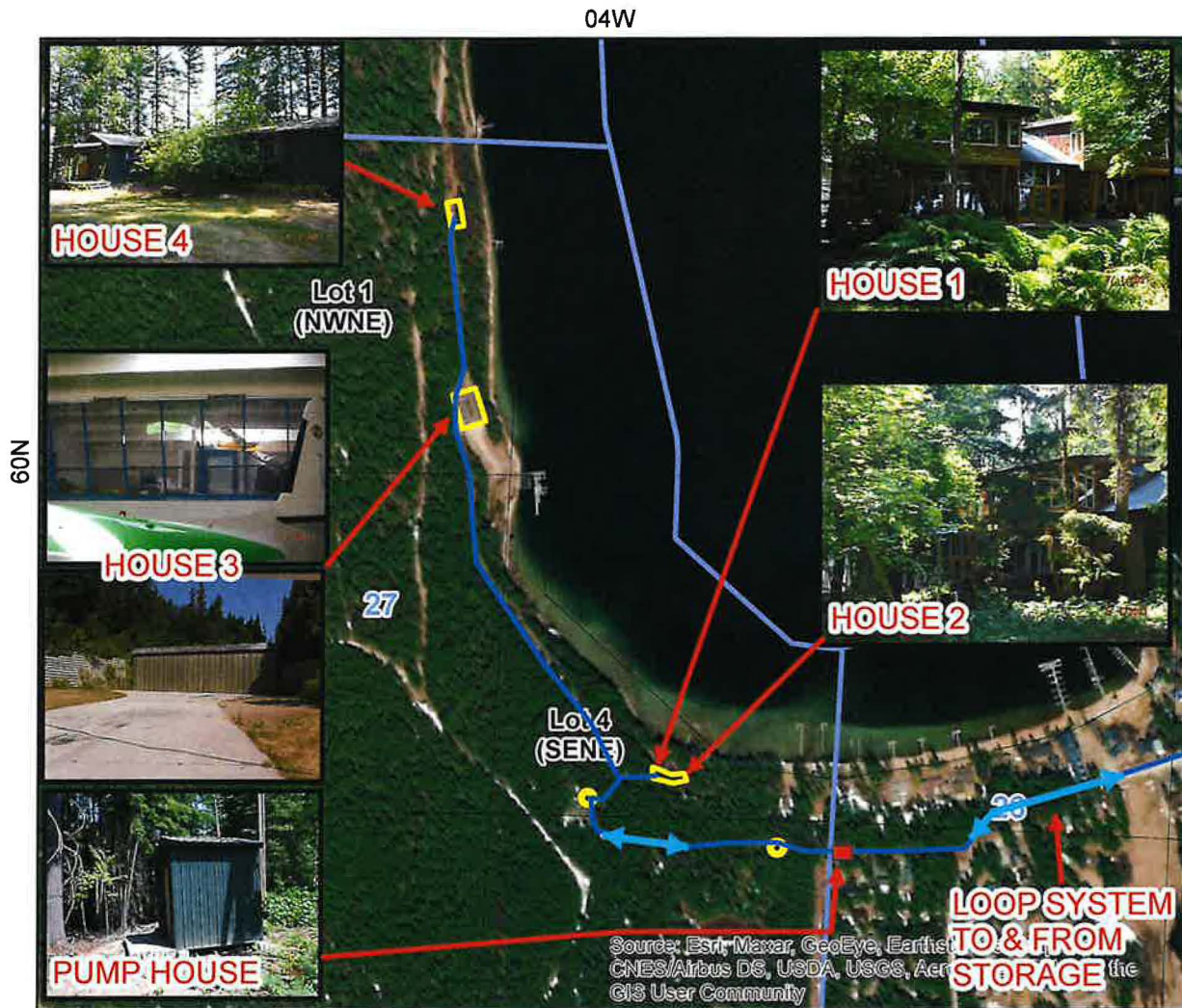
-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters

0 0.1 0.2 0.4 Miles



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DOMESTIC and DOMESTIC FROM STORAGE system diagram.



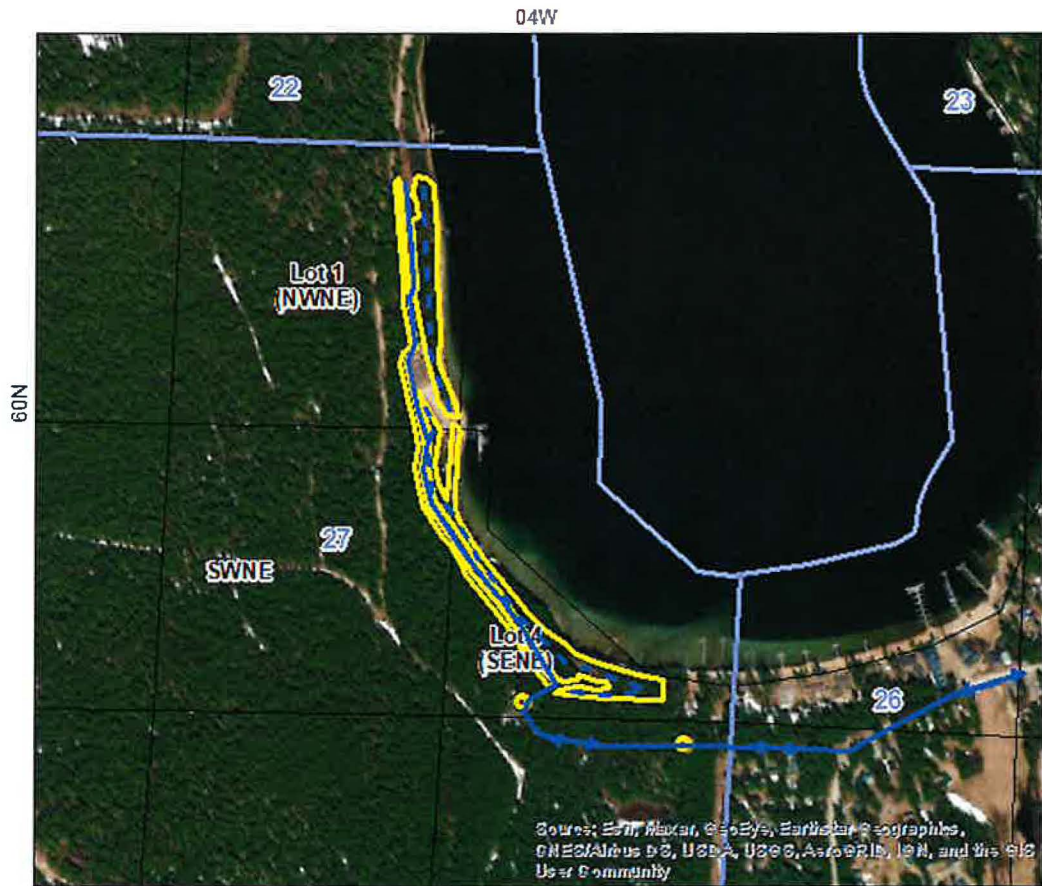
-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters

0 0.075 0.15 0.3 Miles



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IRRIGATION and IRRIGATION FROM STORAGE system diagram.

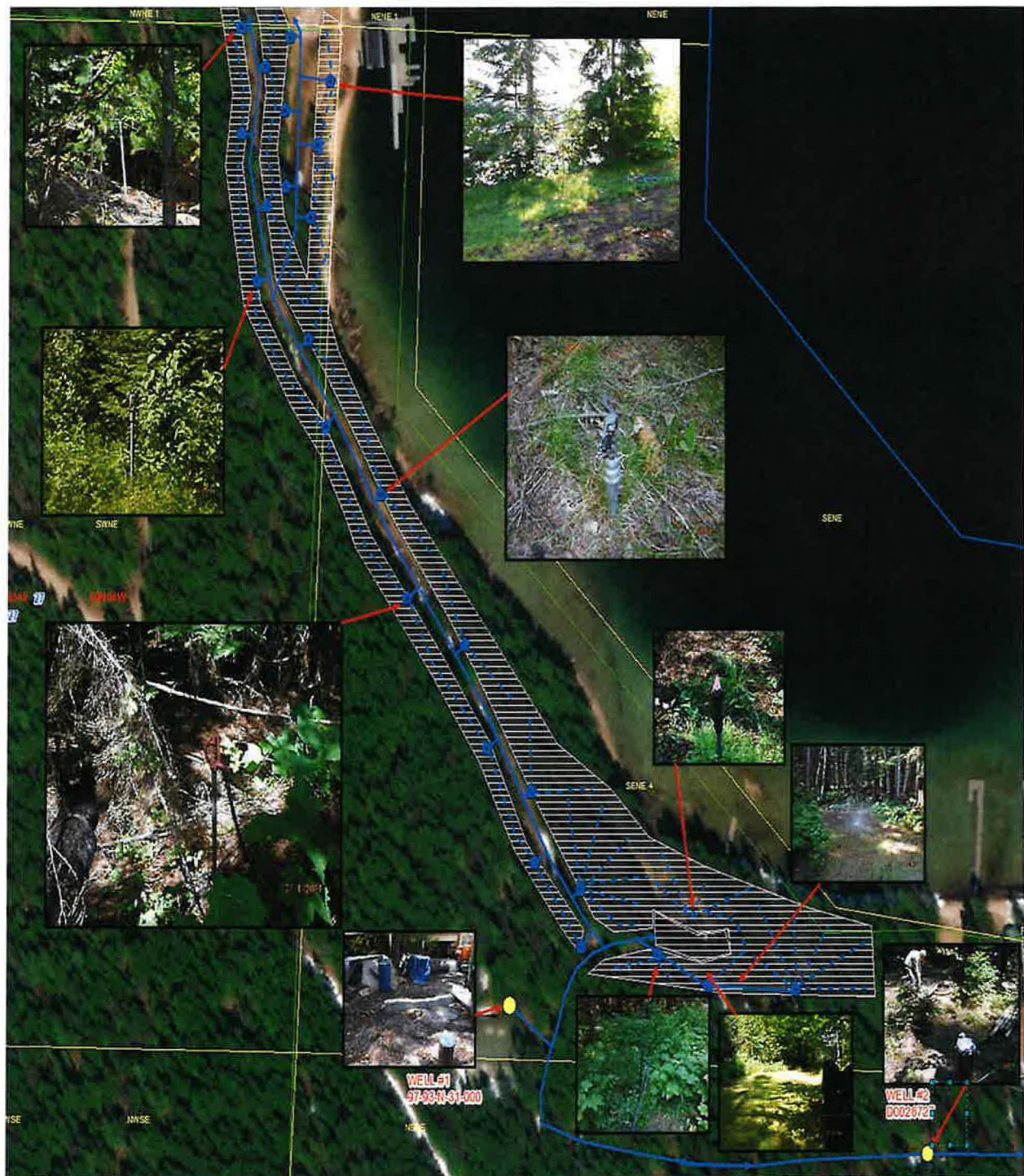


-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters

0 0.075 0.15 0.3 Miles



OVERVIEW MAP



TWP 60N, RGE 04W, SEC 27

IRRIGATION/IRRIGATION FROM STORAGE SYSTEM DIAGRAM - 3.0 ACRES (SENE4) & 1.0 ACRES (SWNE)

WATER SYSTEM INCORPORATES:

- PRESSURIZED SPRINKLERS AROUND STRUCTURES
- FROST FREE HYDRANTS AT INTERVALS WITH HOSE TO SPRINKLER USE ALONG ROAD CORRIDOR
- IN GROUND SPRINKLER RISERS TO RAINBIRD IMPACT SPRINKLER HEADS
- IN GROUND SPRINKLER RISERS TO RAINBIRD 360 DEGREE SPRINKLERS
- IN GROUND SPRINKLER RISERS TO HOSE AND TRYPD SPRINKLERS

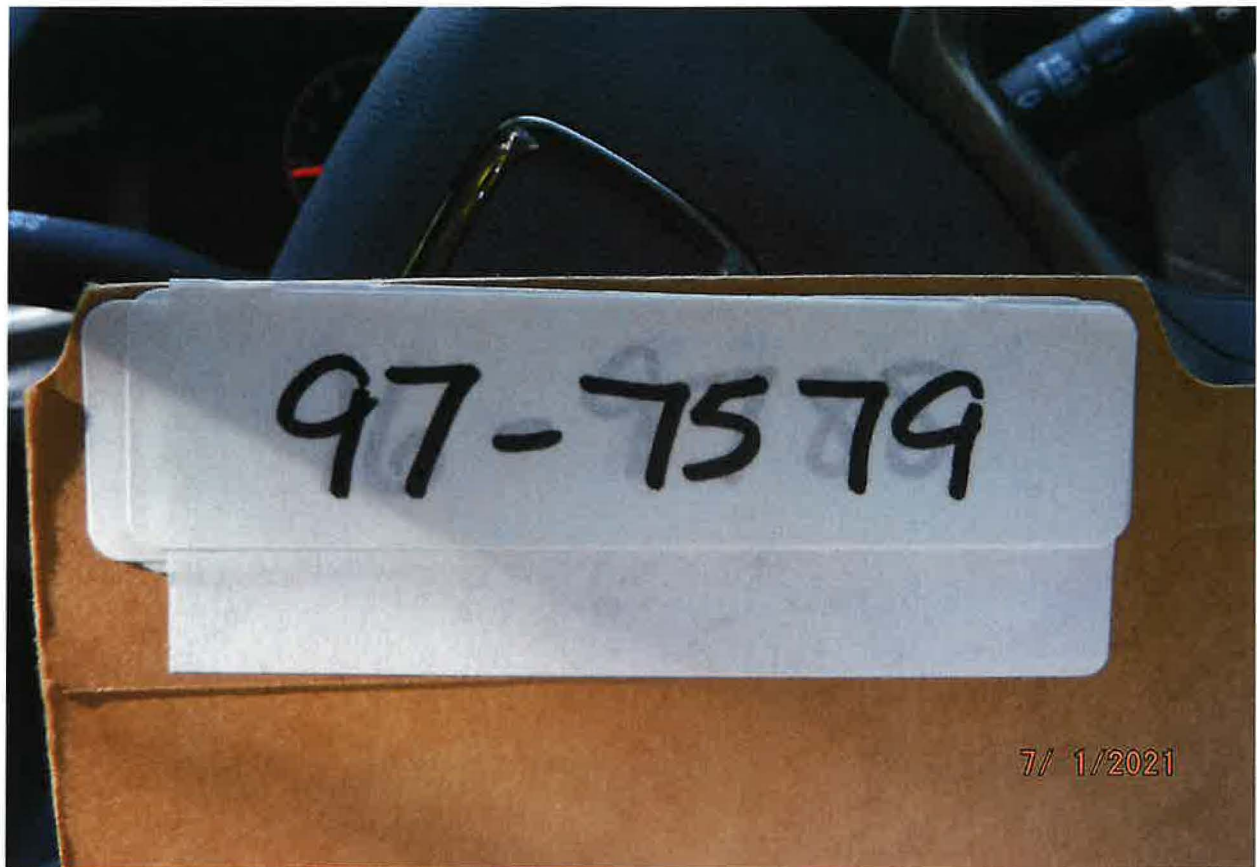


TWP 60N, RGE 04W, SEC 27

IRRIGATION/IRRIGATION FROM STORAGE SYSTEM DIAGRAM - 3.0 ACRES (NWNE4)

WATER SYSTEM INCORPORATES:

- PRESSURIZED SPRINKLERS AROUND STRUCTURES (2EA MULTI-ZONE CONTROL STATIONS)
- FROST FREE HYDRANTS AT INTERVALS WITH HOSE TO SPRINKLER USE ALONG ROAD CORRIDOR
- IN GROUND SPRINKLER RISERS TO RAINBIRD IMPACT SPRINKLER HEADS
- IN GROUND SPRINKLER RISERS TO RAINBIRD 360 DEGREE SPRINKLERS
- IN GROUND SPRINKLER RISERS TO HOSE AND TRYPOD SPRINKLERS
- DEVELOPED PLANTER BOX GARDEN LOCATED ON ROOF OF SEA PLANE HANGER (SOAKER HOSE WATERING SYSTEM)



FIELD EXAM DATE 7/1/2021



POD – WELL No.1 – PERMIT No. 97-93-N-31-000



DEQ TAG FOR WELL No.1 – E0005776



VAULTED DIVERSION WORKS FOR WELL No.1



3 HP PUMP INSTALLED IN WELL 97-93-N-31-000



KENT FLOWMETER INSTALLED ON MAIN LINE FROM WELL No.1

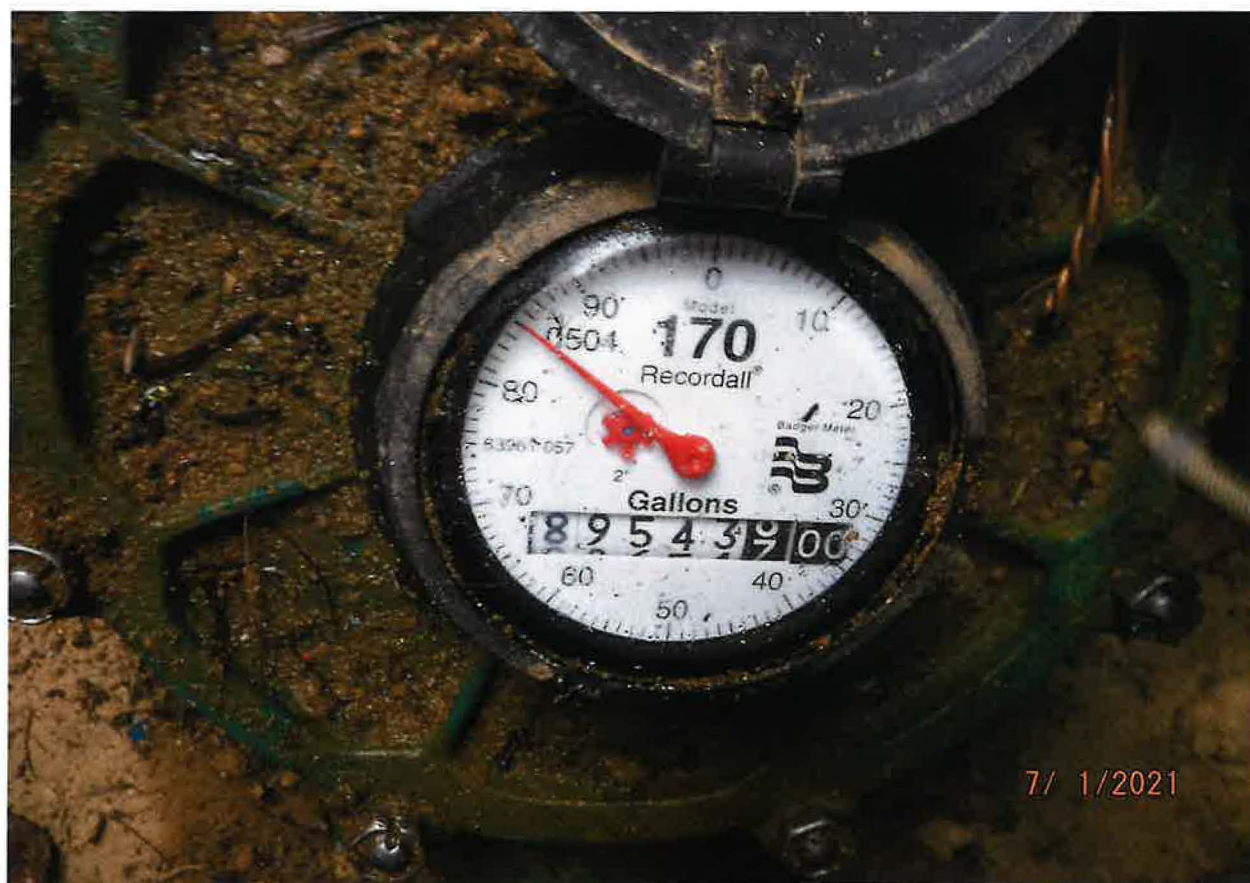


POD – WELL No.2 – D-TAG D0028727





VAULTED DIVERSION WORKS FOR WELL No.2



RECORDALL FLOWMETER INSTALLED ON MAIN LINE FROM WELL No.2



PUMP CONTROL HOUSE FOR WELL No.2



7/7.5 HP, 3 PHASE PUMP INSTALLED IN WELL No.2 D0028727



DOMESTIC & IRRIGATION STORAGE POU – 120,000 GALLON RESERVOIR





DOMESTIC/DOMESTIC FROM STORAGE POU – 1 of 4 HOUSES



DOMESTIC/DOMESTIC FROM STORAGE POU – 2 of 4 HOUSES



DOMESTIC/DOMESTIC FROM STORAGE POU – 3 of 4 RESIDENCE SEA-PLANE HANGER WITH APARTMENT





DOMESTIC/DOMESTIC FROM STORAGE POU – 4 of 4 CABIN





IRRIGATION/IRRIGATION FROM STORAGE POU





IRRIGATION/IRRIGATION FROM STORAGE POU – EXAMPLE RAINBIRD SPRINKLERS USED IN SYSTEM





IRRIGATION/IRRIGATION FROM STORAGE POU





IRRIGATION/IRRIGATION FROM STORAGE POU





IRRIGATION/IRRIGATION FROM STORAGE POU





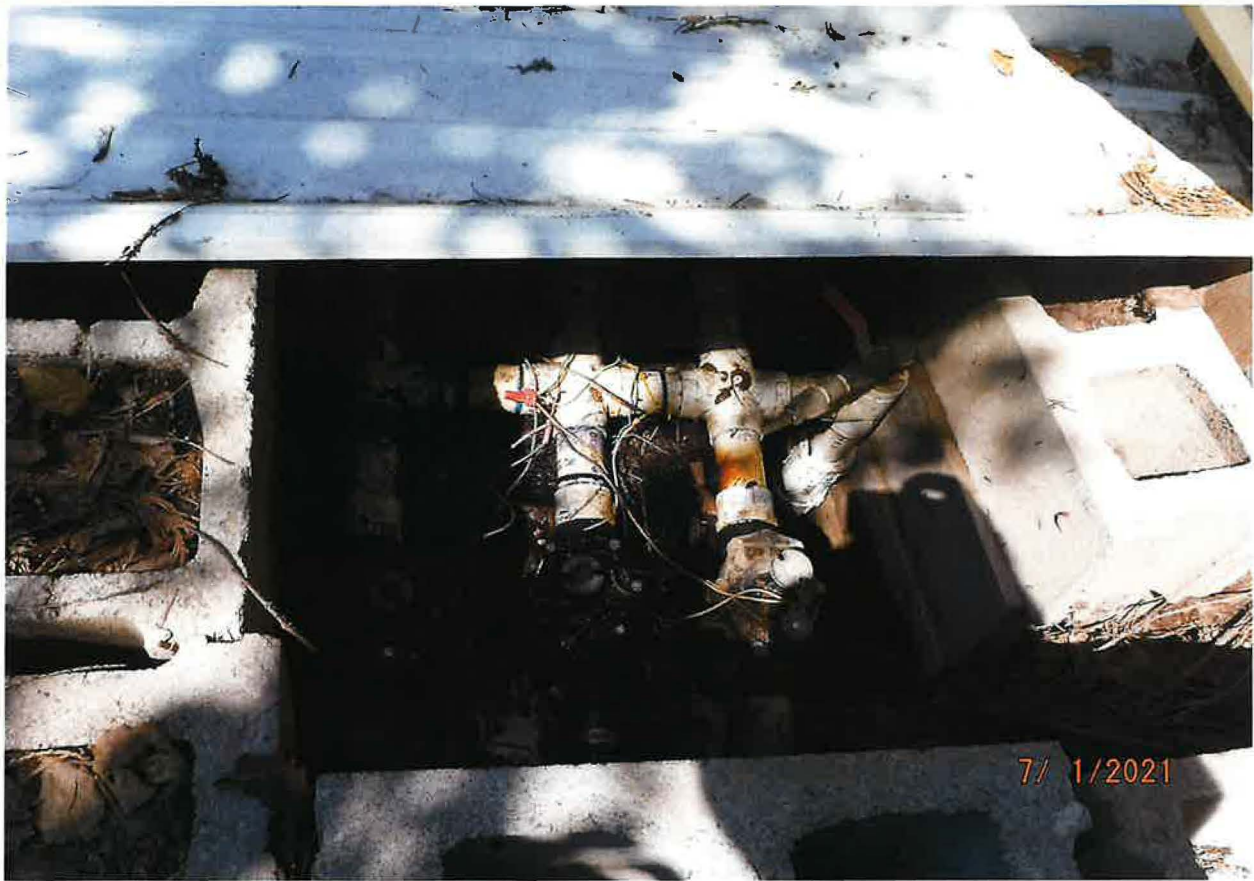
IRRIGATION/IRRIGATION FROM STORAGE POU



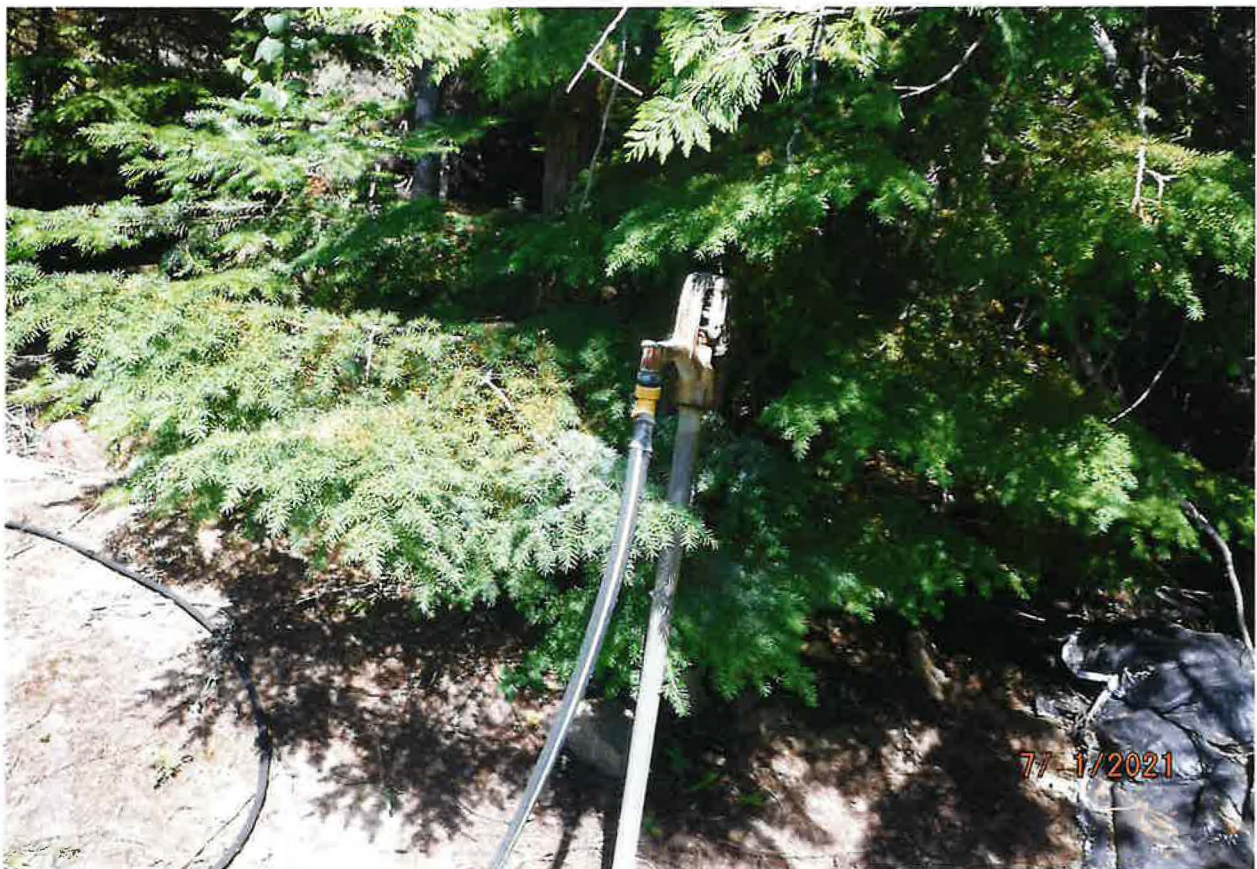


IRRIGATION/IRRIGATION FROM STORAGE POU





PRESSURIZED SPRINKLER CONTROLS – LOCATED NORTH OF SEAPLANE HANGER

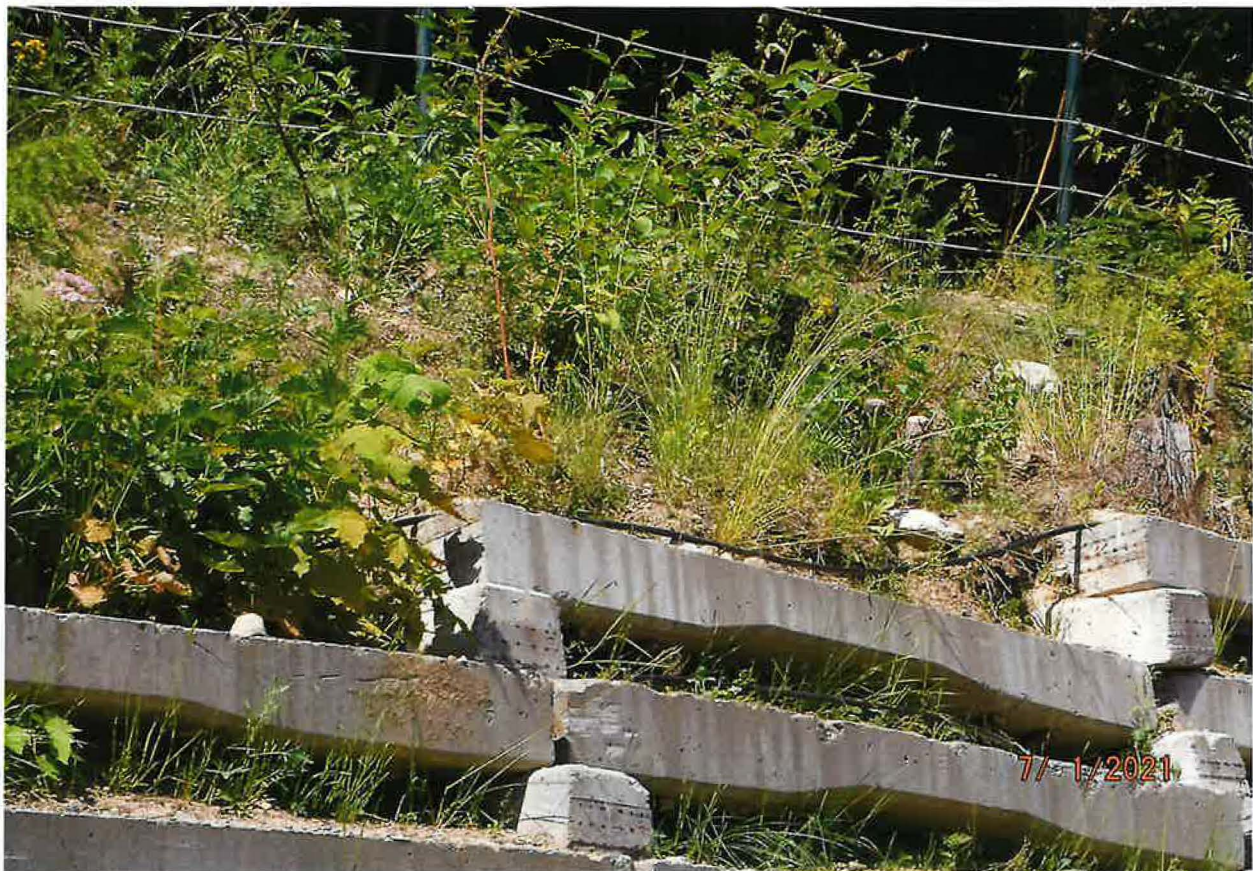


FROSTFREE HYDRANTS INSTALLED AT 100 FT INTERVALS ALONG ROADWAY



RAINBIRD SPRINKLERS INSTALLED AT INTERVALS ON BOTH SIDES OF ROADWAY TO IRRIGATE





SOAKER HOSES INSTALLED EVERY OTHER ROW OF BARRIER ALONGSIDE HANGER





IRRIGATION OCCURING ON ROOF OF HANGER BY SOAKER HOSE



8 STATION PRESSURIZED SPRINKLER CONTROLS LOCATED SOUTH OF HANGER



IRRIGATION/IRRIGATION FROM STORAGE POU

