

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-11042
Exam Date: 07/07/2015

1. Current Owner:
DON L BUTLER PO BOX 2889 POST FALLS ID 83877
2. Accompanied by: Don L Butler
Phone No: 208-687-3970
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: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
95-13464	Groundwater	Domestic, Stockwater	Decreed

Comments: Decreed right 95-13464 is owned by the same applicant as this permit, who filed a beneficial use claim during the CSRBA process. The ½ acre of irrigation occurring under domestic beneficial use for 95-13464 is part of the same irrigation POU as 95-11042, creating minor overlap between the two rights. Condition X35 was added during licensing review for 95-11042 to describe combined use limitations between the two rights for both diversion rate and irrigation acreage.

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

Water Right No.	Source	Purpose of Use	Basis
95-13464	Groundwater	Domestic, Stockwater	Decreed

Comments: 95-13464 and this permit 95-11042 share the same groundwater POD – well D0022314. Condition F06 was added to the permit during licensing review describing the shared well use.

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

GROUND WATER NW¼ SW¼, Sec. 17, Twp 51N, Rge 04W, B.M. KOOTENAI County

Method of Determination: GPS. POD is a groundwater well D0022314 located at -116°52.198, 47°45.936.

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	
51N	04W	17										9.0							9.0

Total Acres: 9.0

Method of Determination: Field examination(s) 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
D0022314	FRANKLIN ELECTRIC	5			

D. FLOW MEASUREMENTS

1.

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

2. Measurements: I was unable to perform flow measurements due to main service pipe from well routing directly to a concrete vault where a pressure tank was installed, along with a booster pump, both of which influence flow. A Theoretic Pump Equation was developed to derive diversion rate equal to 39.2 GPM or 0.09 cfs considering department rounding standards. The 5 hp pump operating at 50 PSI is installed at approximately 288 ft.

E. FLOW CALCULATIONS☒ X Additional Computation Sheets Attached

Measured Method: Theoretic Pump Equation = 5 HP pump @ 287 ft, with 50 PSI operating pressure = 39.2 GPM or **0.09 cfs** considering department rounding standards.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 9.0 \text{ ac} \times 3.0 \text{ afa} = 27.0 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.09 \text{ cfs} \times 246\text{-day} \times 1.9835 = 43.9 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = \mathbf{27.0 \text{ af}}$$

2. Volume Calculations for Other Uses: N/A

G. NARRATIVE/REMARKS/COMMENTS

Department staff performed an initial field examination on 7/7/2015 with the applicant, Don Butler, which showed a groundwater well tag D0022314 being used for irrigation purposes. At time of exam the applicant was irrigating a hay field south of the main residence with a Kifco retractable Water Reel. Department staff took photographs of the well, diverting works, and a few pictures of the water reel in use, but did not capture sufficient data about the well pump motor nor diversion rate required to accurately license this water right.

A follow-up site visit was conducted on 3/7/2022 with Mr. Butler, and while the applicant's water system was not active at time of exam, additional data was collected pertaining to well pump HP, water reel nozzle size & pumping capacity, and photographs of the rest of the irrigation POU and irrigation system. I have utilized a blend of information from the initial field exam & follow-up site visit when making recommendations for licensing purposes. The applicant had a self-imposed short development period for the permit, from 2/10/2010 – 3/3/2010; at face value this indicates the irrigation practices were already in place when the permit was filed for by the applicant. Year 2011 aerial imagery was used to validate irrigate practices toward acreage recommendations.

At the GW well, the applicant has 5 HP Franklin pump motor installed in the well. During the site visit I was unable to perform flow measurements due to main service pipe from well routing directly to a concrete vault where a pressure tank was installed, along with a booster pump, both of which influence flow. A Theoretic Pump Equation was developed to derive diversion rate equal to 39.2 GPM or 0.09 cfs considering department rounding standards. The 5 HP pump operating at 50 PSI is installed at approximately 288 ft. Well driller report identified approx. 30 gpm at time of completion, which is relatively close to the theoretic derived rate.

The applicant's Water Reel with ½ inch nozzle has a pumping capacity of 50 gpm while operating at 50 PSI, which is slightly higher than the theoretic value derived for diversion rate. The applicant has installed a booster pump to help maintain pressurized flow at the furthest extent of the southern hay field when the big irrigation gun is in use. The water reel has the largest diversion rate of all the applicant's irrigation components, and as it is influenced by a booster pump the **0.09 cfs** theoretic derived diversion rate is recommend for licensing this water right.

The irrigation POU consists of a hay field, lawn & tree watering around the main residence, and garden areas located east of the main residence. The applicant's irrigation system incorporates several zones of pop-up pressurized sprinklers around the main home, which is served by one of three main trunk service lines from the diverting works. Mr. Butler incorporates tripod sprinklers from frost-free hydrants to irrigate dry spots throughout the summer and has a fence line PVC-sprinkler system to irrigate garden areas. A main irrigation hand-line routes south from the POD with irrigation risers set at intervals to connect the water wheel to for watering the hay fields.

The irrigation POU was traced out using field maps during the site visit, and Arcmap aerial imagery year 2011 imagery was utilized during licensing review due to the applicant's statement of completion form date being 3/3/2010. Irrigation of the applicant's parcel is clearly shown in 2011 imager & coupled with field exam photos from 2015 the POU was traced out equaling 9.0 acres. The standard diversion rate assigned by acreage equals $9.0 \text{ ac} \times 0.02 \text{ cfs per ac} = 0.18 \text{ cfs}$ considering department rounding standards, but the applicant is limited by well pumping capacity for licensing purposes. The annual volume for irrigation beneficial use equals $9.0 \text{ ac} \times 3.0 \text{ afa} = \mathbf{27.0 \text{ af}}$ which is recommended for licensing purposes.

All conditions from the permit shall be carried forward to licensing. Condition(s) 01R & 175 were added based on Rathdrum Prairie Groundwater Management Area (RPGWMA) requirements. Condition F06 was added due to the applicant having a separate decreed right claimed in the CSRBA which uses the same POD. Condition X35 was added in order to mitigate

overlap concerns as discussed below. Overlap concerns: Decreed right 95-13464 is owned by the same applicant as this permit, who filed a beneficial use claim during the CSRBA process. The ½ acre of irrigation occurring under domestic beneficial use for 95-13464 is part of the same irrigation POU as 95-11042, creating minor overlap between the two rights. Condition X35 was added during licensing review for 95-11042 to describe combined use limitations between the two rights for both diversion rate and irrigation acreage. There are no additional 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	0.09 CFS	27.0 AF

Totals: 0.09 CFS 27.0 AF

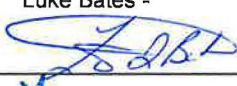
2. Recommended Amendments

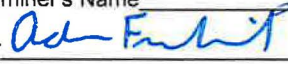
☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☒ None

I. AUTHENTICATION

Luke Bates -

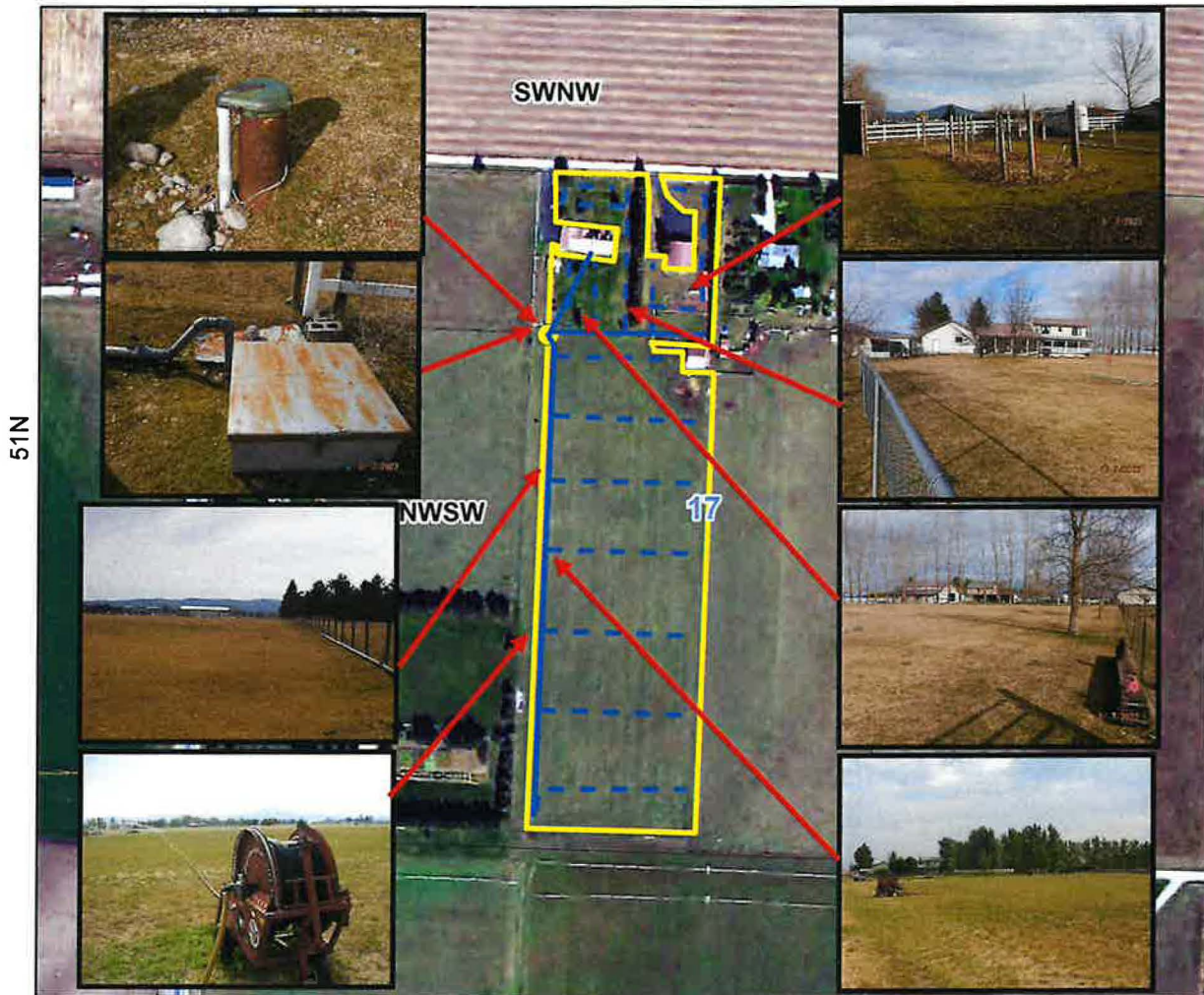
Field Examiner's Name  Date 3/8/2020

Reviewer  Date 7/21/2022

State of Idaho
Department of Water Resources
Attachment to Field Exam
95-11042

IRRIGATION system diagram.

04W



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

0 0.0425 0.085 0.17 Miles



THEORETICAL PUMPING EQUATION(S) FOR WR# 95-11042

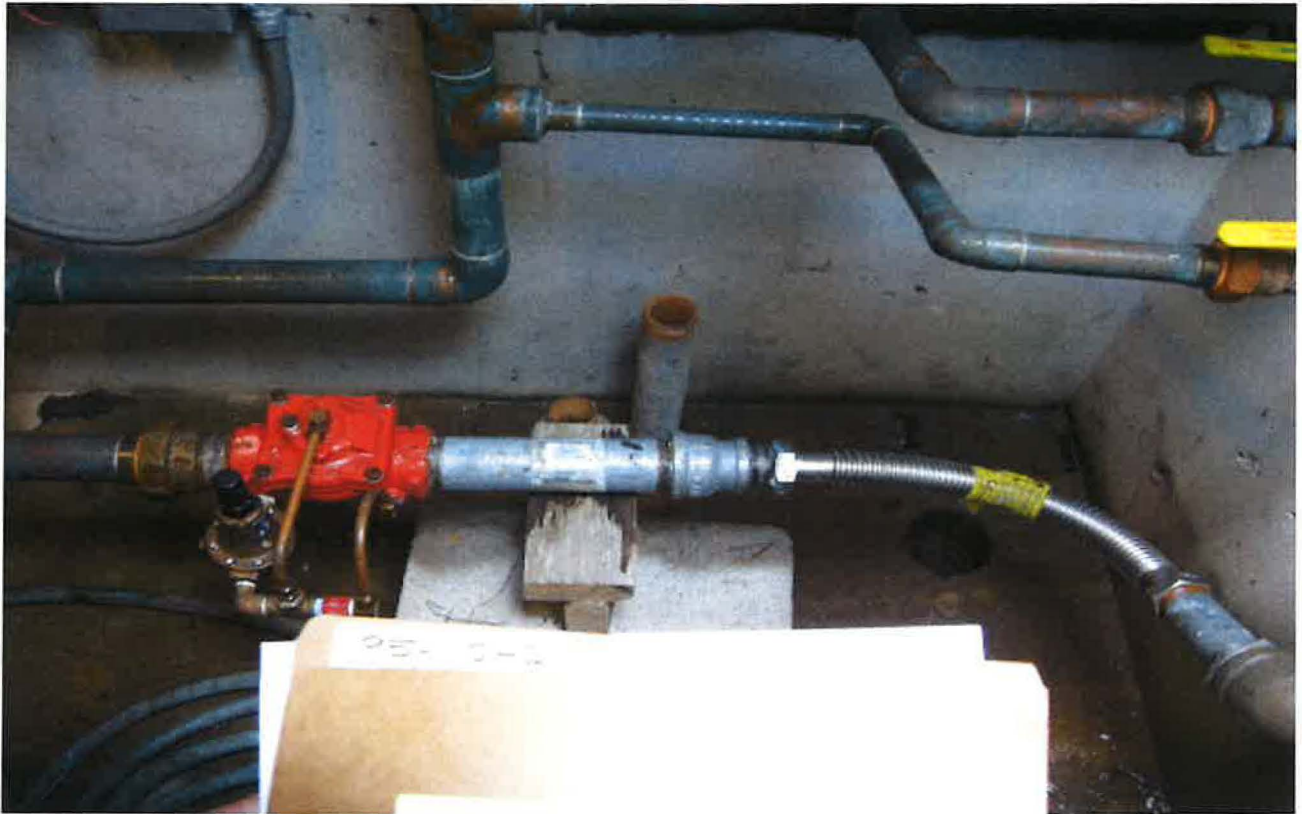
Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to lift 288 ft, and running at 45 psi.					
<u>PUMP EQUATIONS</u>					
WATER RIGHT No. 95-11042					
D0022314	HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI
Q = $HP \cdot 8.8 \cdot \text{Eff} / H$	5	403.6463	0.8	288	50
Q = 0.087 cfs 39.2 gpm					



FIELD EXAM DATE 7/7/2015



POD – GROUNDWATER WELL D0022314



DIVERTING WORKS – CONCRETE VAULT CO-LOCATED WITH WELL

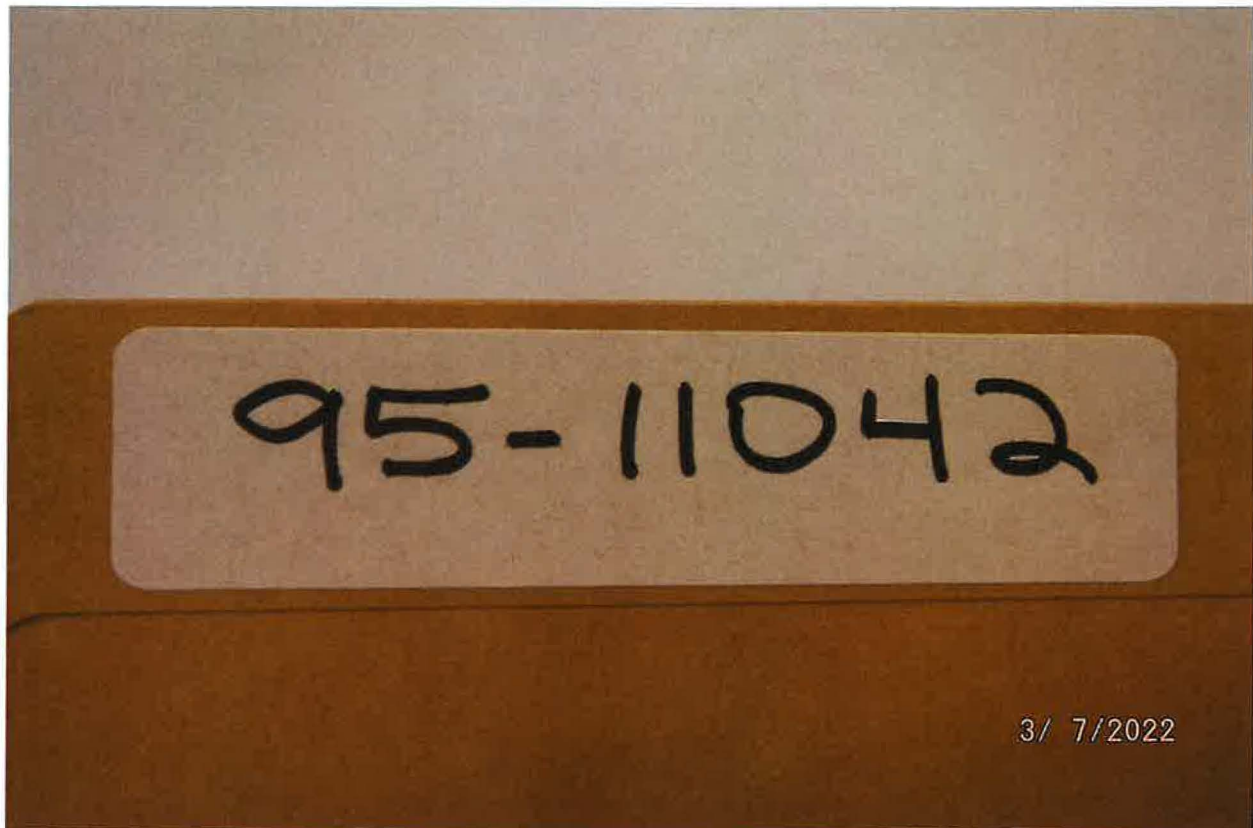


50 PSI OPERATING PRESSURE AT TIME OF EXAM



IRRIGATION POU – BIG WHEEL SPRINKLER FROM MAIN TRUNK HAND LINE AT HAY FIELD





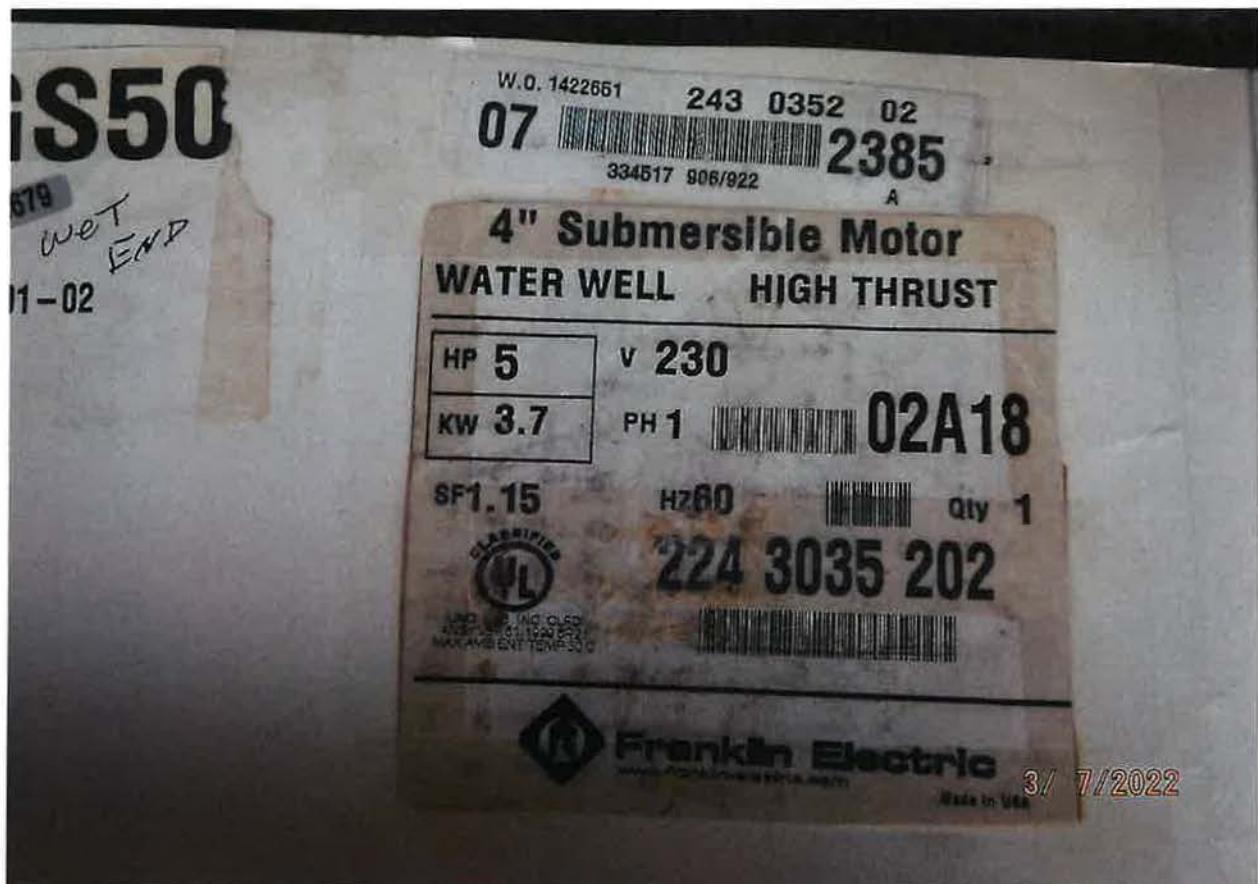
FOLLOW-UP FIELD EXAM DATE 3/7/2022

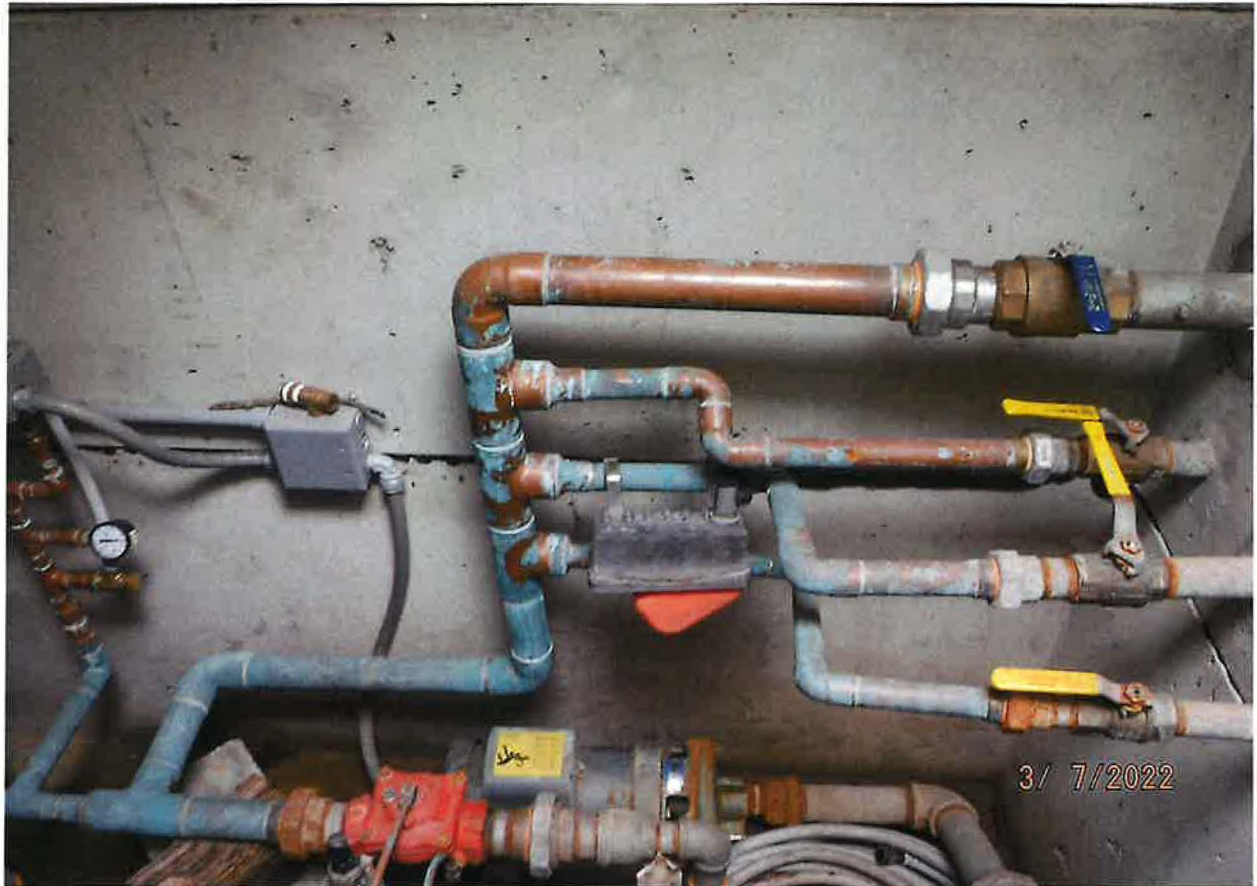


PRESSURE TANK AND WELL PUMP MOTOR CONTROL PANEL LOCATED IN VAULT



5 HP FRANKLIN PUMP MOTOR INSTALLED IN WELL





DIVERTING WORKS



BOOSTER PUMP INSTALLED FOLLOWING INITIAL FIELD EXAM TO SUPPORT BIG WHEEL IRRIGATION USE



IRRIGATION POU & "CAT" – 3 INCH MAIN TRUNK LINE WITH RISERS TO CONNECT TO BIG WHEEL COMPONENT





IRRIGATION POU – MAIN RESIDENCE LAWN SPACE – PRESSURIZED SPRINKLER SYSTEM



EXAMPLE – SPRINKLER ZONE BOX OFF YARD IRRIGATION TRUNK LINE



IRRIGATION POU – GARDEN SPACE & PORTABLE SPRINKLERS





IRRIGATION POU – GARDEN SPACE AND FENCE LINE SPRINKLERS





IRRIGATION POU – PRESSURIZED SPRINKLERS



KIFCO – WATER REEL “BIG WHEEL” IRRIGATION SYSTEM



WATER REEL WITH 1/2 INCH IRRIGATION NOZZLE INSTALLED





½ INCH WATER REEL IRRIGATION NOZZLE - PUMP PERFORMANCE OF 50 GPM @50 PSI OPERATING PRESSURE OR 55 GPM @ 60 PSI OPERATING PRESSURE

B160 PERFORMANCE GUIDE

B160 X 390' Water-Reel Performance						Depth of Application						
Nelson PDS No.	Sprinkler Performance			System Inlet PSI	**Irrigated Area Width X Length	Feet Per Hour						
	PSI	GPM	DIA			30	40	50	60	70	80	90
3/8"	60	32	150	72	105 X 443	1.0	0.7	0.6	0.5	0.4	0.4	0.3
7/16"	50	39	152	67	106 X 443	1.2	0.9	0.7	0.6	0.5	0.4	0.4
7/16"	60	43	162	80	113 X 447	1.2	0.9	0.7	0.6	0.5	0.5	0.4
1/2"	50	50	164	77	115 X 447	1.4	1.0	0.8	0.7	0.6	0.5	0.5
1/2"	60	55	180	92	126 X 453	1.4	1.1	0.8	0.7	0.5	0.5	0.5
9/16"	50	63	178	91	125 X 452	1.6	1.2	1.0	0.8	0.7	0.6	0.5
9/16"	60	69	194	108	136 X 458	1.6	1.2	1.0	0.8	0.7	0.6	0.5
5/8"	50	76	186	108	130 X 455	1.9	1.4	1.1	0.9	0.8	0.7	0.6
5/8"	55	80	198	119	139 X 459	1.9	1.4	1.1	0.9	0.8	0.7	0.6
Minimum Inlet Pres. 70 PSI		Hours for 390 Foot Run:				13.0	9.8	7.8	6.5	5.6	4.9	4.3
		Ave. Strokes Per Min:				4.6	6.2	7.7	9.2	10.8	12.3	13.8

** Area covered may vary depending on wind conditions, field dimensions, and use of unspecified sprinklers.

Specifications are subject to change without notice.

3/ 7/2022

599-0265-0