

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-17144
Exam Date: 03/22/2022

1. Current Owner:
KOOTENAI COUNTY FIRE & RESCUE 1590 E SELTICE WAY POST FALLS ID 83854-9531
2. Accompanied by: Todd English
Phone No: 208-777-8500
Address: Same as above
Relationship to permit Holder: Representative – Fire station Logistics Manager.

3. SOURCE:
GROUND WATER

Method of Determination: ArcMap & DRG.

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis
Numerous	GW	Municipal	Decreed

Comments: 17 City of Post Falls decreed water rights which use groundwater source(s) for municipal purposes overlap this rights POU. The applicant is service connected to the City of Post Falls being served water for in-station domestic use only; applicant's domestic use serves as a back-up system in the event the City's water system is compromised. Applicant's private GW well and industrial & irrigation uses are from a separate system than the City's water system negating concern for overlap between 95-17144 & the numerous City of Post Falls decreed water rights. Condition X35 is not recommended for inclusion in the licensing of this right.

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 SE¼, Sec. 6, Twp 50N, Rge 04W, B.M. KOOTENAI County

Method of Determination: GPS. POD located at -116°52.629, 47°42.407; well D-TAG D0073355.

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	
50N	04W	6													0.8				0.8

Total Acres: 0.8

PLACE OF USE: INDUSTRIAL & 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	
50N	04W	6													X				

Method of Determination: Beneficial use field examination & 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
D0073355	FRANKLIN ELECTRIC	7.5 HP (x2)	UNKOWN	UNKOWN	UNKOWN

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements: Unable to perform flow measurements due to inadequate pipe requirements. Main water line from well routed direct to pressure tanks located within the fire station prior to water system distribution.

E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method: Theoretic pump equation estimates flow as follows:

- D0061836 – 7.5 hp pump at 210 ft with 60 PSI operating pressure equals 68.1 gpm or **0.15 cfs** considering department rounding standards.
 - There are 2ea 7.5 hp pumps installed down hole in the well, but the system was developed for redundancy in the event one pump fails operation; normal operations use 1 pump and cycle lead/lag between pump cycles.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 0.8 \text{ ac} \times 3.0 \text{ afa} = 2.4 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.03 \text{ cfs} \times 246\text{-day} \times 1.9835 = 14.6 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = \mathbf{2.4 \text{ af}}$$

2. Volume Calculations for Other Uses:

- Domestic annual volume = 10 people on shift x 50 gpd x 5 day per week x 52 week per year = 130,000 gal annually / 325,850 gal per acre-foot = 0.398 af = **0.40 af** considering department rounding standards.
- Industrial annual volume = 2,500 gal per day x 5 workdays per week x 52 weeks per year = 650,000 gal per year / 325,850 gal per acre-foot = **2.0 af** considering department rounding standards.
- Maximum diversion volume = 2.4 af (irrigation) + 0.4 af (domestic) + 2.0 af (industrial) = **4.8 af**.

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 3/22/2022 with the applicant's representative, Todd English – Logistics Manager, showed a groundwater well being used for domestic, irrigation, and industrial uses. At the POD, GW well D0073355 routes a buried main service line to an indoor pump room where it fills 5ea pressure tanks prior to distribution to water uses. I was unable to complete flow measurements due to inadequate pipe requirements and manufacturer pump curve information was used to derive a flow rate for the dual 7.5 HP in-well pump motors installed in the well. I collaborated with United Crown Pump & Drilling, Chris Argueros – Sales Manager, to gain understanding of the dual pump install & pump performance capacity following the field exam.

The applicant's statement of completion form identifies two groundwater wells; D0073355 is the 8" well casing permit No. 881241 and the second well is a 6" casing permit No. 881242. The second well is a monitoring well on the property which has a hand lever action cap installed. The well is not connected to the applicant's water system and does not factor into licensing purposes for the single POD (D0073355) for this permit. Mr. English asserts that the hand lever does work, but is only there in the event of complete water system failure to supply small amounts of water as required in an total catastrophe event.

The applicant requested two 7.5 HP pump & motor be installed for redundancy purposes to ensure the fire station had water on demand in the event one pump failed. During normal operations only one pump cycles on at a time, but in the event of an emergency both pumps can be operated simultaneously. As the system is only operated with one pump cycled on, flow measurements are evaluated for a single pump operation toward recommendation for licensing purposes. The 4" high-capacity Franklin 7.5 HP pump and motor installed performance charts indicate a maximum flow rate of 48 gpm at 60 psi (observed) and pump depth of 210 ft. The second motor of the same make was installed at approx. 160 ft depth and performance charts illustrate 51 gpm at 60 psi is achievable. Both 48 gpm and 51 gpm equate to **0.11 cfs** considering department rounding standards, which is recommended as the industrial diversion rate & maximum diversion rate for licensing purposes.

The applicant's irrigation beneficial use diversion rate was permit approved for 10 acres at 0.20 cfs; following the field exam 0.8 ac irrigation acreage was observed resulting in a reduction in diversion rate to **0.03 cfs** as authorized per acre up to 5-ac in accordance with Administrator's Memorandum – App Processing No.17 – acceptable rates of irrigation flow for small acreage. The domestic beneficial use diversion rate authorized equals **0.04 cfs** which is being recommended for licensing the domestic use component. The maximum diversion rate was reduced from 0.20 cfs on the permit to 0.11 cfs following the field exam based on the applicant's pump performance found at time of exam.

The domestic POU was observed during the exam as a fire station & shop with the domestic use being primarily a back-up system, maintaining the station's primary in-house use from the City of Post Falls municipal provider. Photographs taken from within the pump station room in the fire station that illustrate an interconnecting pipe with coupler designed to be installed and complete the water service from well D0073355 in the event the City's water supply is compromised. Mr. English asserts the system is tested by installing the coupler pipe periodically to ensure proper water system operation, but the well's water is not used during normal water system operations. Domestic annual volume was derived by calculating the maximum number of employees present, which is 10 staff working 40 hrs per week (no 24 hr staff operations). Staff use domestic water for laundry, bathrooms, showers, & a full kitchen. Domestic annual volume equals **0.4 af** considering department rounding standards as calculated above on PG-2. ArcMap aerial imagery was used to trace out the domestic POU for licensing purposes.

The applicant's irrigation system was walked during the field exam, photos taken with field maps sketched out to show the irrigation POU. During licensing review, ArcMap aerial imagery was used to accurately trace out the POU consisting of 0.8 acres irrigation by pressurized sprinkler & drip line watering. Irrigation occurs in a main lawn space and several narrow corridors of landscape plants & trees watered by drip line. The annual volume for irrigation equals 0.03 cfs per acre x 0.8 ac = **2.4 af**, which is recommended for licensing purposes. Mr. English asserts the primary reason for drilling the private well was to secure irrigation & industrial water and become self-reliant from their municipal provider.

The industrial POU consists of using portable 275-gal water tanks filled by a single-point fire hose fill valve located on the external wall from the station's pump room, fire hose to fill tender trucks, & a 20,000-gal rail tanker which is used once or twice a year for training purposes. I used ArcMap to trace out the industrial POU which encompasses fenced in training grounds on the property & a training tower. Mr. English asserted during the exam that the rail tanker was only used once or twice a year for rail training, and that training events by portable tank and/or fire tender truck fills were occasional depending on mission requirements. There was no annual volume tracking completed by the applicant and no flowmeter installed on the system. I am recommending volume related to part B of domestic, or 2,500 gal per day for volume calculations. 2,500 gal per day x 5 workdays per week x 52 weeks = 650,000 gal / 325,850 gal per af = **2.0 af** considering department rounding standards. I did not recommend a condition of approval limiting industrial volume to 2,500 gal per day; doing so will have made the license more restrictive than the permit & the rail tanker fill requirement shall require more than 2,500 gal in a day to fill. Maximum diversion volume recommended for licensing is the sum of three beneficial uses annual volume(s) = **4.8 af**.

Conditions 046 & 26A were removed from the permit during licensing review. Condition R62 was replaced with X31 to better describe rate & volume for small acreage irrigation use. A text condition describing both domestic & industrial use was removed and replaced by two separate text conditions describing each beneficial use; for domestic, a text version of condition 132 was used describing the fire station water use but removing the "backup water supply" verbiage found on the original text condition. All other conditions on the permit shall be carried forward to the license.

Overlap concerns: there are 17 separate decreed water rights associated with the City of Post Falls municipal water system with service area that includes this permit's POU. The city serves primary domestic use to the applicant at the POU, but I am recommending domestic use without concern for overlap as the system is designed to manually switch to backup use if the municipal service is not functioning. Due to the applicant using a separate water system to fulfill industrial and irrigation than the municipal water services, there is no concern for overlap. In the event of a fire, all fire hydrants on the property are served by the municipal provider, and hydrants are not used for industrial training events. There are no other overlapping 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	0.03 CFS	2.4 AF
INDUSTRIAL	01/01 to 12/31	0.11 CFS	2.0 AF
DOMESTIC	01/01 to 12/31	0.04 CFS	0.4 AF
<u>Totals:</u>		0.11 CFS	4.8 AF

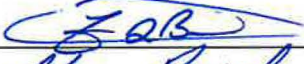
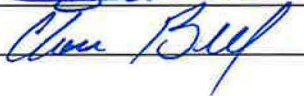
2. Recommended Amendments

_____ 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 -

Field Examiner's Name  Date 7/25/2023Reviewer  Date 5/21/2024

State of Idaho
Department of Water Resources
Attachment to Field Exam
95-17144

DOMESTIC system diagram.

04W



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

0 0.035 0.07 0.14 Miles



State of Idaho
Department of Water Resources
Attachment to Field Exam.
95-17144

IRRIGATION system diagram.

04W



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

0 0.035 0.07 0.14 Miles



State of Idaho
Department of Water Resources
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INDUSTRIAL system diagram.

04W



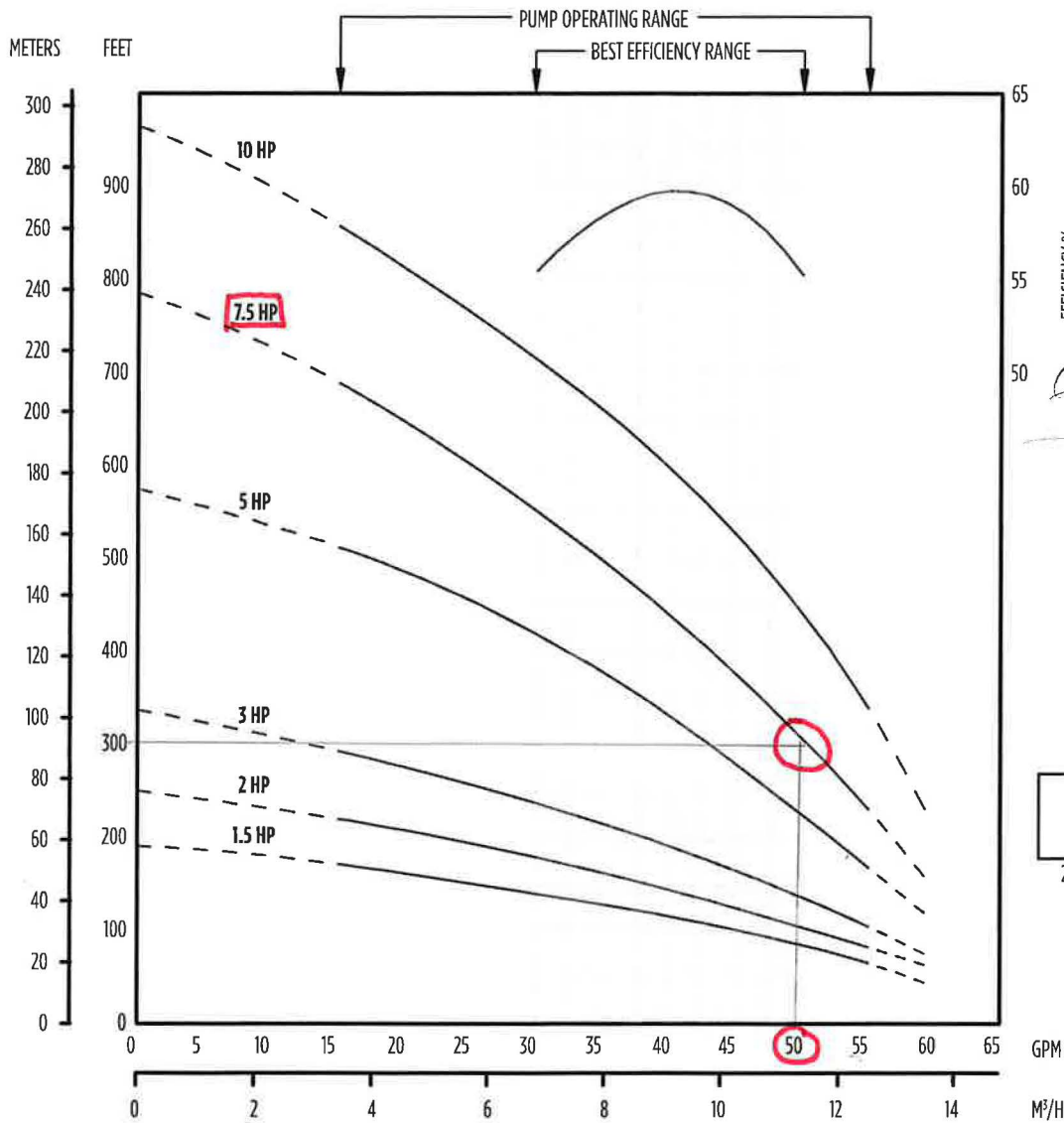
-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters

0 0.035 0.07 0.14 Miles



4" HIGH CAPACITY PUMPS - 45 GPM

PERFORMANCE



3" x 40 0.91
60 1.94
3" x 80 3.30
100 4.98
120 6.98
140 9.28
160
10 x 2.5' = 138
10
308

100

50 FT
2.5 GPM

HP	PSI	Depth to Pumping Water Level (Lift) in Feet. Shaded Areas Indicate Most Efficient Performance																	Shut-Off (ft)
		20	40	60	80	100	120	140	160	180	200	250	300	350	400	450	500	550	
1.5	0				52	46	38	30	21										190
	10		55	51	45	37	26	20											
	20	54	50	43	35	27	18												
	30	49	42	34	26	16													
	40	41	33	24	15														
	50	32	23																
	60	22																	
Shut-off PSI		74	65	56	48	39	30	22	13										250
2	0				55	51	46	41	36	30	23								
	10				55	50	45	40	35	29	22								
	20		54	49	44	39	34	28	21										
	30	53	49	44	38	33	27	19											
	40	48	43	38	32	26	18												
	50	42	37	31	24	17													
	60	36	30	23	16														
Shut-off PSI		99	91	82	74	65	56	48	39	30	22								

4" HIGH CAPACITY PUMPS - 45 GPM

PERFORMANCE

Pump 1 - ~160ft depth
Pump 2 - ~210ft depth

HP	PSI	Depth to Pumping Water Level (Lift) in Feet. Shaded Areas Indicate Most Efficient Performance																				Shut-Off (ft)
		20	40	60	80	100	120	140	160	180	200	250	300	350	400	450	500	550	600	650		
3	0						53	49	46	42	38	27									337	
	10				55	52	49	45	41	37	33	21										
	20			55	52	48	45	41	37	32	26											
	30		54	51	48	44	40	36	32	27	22											
	40	54	51	47	44	40	35	31	26	21	15											
	50	50	47	43	39	35	30	25	20													
	60	46	42	38	34	30	25	19														
	70	42	38	33	29	24	18															
	80	37	33	28	23	17																
	90	32	27	22	16																	
100	27	21	16																			
Shut-off PSI		137	129	120	111	103	94	85	77	68	60	38										
5	0								54	52	48	43	38	32	26	17					575	
	10							55	54	52	46	41	36	30	22							
	20						55	53	52	50	48	43	38	33	26	18						
	30					55	53	51	50	48	46	41	36	30	23							
	40				55	53	51	49	47	46	44	39	33	27	19							
	50			54	53	51	49	47	45	43	42	36	31	23								
	60		54	52	51	49	47	45	43	41	39	34	27	19								
	70	54	52	50	48	47	45	43	41	39	37	31	24	15								
	80	52	50	48	46	44	43	41	39	36	34	28	20									
	90	50	48	46	44	42	40	38	36	34	31	25	16									
	100	48	46	44	42	40	38	36	34	31	28	21										
	110	45	44	42	40	38	35	33	31	28	25	17										
	120	43	41	39	37	35	33	30	28	25	21											
	130	41	39	37	35	32	30	27	24	21	17											
	140	39	37	34	32	29	27	24	20	17												
	150	36	34	32	29	26	23	20	16													
	160	28	25	22	18																	
Shut-off PSI		240	232	223	214	206	197	188	180	171	162	141	119	97	76	54	32					
7.5	0										54	51	47	43	39	35	30	25	20	17	786	
	10										55	54	51	47	44	39	35	30	26	20		
	20									55	54	53	49	46	42	37	33	28	23	17		
	30								55	54	52	51	48	44	40	35	31	26	21	15		
	40							55	54	52	51	49	46	42	38	33	29	24	18			
	50						55	53	52	51	49	48	44	40	36	31	26	21	15			
	60					54	53	52	51	49	48	44	40	36	31	26	21	15				
	70			55	54	53	52	50	49	48	46	42	38	34	29	24	18					
	80		55	54	53	52	50	49	47	46	44	40	36	32	27	21	16					
	90	55	54	53	51	50	49	47	46	44	43	38	34	29	24	19						
	100	54	52	51	50	48	47	45	44	42	41	36	32	27	22	16						
	110	52	51	50	48	47	45	44	42	40	39	34	30	25	19							
	120	51	49	48	47	45	43	42	40	39	37	32	27	22	17							
	130	49	48	46	45	43	42	40	38	37	35	30	25	20								
	140	48	46	45	43	41	40	38	36	34	33	28	23	17								
	150	46	44	43	41	39	38	36	34	32	30	26	20									
	160	40	39	37	35	33	31	30	28	26	24	18										
Shut-off PSI		331	323	314	305	297	288	279	271	262	254	232	210	189	167	145	124	102	80	59		

HP	PSI	20	40	60	80	100	120	140	160	180	200	250	300	350	400	450	500	550	600	650	700	750	800	850	Shut-Off (ft)
10	0												55	53	50	48	45	42	39	35	31	27	22	16	965
	10												54	52	49	47	44	41	37	33	29	24	19		
	20												53	51	48	45	42	39	36	32	27	22	16		
	30												52	49	47	44	41	37	34	30	25	19			
	40												53	51	48	45	43	39	36	32	27	22	17		
	50											55	52	50	47	44	41	38	34	30	25	20			
	60								55	55	54	51	48	46	43	40	36	32	28	23	17				
	70							55	54	53	52	50	47	44	41	38	34	30	26	20	14				
	80						55	54	53	52	51	49	46	43	40	36	32	28	23	18					
	90					55	54	53	52	51	50	47	45	42	38	35	31	26	21	15					
	100				55	54	53	52	51	50	49	46	43	40	37	33	28	24	18						
	110			55	54	53	52	51	50	49	48	45	42	39	35	31	26	21	15						
	120		55	54	53	52	51	50	49	47	46	43	40	37	33	29	24	19							
	130	54	53	52	51	50	49	48	47	46	45	42	39	35	31	27	22	16							
	140	53	52	51	50	49	48	47	46	45	44	41	37	33	29	24	19								
	150	52	51	50	49	48	47	46	45	44	42	39	36	32	27	22	16								
	160	49	48	46	45	44	43	42	40	39	38	34	30	25	20										
Shut-off PSI		410	402	393	385	376	367	359	350	341	333	311	289	268	246	224	201	179	158	136	115	93	71	50	

NOTES: Performance shown does not include friction loss in the drop pipe. All performance data is based on rated motor nameplate voltage. Performances for former XP models are the same as 45 gpm models. Performance shown is based on a pump without check valve.

UNITED CROWN

PUMP & DRILLING

3125 W. Hayden Ave. • Hayden, ID 83835
(208) 772-7867 • (800) 682-9641 • Fax (208) 772-7229

RECEIVED

MAR 22 2022

IDWR / NORTH

SOLD TO: Kootenai County Fire and Rescue

1590 E. Seltice Way

Post Falls, ID 83854

INVOICE

№ 26952

INVOICE DATE

ORDER NO.

April 18, 2018

Training Center

Water System

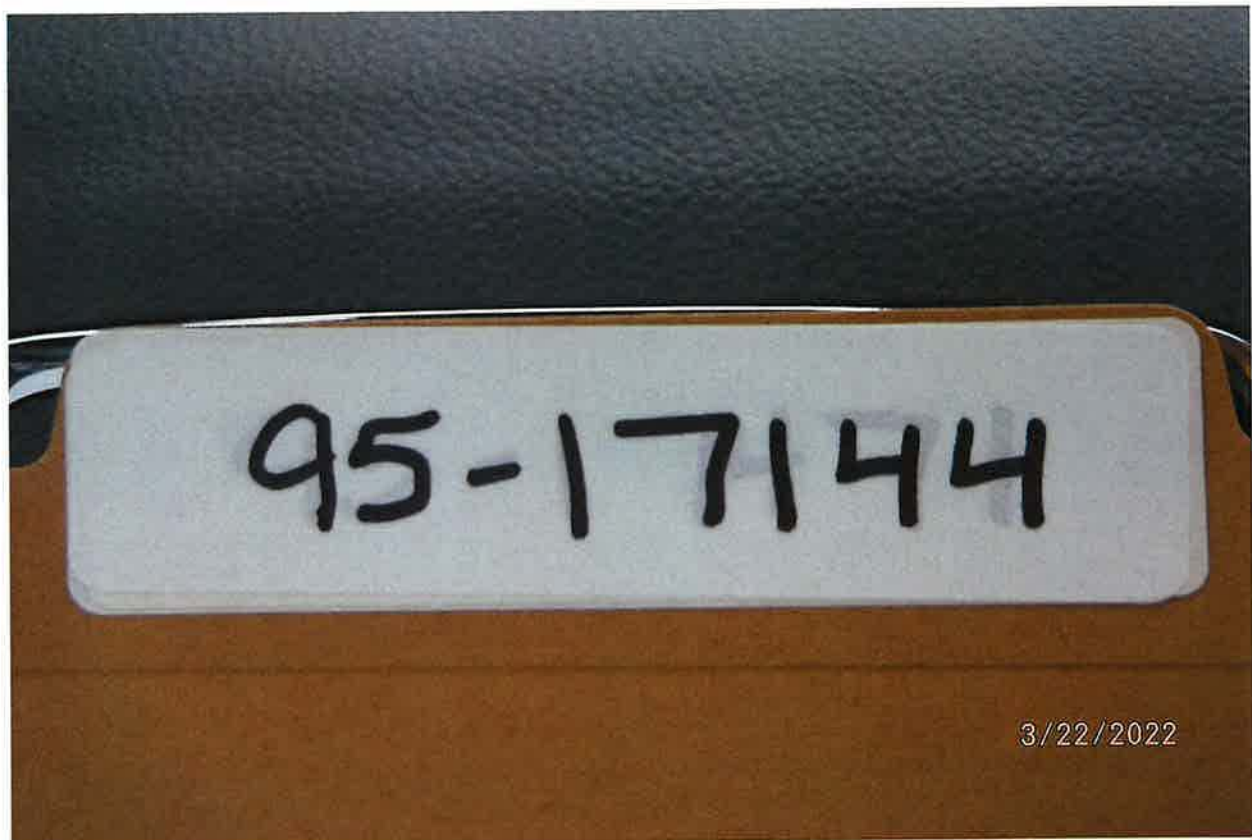
PHONE#

208-777-8500

INSTALLATION/SERVICE DATE		PROJECT CODE	F.O.B. POINT	TERMS	
March 23 -30		Install WC	1590 E Seltice Way	Payment Due	
QTY.	UNIT	DESCRIPTION		UNIT PRICE	TOTAL
Two Pumps in One Well - Per Estimate					
2	ea.	Franklin 7.5hp 45 GPM domestic pumps and motors			
1	ea.	In well two-pump tool			
200	lf.	3" Galvanized drop pipe			
2	ea.	3" Flomatic DI Check valves			
420	lf.	#10/4 Flat jacketed submersible pump cable → for 2ea Pump Install.			
2	ea.	Motor splice and tape probe conduit			
1	ls.	Labor to install system to "top of well"			
1	ea.	Mass 8J3 8" x 3" weld on pitless			
1	ea.	8" Baker well cap with vent			
1	ls	Labor to install pitless and well cap with welding			
Subtotal				\$ 24,059.00	\$ 24,059.00
APPROVED TO PAY					
C500 F16 per JESS'P					
4/24/18					
Subtotal					\$ 24,059.00
Idaho State Tax 6%					\$ -
Total due this Invoice					\$ 24,059.00

This invoice due and payable upon receipt. Invoices not paid within 10 days will accrue interest at a rate of 1.5% per month.

\\NASDRIVE\UnitedCrownChris\United Crown\CCA Invoices\A-L\K\Kootenai County two pump well .xls



FIELD EXAM DATE 3/22/2022





POD – GROUNDWATER WELL D-TAG D0073355





2EA 45 GPM FRANKLIN 7.5 HP PUMPS INSTALLED

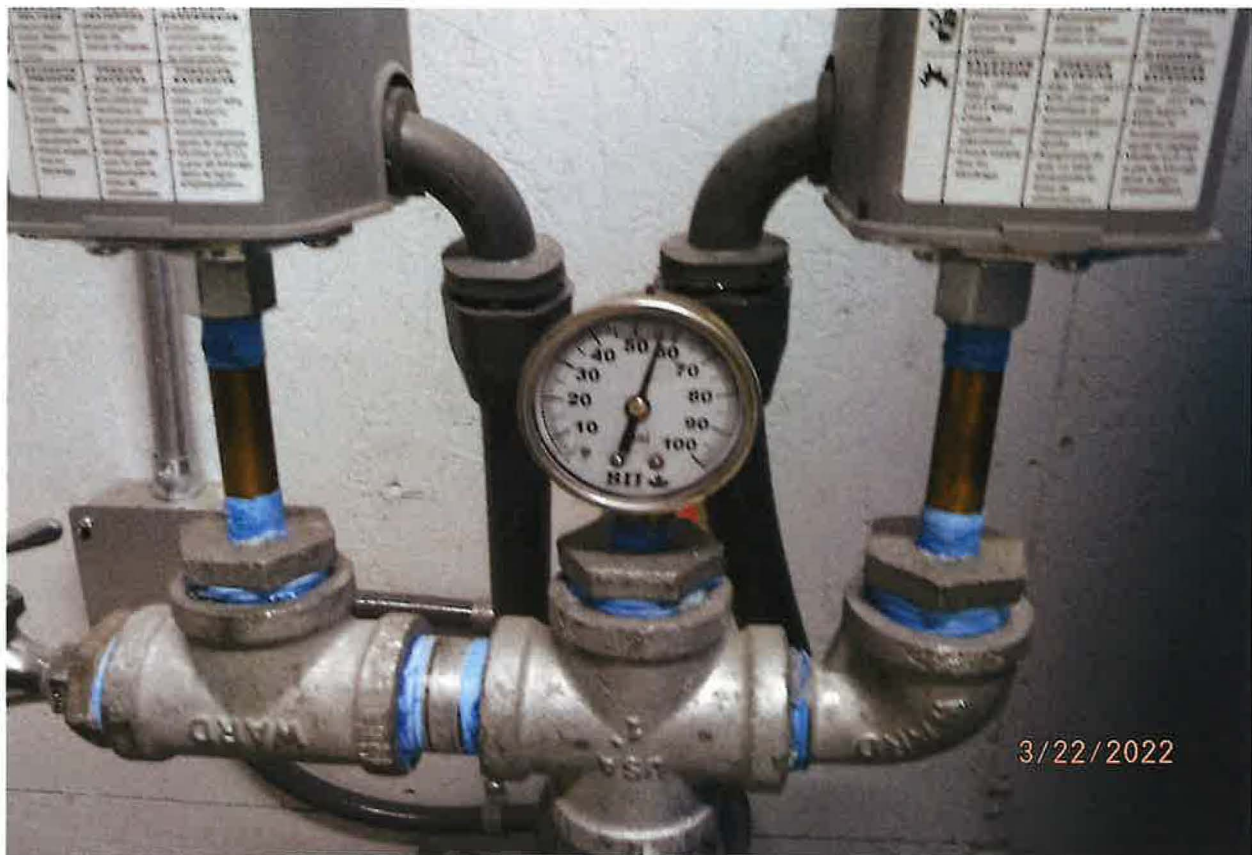


5EA PRESSURE TANKS INSTALLED IN SYSTEM

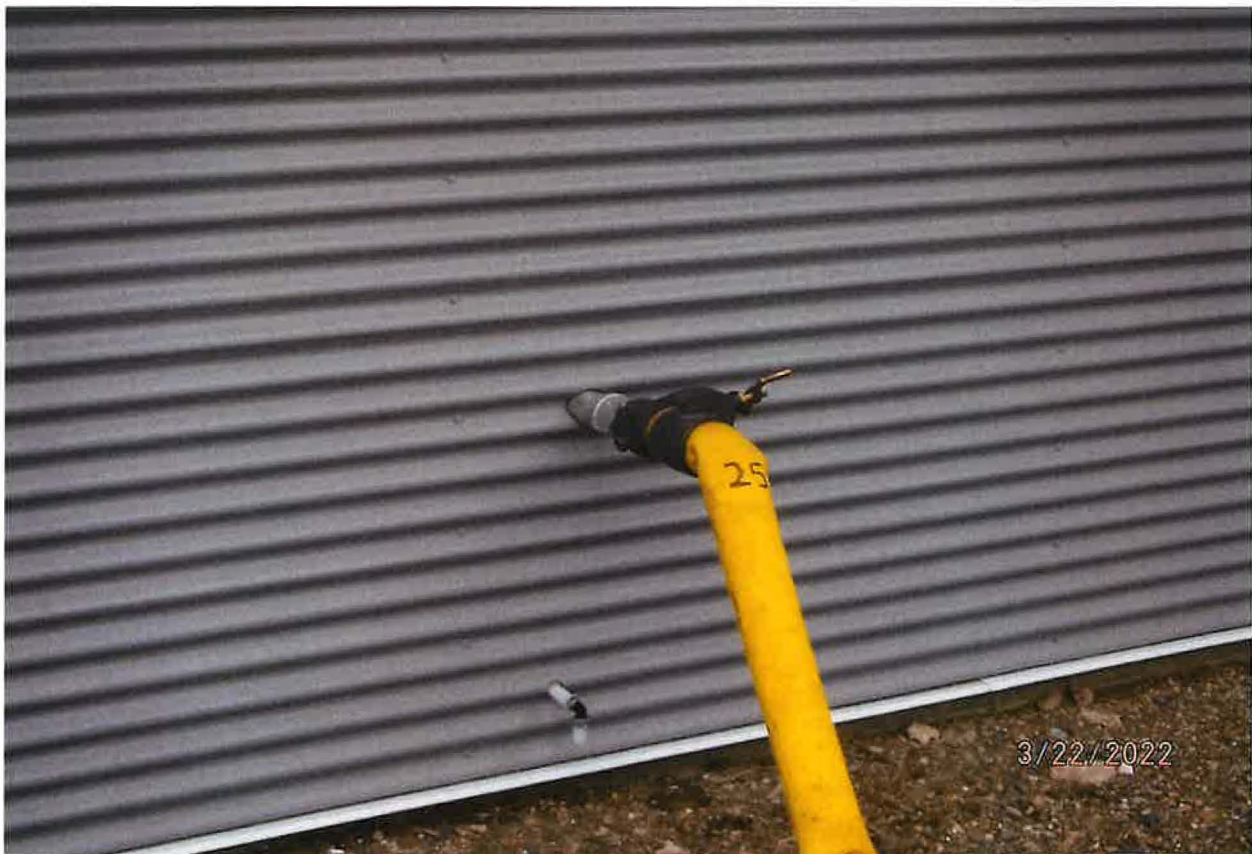


DOMESTIC USE INTERCONNECT W/COUPLER PIPE





55 PSI OPERATING PRESSURE



INDUSTRIAL POU – SINGLE POINT FIRE HOSE CONNECTION



INDUSTRIAL POU – WATER TANKS, FIRE TRUCKS, & A 20,000 GAL RAIL TANKER FILLED FOR TRAINING





DOMESTIC POU – TRAINING CENTER



IRRIGATION POU



IRRIGATION POU – PRESSURIZED SPRINKLER SYSTEM





IRRIGATION POU





IRRIGATION POU





IRRIGATION POU

