

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 37-22815

Exam Date: 7/12/2017

1. Current Owner: BLAINE COUNTY SCHOOL DISTRICT #61
118 W BULLION ST
HAILEY ID 83333
(208) 578-5000

Daniel A. Nelson scheduled the site visit and oversaw the measurements. He was accompanied by IDWR state office personnel, Chelsey Serrano and Manuel Rauhut.

2. Accompanied by: Howard Royal, Facilities Director
Phone No: 208-578-5402
Email Address: hroyal@blaineschools.org
Relationship to Permit Holder: BCSD employee

3. SOURCE

GROUNDWATER

TRIBUTARY

NA

B. OVERLAP REVIEW

1. Other water rights with the same place of use: City of Ketchum municipal water rights provide potable water to the school.

2. Other water rights with the same point of diversion: none

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

GROUND WATER SE¼NE¼ Sec. 13, Twp 04N, Rge 17E, B.M. BLAINE County

LOCATION OF POINT(S) OF INJECTION:

GROUND WATER SE¼NE¼ Sec. 13, Twp 04N, Rge 17E, B.M. BLAINE County

Method of Determination:

The well locations were confirmed and determined by GPS at the time of the July 12, 2017 site visit. The injection well is best represented by spatial data point 487276 and the production well by spatial data point 473224.

2.

PLACE OF USE:

COOLING and HEATING

Twp	Rge	Sec	NE				NW				SW				SE				
			<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>Totals</u>
04N	17E	13			X	X													

Method of Determination:

The school is visible in aerial photography and is located at the PLS address given on the permit.

3. ☐ Delivery System Diagram Attached (required). Indicate all major components and distances between components. See engineering drawings provided by Brian Formusa, P.E.
- ☐ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
- ☒ Aerial Photo Attached (required for irrigation of 10+ acres).
- ☒ 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
Production D0064730	Franklin	15			
Injection D0064731					

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

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

2. Measurements:

Please refer to the field visit memo from Dan Nelson.

During the July 2017 site visit, the school was not in session. Measurements were targeted at calibration of the flow meter rather than confirmation of beneficial use. The meter proved to be operating within an acceptable margin of error. So the measurement data provided by the permit holder/system operator was also acceptable for determining a volume of water used by the system.

Condition 6 of the permit required that the permit holder record the quantity of water diverted and records be kept. I requested and received data from BCSD but the data was dated after the development period of this permit.

I confirmed beneficial use of 366 gpm from the commissioning documentation provided to me by the lead mechanical engineer for the project, Brian Formosa P.E.

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method:

Please refer to Dan Nelson's memo.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: not applicable

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

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

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

2. Volume Calculations for Other Uses:

See the attached spreadsheet of heating and cooling volume calculations.

G. NARRATIVE/REMARKS/COMMENTSOwnership

Available Blaine County taxlot information shows that Blaine County Schools own the property which contains the POU, and the production and injection wells.

Water Use

Although the applicant had until June 1, 2016 to submit proof of beneficial use, the Statement of Completion was submitted on September 16, 2013. The 'proof' statement was accepted even though no data had been submitted in compliance with condition 6 of the permit. The development period of the permit was inadvertently cut very short and data confirming beneficial use during the May 3, 2013 to September 16, 2013 timeframe was difficult to locate.

However, I believe that the HVAC system was used for climate control in the school during the development period.

According to an article in the Idaho Mountain Express, 'all major work was substantially complete August 19, 2013 and the systems were operational, tested and performing to expectations'. The new HVAC system would have been operating and using water late August and early September of 2013 for approximately four weeks of the development period. I reviewed August and September 2013 air temperatures and found that the weather during the development period was typical of weather for the location. Beneficial heating use similar to that documented by the measurement records from the post-development-period, would have regularly occurred during the cool mornings when air temperatures ranged from 48 to 59 degrees F.

Operation strategy

The Hemingway Elementary School has a ground water-sourced heat pump system. The heating and cooling water use is non-consumptive and occurs in an open loop configuration. A single production well supplies water to the system and a single injection well accepts the 'spent' water from that system. Between the two wells, a plate and frame heat exchanger extracts heat from the ground water loop on one side and passes that heat to a loop other side. The loop on the building side is a closed loop containing water and glycol and connecting ~30 slave heat pumps which are distributed throughout the building. The fluids in the two loops are never in contact with each other and the only change to the ground water is a change in temperature. In this case, the heat exchanger can increase the water temperature 6 degrees F.

Rate

I am recommending 0.82 cfs for each of the uses but those rates are not additive. I am also recommending 0.82 cfs as total rate for the license.

This recommendation is based on the maximum flow rate confirmed during commissioning tests of the system.

The lead mechanical engineer and construction manager for the project was Brian Formosa P.E. I discussed the HVAC system with him on July 17 and 18, 2017. When I asked, he confirmed that he was aware that an enlargement to the school was anticipated for 2014 and that he had accommodated for the increased space and flow requirements in the 2013 installation.

Volume

This recommendation is a degree-day based calculation applied to pre-permit weather conditions. According to IDAPA 37.03.02. Beneficial Use Examination Rule 035.01.j.

"Annual diversion volumes for heating and cooling uses may be adjusted to account for documented weather conditions during any single heating or cooling season from among the fifty (50) years immediately prior to submitting proof of beneficial use for the permit. "

I chose years that were not the HDD or CDD extreme but were more than one standard deviation from the mean.

I am recommending 210 AF for the heating use and 9.0 AF for cooling use but those volumes are not additive.

This location has very few CDD and it would be unlikely that the maximum CDD and the maximum HDD would occur in the same year. I am also recommending 210.0 AF as total volume for the license.

Watermaster conditions

I consulted the current WD 37 watermaster about his preferences for the reporting and controlling works requirements to be applied on the license. He was not concerned about controlling works for this non-consumptive use, but requested a continuance of the measurement and reporting requirement.

Conditions requiring continued measuring and reporting and for controlling works will be included on the license.

SOU

The permit authorized year-round SOU for both heating and cooling. This part of the state requires some heating even during the summer months. I am recommending a year-round SOU. Even though the school is not in session year-round, the building is maintained year-round.

Point-of-Discharge

The injection well was authorized by permit Injection Well Permit 37-W-0095-001. A copy of the authorization was submitted with proof. That well appears to be accepting the spent heating/cooling water as expected.

Trust Water Right

Although the use is non-consumptive, the POD is within the Trust Water Right area. The license will carry a condition which identifies the use as non-consumptive and exempt from Trust Water Right review.

Have conditions of permit approval been met? ____ Yes ____X____ No

Condition 6 was not met before the proof statement was submitted. At my request, satisfactory measurement records of post-development-period operation were provided by the permit holder's representative. Otherwise, the use was and is in compliance with the permit.

H. RECOMMENDATIONS

I recommend that.

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
HEATING	01/01 to 12/31	0.82 CFS	210.0 AF
COOLING	01/01 to 12/31	0.82 CFS	9.2 AF
	<u>Totals:</u>	0.82 CFS	210.0 AF

2. Recommended Amendments

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

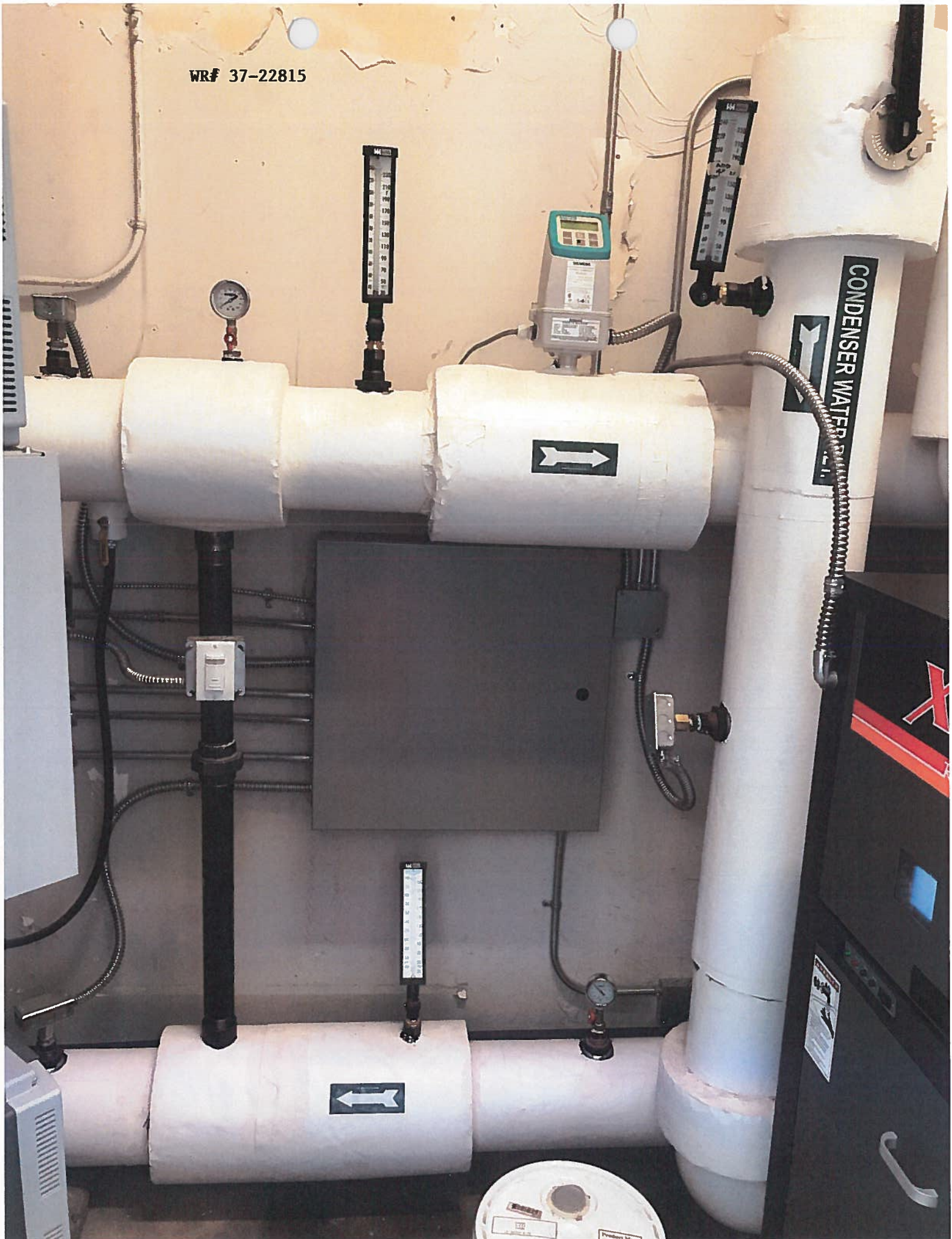
____ Change P.U. as reflected above ____ Add P.U. as reflected above ____ Other

I. AUTHENTICATION

Field Examiner's Name _____ Michele Edl _____ Date _____ 07/25/2017 _____

Reviewer _____ Date _____

WR# 37-22815



CI-020-P2
55035110179

6" SUBMERSIBLE MOTOR

WATER WELL SUBTROL

WR# 37-22815

HP **15** V **200**

KW **11** PH **3** HZ **60**

DATE CODE **13G19** 24 06089 A
QTY **1**



CLASSIFIED
WATER QUALITY
DRINKING WATER
SYSTEM COMPONENT
ANSI/NSF 61 SR21
30°C MAX AMBIENT

236 6538 120



S/N 13G19-24-06089A



Franklin Electric
www.franklin-electric.com

Product of USA

X



Franklin Electric
SUBMERSIBLE MOTOR

MODEL **2366538120** 3-PHASE

12.8 kW 200 V 54.4 A 3465 min⁻¹ cos φ 0.85
60Hz
metric (11 kW SF 1.15)

15 HP 200 V 47.8 A 3450 RPM 54.4 MAX A
60Hz SF 1.15

KVA Code H

Thrust Load 15500N 3500LB

Max Ambient Temp 30°C

Min Cooling Flow 16cm/s 0.6ft/sec

Ins Class F

IP68

Continuous Duty

PRODUCT OF USA

Certified by

SONDEX, INC.



7040 International Drive
Louisville, KY 40258
T: 502-433-9991
F: 502-433-9914

Serial Number	16248	
Model Number	347-16-106	
Test Pressure	195	PSI
Design Temperature	230	°F
Design Pressure	150	PSI
As-Minimum Assembling Measure	12.0-12.5	(in.)
Area	575.54	(sq. ft.)
Year Built	2013	

IMPORTANT

1 The plate heat exchanger must not be assembled under the stated minimum assembling measurement. Please contact your SONDEX distributor if the plate heat exchanger is leaking when subjected to the minimum measurement.

2 For start up please refer to Operation and Maintenance manual.

WR# 37-22815

Please contact us for Parts and Service



SONDEX INC.

7040 International Drive

07/10/2017

MEMORANDUM

TO: Water Right Permit File 37-22815

FROM: Daniel A. Nelson

DATE: July 12, 2017

SUBJECT: Field Visit of Permit 37-22815

Michele Edl is the water right agent currently working on licensing the heating and cooling permits for Blaine County School District #61. Ms. Edl requested that I visit the site to gather some information that was not available through the permit holder's consultant. Chelsey Serrano, Manuel Rauhut, and I visited the site of July 11, 2017. We were shown the system by the Facilities Director, Howard Royal, 1630 Aviation Drive, Hailey, ID 83333, Telephone Number (208) 578-5402, Email – hroyal@blaineschools.org.

During the field examination, we GPS'ed the production well and the injection well. We also measured the well at full operation capacity, and compared those measurements to the flow meter that was installed in the facility. We determined that the flow meter was within 3% of the Department's meter, and that any volume records attained from this system would have a calibration factor of 0.97. This means that any volume records received from the permit holder should be adjusted down to 97% of the amount submitted.

School was not in session at the time we were at the facility, so we were not able to see the system operating under normal conditions. The system was turned on for the measurements, but they were not using it to cool the building.

The system did have several thermometers on the system, and they all read between 49 and 53 degrees. The computer system said the water was 47 degrees, so it appears as though the computer system is registering a lower water temperature than the thermometers on the well. I was not able to see the thermometer devices used by the computer on the system, so I am more inclined to go with the actual thermometer readings. The temperature of the pipe was 50 degrees, so I am more inclined to go with the thermometer readings.

Please review the maps, spreadsheets and pictures of the system for additional information. Other than being able to test the system under normal operating conditions, we supplied the information that was available.

Permit 37-22815

Field Visit by Daniel A. Nelson, Manuel Rauhut, and Chelsey Serrano

7/11/2017



Permit -- 37-22815

Measurement by -- Dan Nelson, Manuel Rauhut, and Chelsey Serrano

Siemens Flow Meter Calibration - Ernest Hemingway Elementary School, Ketchum ID.

File Title: s\dnelson\Desktop\HEM.LOG
 File Name: s\dnelson\Desktop\HEM.LOG
 Start Time: 7/11/2017 10:46
 End Time: 7/11/2017 10:57
 Interval: 60
 Records: 11
 Cyclic Flags: 2
 Error Flags: 8208

(M-1 - M-2) / M-2 X 100 = ± %	
Percent Difference =	2.89 %

Date/Time	(+)Total (gal)	Velocity (ft/s)	Error #
7/11/2017 10:46	589758.1171	3.761194928	0
7/11/2017 10:47	590120.1187	3.784682	0
7/11/2017 10:48	590482.4793	3.751085733	0
7/11/2017 10:49	590825.4406	3.784099457	0
7/11/2017 10:50	591188.8321	3.78434905	0
7/11/2017 10:51	591546.4051	3.756335884	0
7/11/2017 10:52	591911.2488	3.766960099	0
7/11/2017 10:53	592272.1595	3.792990182	0
7/11/2017 10:54	592628.7802	3.767485119	0
7/11/2017 10:55	592994.2423	3.761865918	0
7/11/2017 10:56	593354.0679	3.758412694	0
		3.77	Average Velocity

M-2 / M-1 = Multiplier	
Calibration Multiplier =	0.97

3595.950746	Total Gallons
10	Minutes of Test
360	Gallons Per Minute
	M-2

Log Name C:\Users\dnelson\Desktop\HEM.LOG
 Log Title C:\Users\dnelson\Desktop\HEM.LOG
 Start Time 7/11/2017 10:46
 End Time 7/11/2017 10:57
 Records 2
 Interval 60
 Error Flags 8208
 Cyclic Flags 2

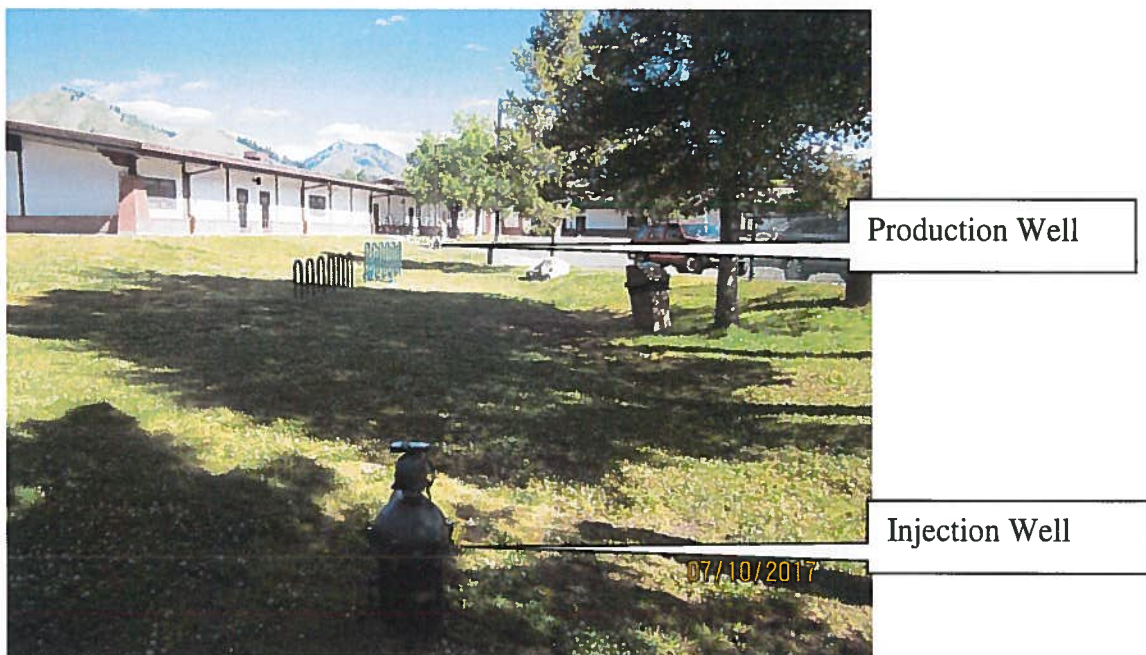
Item #	Label	Symbol	UnitType	Channel	Comport	Computer	Decimal	Width	Input	NodeID
0	(+)Total	gal	1160	0	0	PT878	4	12	20	0
1	Velocity	ft/s	578	0	0	PT878	4	12	2	0

Owner's Meter

Starting Totalizer Reading	220.9044
Ending Totalizer Reading	220.9081
Multiplier	1,000,000
Total Gallons	3700
Time of Test in Minutes	10
Gallons Per Minute	370
	M-1

PHOTOGRAPHER AND DATE OF PHOTOS Daniel A. Nelson, Manuel Rauhut, and Chelsey Serrano 7/11/2017

FILE NUMBER 37-22815

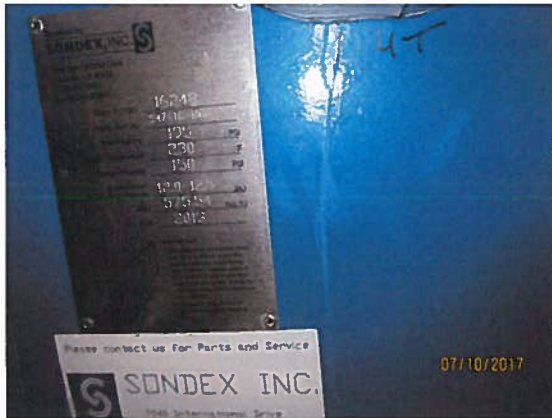


The photo above shows the two wells. The closest well is the injection well (D0064731) and the farthest well over by the school is the production well (D0064730).



PHOTOGRAPHER AND DATE OF PHOTOS Daniel A. Nelson, Manuel Rahhut, and Chelsey Serrano 7/11/2017

FILE NUMBER 37-22815



The photos above are of the heat exchanger nameplates. The information below is for the boiler nameplates.



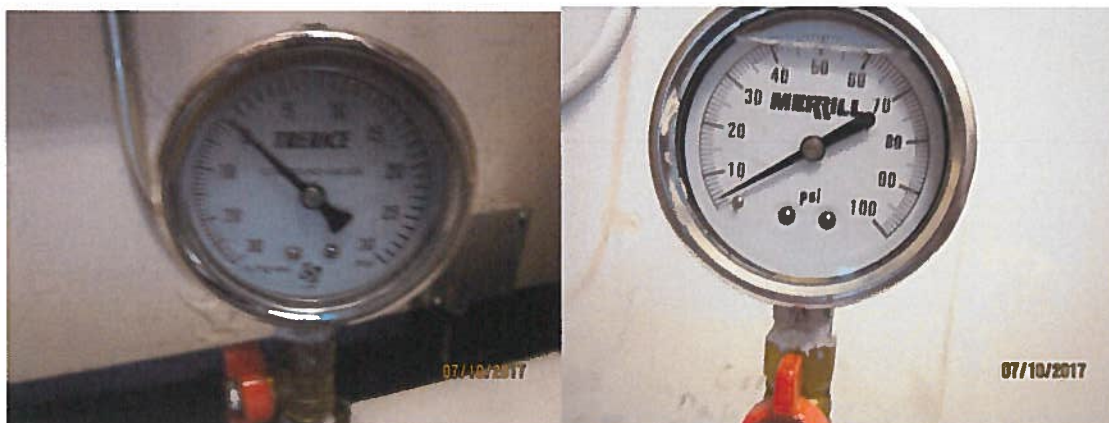
PHOTOGRAPHER AND DATE OF PHOTOS Daniel A. Nelson, Manuel Rauhut, and Chelsey Serrano 7/11/2017

FILE NUMBER 37-22815



The photos above show the Siemens flow meter and the variable speed pump panel for the production well.

The photos below show the in-flow pressure and the out flow pressure. Both pressures were approximately the same, since the system wasn't operating at the time of the exam.

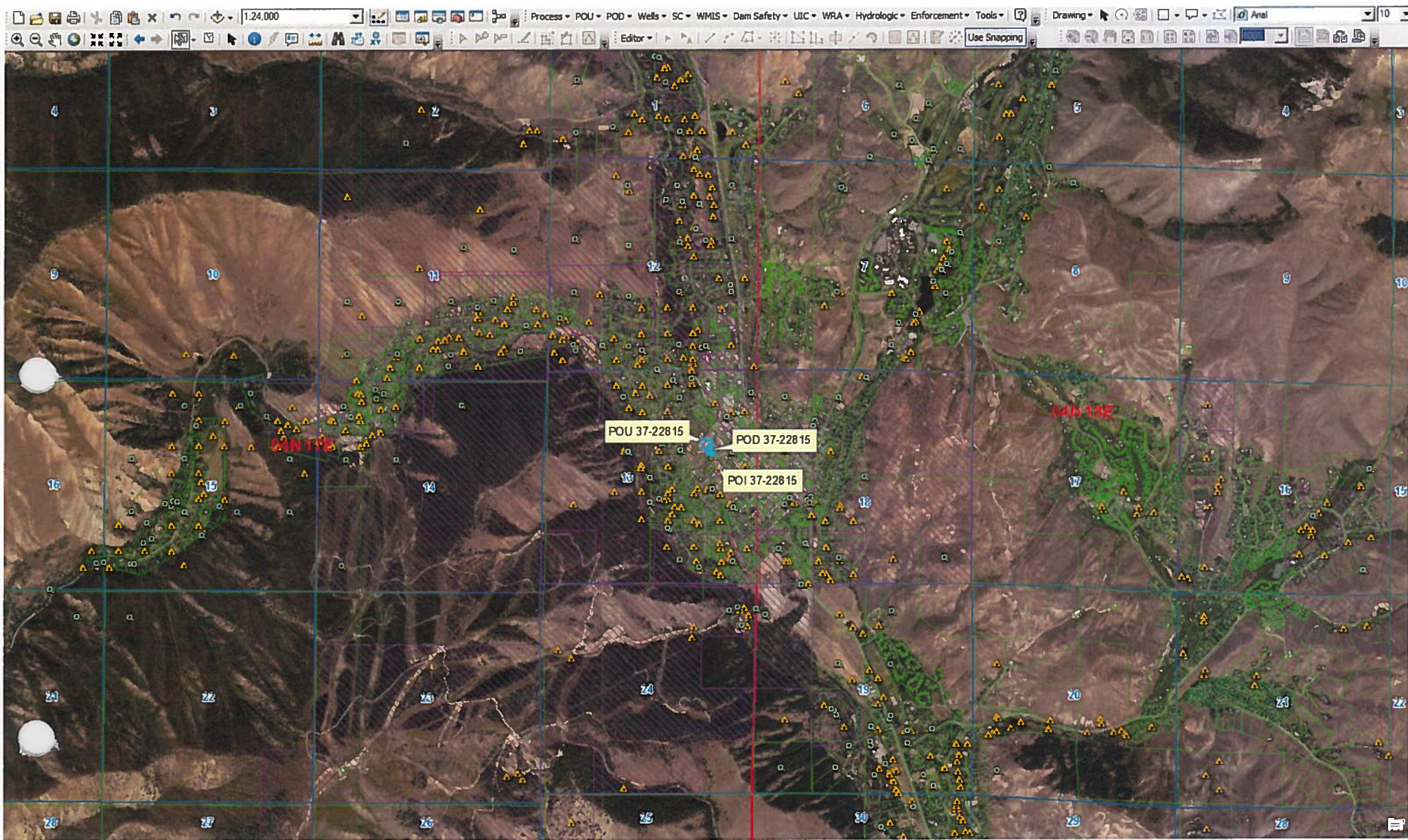


PHOTOGRAPHER AND DATE OF PHOTOS Daniel A. Nelson, Manuel Rauhut, and Chelsey Serrano 7/11/2017

FILE NUMBER 37-22815

The photos below show the distribution system in the pump house. The first picture shows the inflow and outflow pipes with the control valves on each line. The second picture shows the temperature gauges on the pipelines. The temperature was 50 degrees on the thermometer and their system said the temperature was 47 degrees. There appears to be a 6% difference between the thermometers and their system. The bottom two pictures show the heat exchanger/boiler and the pressure tank on the system.





WR #37-22815		Hemingway Elementary School		calculated by Michele Edl on 7/20/2017	
Heating volume calculations					
		totalizer data	date		comment
		82007000	12/31/2014		other heat sources (kids, lights, computers..) mostly absent
		81513600	12/30/2014		
	A	493400	gallons/ that day		
	B	62	HDD/that day		Hailey Airport station calculations by Wunderground
	A/B	7958.064516	gal / HDD that day		
		gal/AF	325851.4319		conversion factor
	D	8131	long-term avg HDD		Hailey Airport station calculations by WRCC
	A/B x D	64707022.58	gal / avg yr		
		198.578	convert gal to af		
		198.6	AF for heating avg yr		
	A/B	7958.064516	gal / HDD		
		gal/AF	325851.4319		conversion factor
	E	8591	recent higher HDD	2008	Hailey Airport station calculations by Wunderground
	A/B x E	68367732.26	gal / yr with higher HDD		
		209.813	convert gal to af		
		209.8	AF heating during a higher HDD yr		
Cooling volume calculations					
		totalizer data	date		comment
		167788700	8/31/2016	Wed	school in session so other heat sources in the bldg
		167746000	8/30/2016	Tue	
	A	42700	gallons / that day		
	B	8	CDD that day		Hailey Airport station calculations by Wunderground
		0	HDD that day		
	A/B	5337.5	gal / CDD		unitized as representative of the bldg
		gal/AF	325851.4319		
	F	232	long-term avg CDD		Hailey Airport station calculations by WRCC
	A/B x F	1238300	gal / avg yr		
		3.800	AF for cooling avg CDD yr		
	A/B	5337.5	gal/CDD		
		gal/AF	325851.4319		
	G	565	recent higher CDD	2007	Hailey Airport station calculations by Wunderground
	A/B x G	3015687.5	gal / yr with higher CDD		
		9.255	AF for cooling during a higher CDD yr		
reality check of system					
		126317200	12/15/2015		
		180199700	12/15/2016		
		53882500	gal per yr		
		165.3591015	afa '2016'		
		17396000	12/18/2013		
		77709800	12/18/2014		
		60313800	gal per yr		
		185.0960103	afa '2014'		
360 gpm run continuously yields 580.68 afa					

Hailey, ID 
Friedman Memorial

© 12:06 PM MDT on July 17, 2017 (GMT -0600)

Weather History for KSUN - January, 2007

From:

January

1

2007

To:

December

31

2007

Get History

Daily	Weekly	Monthly	Custom				
				Max	Avg	Min	Sum
Temperature							
Max Temperature				98 °F	57 °F	8 °F	
Mean Temperature				82 °F	46 °F	2 °F	
Min Temperature				73 °F	35 °F	-7 °F	
Degree Days							
Heating Degree Days (base 65)				64	20	0	7324
Cooling Degree Days (base 65)				17	2	0	565
Growing Degree Days (base 50)				32	6	0	2287
Dew Point							
Dew Point				70 °F	27 °F	-17 °F	
Precipitation							
Precipitation				0.00 in	0.00 in	0.00 in	0.00 in
Snowdepth				-	-	-	-
Wind							
Wind				101 mph	8 mph	0 mph	
Gust Wind				39 mph	19 mph	10 mph	
Sea Level Pressure							
Sea Level Pressure				30.66 in	30.07 in	28.87 in	

Custom Weather History Graph

HAILEY 3 NNW, IDAHO

Period of Record General Climate Summary - Cooling Degree Days

Station:(103942) HAILEY 3 NNW													
From Year=1893 To Year=1988													
Cooling Degree Days for Selected Base Temperature (F)													
Base	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
55	0	0	0	4	48	156	389	344	120	14	0	0	1075
57	0	0	0	2	29	117	329	286	85	7	0	0	855
60	0	0	0	0	12	69	242	202	46	1	0	0	572
65	0	0	0	0	1	23	115	85	9	0	0	0	232
70	0	0	0	0	0	5	31	18	1	0	0	0	55

Cooling Degree Day units are computed as the difference between the daily average temperature and the base temperature. (Daily Ave. Temp. - Base Temp.) One unit is accumulated for each degree Fahrenheit the average temperature is above the base temperature. Negative numbers are discarded. Example: If the days high temperature was 95 and the low temperature was 51, the base 60 heating degree day units is $((95 + 51) / 2) - 60 = 13$. This is done for each day of the month and summed.

Table updated on Oct 31, 2012

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Western Regional Climate Center, wrcc@dri.edu

Hailey, ID

Friedman Memorial

© 9:27 AM MDT on July 17, 2017 (GMT -0600)

Weather History for KSUN - January, 2008

From:

January

1

2008

To:

December

31

2008

Get History

Daily	Weekly	Monthly	Custom				
				Max	Avg	Min	Sum
Temperature							
Max Temperature				91 °F	53 °F	10 °F	
Mean Temperature				74 °F	42 °F	4 °F	
Min Temperature				62 °F	31 °F	-4 °F	
Degree Days							
Heating Degree Days (base 65)				61	23	0	8591
Cooling Degree Days (base 65)				9	0	0	159
Growing Degree Days (base 50)				24	4	0	1579
Dew Point							
Dew Point				57 °F	24 °F	-27 °F	
Precipitation							
Precipitation				0.00 in	0.00 in	0.00 in	0.00 in
Snowdepth				22.0 in	22.0 in	22.0 in	-
Wind							
Wind				24 mph	8 mph	0 mph	
Gust Wind				34 mph	19 mph	9 mph	
Sea Level Pressure							
Sea Level Pressure				31.14 in	30.06 in	29.09 in	

Custom Weather History Graph

HAILEY 3 NNW, IDAHO

Period of Record General Climate Summary - Heating Degree Days

Station:(103942) HAILEY 3 NNW													
From Year=1893 To Year=1988													
Heating Degree Days for Selected Base Temperature (F)													
Base	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
65	1418	1155	1055	673	413	209	38	55	259	574	959	1323	8131
60	1263	1014	900	523	269	106	10	17	146	420	809	1168	6645
57	1170	929	807	435	193	63	4	8	95	332	719	1075	5832
55	1108	872	745	377	150	42	2	4	70	278	659	1013	5321
50	953	731	590	243	69	12	0	1	28	161	510	858	4157

Heating Degree Day units are computed as the difference between the base temperature and the daily average temperature. (Base Temp. - Daily Ave. Temp.) One unit is accumulated for each degree Fahrenheit the average temperature is below the base temperature. Negative numbers are discarded. Example: If the days high temperature was 65 and the low temperature was 31, the base 50 heating degree day units is $50 - ((65 + 31) / 2) = 2$. This is done for each day of the month and summed.

Table updated on Oct 31, 2012

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Western Regional Climate Center, wrcc@dri.edu

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Friday, September 13, 2013

NEWS

Hemingway work done under budget

Project engineer claims savings of
\$325,000

By **TERRY SMITH**
Express Staff Writer

Construction work this summer at Hemingway Elementary School in Ketchum is essentially complete and was done at 14 percent under budget, the project engineer told the Blaine County School District board of trustees at their monthly meeting Tuesday evening.

Hailey engineer Brian Formusa, who was hired to oversee the project in January, told the board that carefully watching expenditures and doing much of the work internally resulted in a savings of about \$350,000.

The project was originally budgeted at \$2.25 million. Instead, Formusa said, the work was completed for about



Construction over the summer at Hemingway Elementary School in Ketchum is "essentially complete," project engineer Brian Formusa told the Blaine County School District board of trustees on Tuesday. Formusa further reported that the work was completed at 14 percent under budget, resulting in a savings of about \$350,000. Photo by Roland Lane

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EMPLOYMENT

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Last weekend, the U.N. issued a dire report on the forthcoming impacts of climate change. What is your reaction?



Extremely concerned



Very concerned



Mildly concerned



Not concerned at all

Vote

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SPECIAL SECTIONS

\$1.9 million. The work was funded by a \$59.8 million plant facilities levy approved by Blaine County voters in 2009.

The project involved drilling of geothermal heat-source wells, replacing an aged heating, ventilation and cooling system, improvements to the school lighting system, door retrofits, outside facility improvements and installation of a roof drainage system to prevent winter ice buildup on the east side of the building.

Formusa said a few finishing touches remain to be done, including some outdoor tasks, gutter work and building a new fence.

"All major work was substantially complete Aug. 19, allowing teachers two weeks of early classroom access," Formusa said. "The systems are operational, tested and performing to expectations."

Formusa further reported that the new heating, ventilation and cooling system provides a healthier environment for staff and students by quieter operation and "noticeably fresh indoor air quality."

New construction approach

The hiring of Formusa to oversee the project is a departure from the way earlier construction work was handled under a contract with McKinstry Essention, a Seattle-based company that is now involved in multi-million-dollar litigation with the School District. Under the McKinstry contract, work was overseen by McKinstry engineers working under the direction of district Director of Buildings and Grounds Howard Royal.

Formusa promised the school board in March that the work would be run differently and for less cost than work done under the McKinstry contract.

"We're managing it very close and tight from cradle to grave," Formusa said then.

Formusa told the school board Tuesday that with the Hemingway project the district "essentially acted as its own general contractor." He said the approach gave the district greater control on the project.

"The results were early completion, significant cost savings, excellent quality and a satisfied teaching staff," Formusa said.

Not all the work that the district plans for Hemingway was included in the budget for this summer's work. Left to be done are installation of new carpet, additional site improvements, new plumbing fixtures and further ice mitigation on the south side of the building.

Formusa told the school board that the district should also consider building a larger school lunch room.

Terry Smith: tsmith@mtexpress.com

5.6KShare

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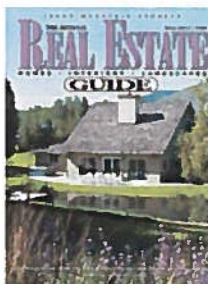


- Mountain Weddings
- Valley Woman
- Kids of Summer
- Valley Man
- Fourth of July
- Wagon Days
- Economic Almanac
- Valley Nonprofits
- Christmas Planner
- Christmas Section

MAGAZINES



- Winter
- Habitat
- Summer



AREA



- Local Area Maps
- Web Cams

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- Clearly unrelated
- Personal attacks on others

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•Relocating here?

VISUALS

Purchase photos
that are printed in
our newspaper.

Please call our
front desk to
place your order.

726-8060

HISTORY



•Hemingway Archives

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Comments

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roberto • 4 years ago

I'm not sure why the blaine county school board was afraid to hire locally the first time. Maybe they got burned in the past and felt people from elsewhere might be more honest? Maybe you just can't trust anyone ever and have to always be on top of whatever multi-million dollar project you have going at the time.hmmmm

^ | v • Share >

Bob Hunter • 4 years ago

Now that McKinstry and the school district have reached a out of court settlement in their law suit , it will be intesting how both parties try to put a p.r. spin on this spending debacle by the school administrators. Regardless of the outcome the real losers are the taxpayers.

3 ^ | v • Share >

Rod ➔ Bob Hunter • 4 years ago

Actually the taxpayers will do quite well as a result of the settlement, but you're correct about the administrators agreeing to the project in the first place.

2 ^ | v • Share >

Curt C. Richerund ➔ Bob Hunter • 4 years ago

They settled? Nothing in the MtExpress about that. Please provide more details.

2 ^ | v • Share >

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The Idaho Mountain Express is distributed free to residents and guests throughout the Sun Valley, Idaho resort area community. [Subscribers](#) to the Idaho Mountain Express will read these stories and others in this week's issue.

Edl, Michele

From: Brian Formusa <BKFORMUSA@msn.com>
Sent: Tuesday, July 18, 2017 7:07 PM
To: Edl, Michele
Cc: hroyal@blaineschools.org
Subject: RE: Permit 37-22815 (Hemingway School)
Attachments: HEM central plant 3_2016.JPG; HEM well flow Cx 3-14-14.pdf; mech room layout6.pdf; Sondex HEX.pdf; well test 8-7-13.pdf; 11-19 5-56am all Hps in Htg2 high spd.JPG; HEM central plant 3_2016.JPG; M3.0 EQUIPMENT SCHEDULES _ Layo.pdf; pump loop pressure lss calcs -PIPE-FLO REPORT Power Engineers.pdf; m1.3.pdf; M3.0 EQUIPMENT SCHEDULES _ Layo.pdf; M3.1 SHEET SPECIFICATIONS _ Lay.pdf; m1.0.pdf; m1.1.pdf

Michele,

Here is what you have requested. Attached; drawings, equipment specs, field notes and BAS screenshots during commissioning. Note below I have provided some data extraction for you red below. Drawings may be rudimentary since I was directly managing the installation as well – soup-to-nuts if you know the expression.

Feel free to call or you are invited to tour the installation here!

-Brian

Brian Formusa P.E.
Cell: (208)-309-3023

From: [Edl, Michele](#)
Sent: Tuesday, July 18, 2017 2:08 PM
To: [Brian Formusa](#)
Subject: RE: Permit 37-22815 (Hemingway School)

Brian Formusa,

I have a pretty good understanding of the place-of-use and the points-of-diversion/injection. After all school is easily visible in aerial photography. I also have the Well Driller's Reports for both wells, and a crew from the state office GPS'd the well locations last week. They also completed a calibration measurement which confirmed that the meter was operating correctly and within a reasonable margin of error. And as I stated, the representative from SPF engineering has provided measurement data 11/27/2013-1/23/2017

I know what the system will do now. I need information about the system did from Aug and Sept 2013.

- 1) I particularly need confirmation of the maximum rate of water that the system used on or before Sept 16, 2013. Five points of well flow reference: Commissioning tests from 3/14/16 –indicate full flow of **364-366 gpm** at 100% speed drive for well pumps, see my attached field commissioning notes. To corroborate I found a screenshot from the BAS later in 3/8/16 (attached) which indicated a flowrate of **366 gpm** for the well pump running at 100% speed drive flowrate. 3rd point of reference is the field testing of the well (attached) indicating well pump flow w/o any piping or HX attached pump at approx. 448 gpm. There is a fourth reference point from 11-19-13 with the system running at full capacity and outdoor temps of 34 F indicating the well was flowing '422 gpm UK' but I believe that is before the device was properly calibrated as it says UK or imperial units in the screenshot. I had every heat pump running at full capacity for that test. Still only a 6 degree delta T. Today, I went into the BAS and forced the well pump to full flow – it registered **369 gpm**. Wonderful Windows 10 is hiding that screenshot from me at the moment. I believe that the commissioning steps would have verified that rate. I am not expecting it to be the full diversion rate that was authorized by the permit, but I want to justify recommending a licensed rate of 360 gpm (~0.80 cfs), which was the calibration measurement of the system on July 12, 2017.
- 2) I could also use a system diagram. Would you be able provide an as-built general plan or elevation showing the HVAC system? **Attached.**

- 3) Lastly, I am expecting that the current system will be expanded to accommodate additions to the school in the not too distant future. Therefore, it would be very good to have a snap-shot of what was in place as a basis of comparison. Would you be able to provide equip specs (Ex. pump, heat exchanger) for the current system?
Heat exchanger sized for 400 gpm on well side, and 360 on bldg. side. System pumps sized for 340 gpm see attached submittals. Well pump tests in field commissioning indicated 448 gpm w/o system piping, and 366 gpm with.

Michele Edl

From: Brian Formusa [mailto:BKFORMUSA@msn.com]
Sent: Tuesday, July 18, 2017 12:19 PM
To: Edl, Michele <Michele.Edl@idwr.idaho.gov>
Subject: RE: Permit 37-22815 (Hemingway School)

Hi Michele,

Yes I was involved with the project from design, construction and through system commissioning, tuning of the wells (one production and one injection) and connected heat pump systems and can assist you. I also have access to the building automation system that oversees and records well flow and pump run time data.

Let me know how I can assist you further.

-Brian

Brian Formusa P.E.
Cell: (208)-309-3023

From: [Edl, Michele](#)
Sent: Tuesday, July 18, 2017 12:05 PM
To: bkformusa@msn.com
Subject: Permit 37-22815 (Hemingway School)

Brian Formusa,

I'm taking a chance that this is still your email. I spoke with you briefly yesterday. Thank you for agreeing to answer questions related to some of the Blaine County School District's climate control systems.

Permit 37-22815 for heating and cooling uses in Hemingway School was issued to the BCSD in May 2013. They didn't need to submit the Statement of Completion until June 1, 2016. However, they submitted it on September 16, 2013. And it was accepted even though a condition on the permit required flow measurement records and annual reports. That Proof statement officially ended the development period of the permit. And that means that the period of time that the school district could have beneficially used water was inadvertently cut very short.

In order to issue a water right license for the uses, I am required to confirm that water was put to beneficial use during the development period. And I am finding that to be a challenge in this case.

At my request, I have received some measurement records from the school district. The data begins November 27, 2013, which two months after the development period ended. I am willing to make an argument to my supervisor that the HVAC system was substantially in place and would have used water within the development period but I need some information with which to make that argument.

Because you were instrumental in seeing the project completed, I am assuming that you were present during the HVAC system's commissioning and that you can help me confirm beneficial use of water occurred before September 16, 2013.

At your earliest convenient moment, please confirm that you witnessed the commissioning and if you have any information about the system performance from that exercise. Thank you again.

Sincerely,

Michele Edl

Idaho Department of Water Resources

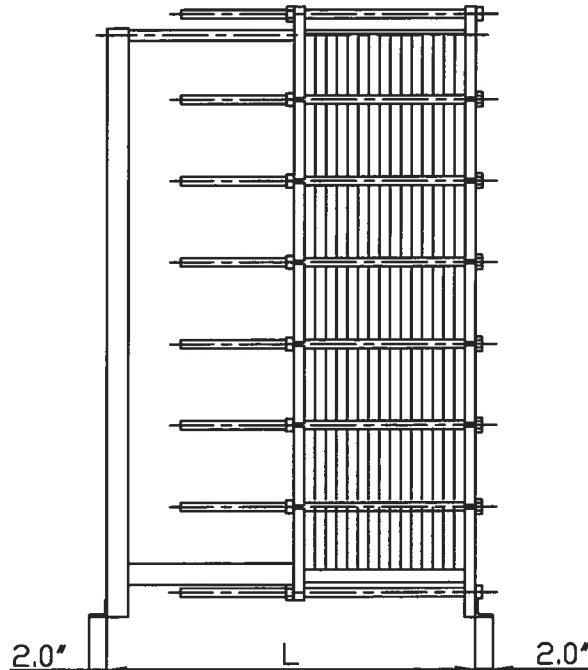
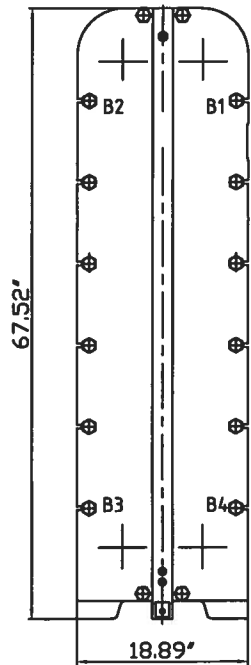
Water Rights Section

322 E Front St

Boise ID 83720

208-287-4946

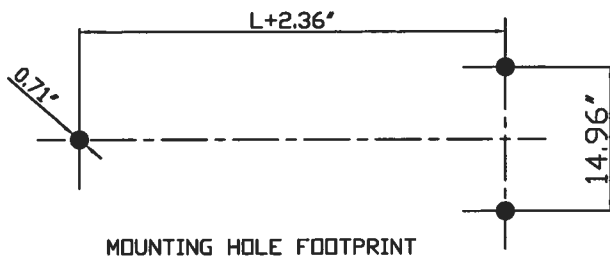
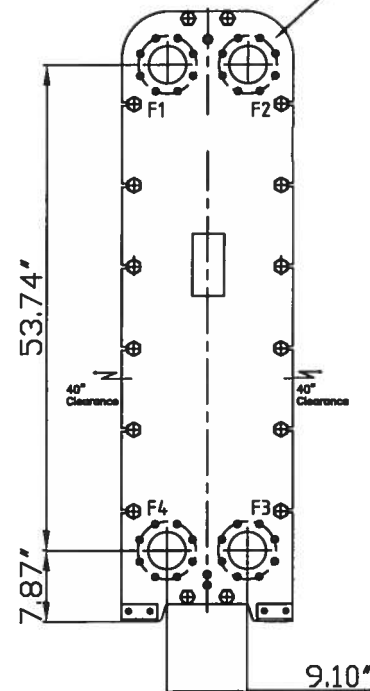
BACK



L = FRAME LENGTH FROM THE DATA SHEET

FRONT

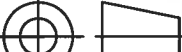
4.0' #150 Studded Port



MOUNTING HOLE FOOTPRINT

CAD Design

LAYER DK TURNED OFF

Dimensions without tolerance: ISO 2768-m		Drawn: SW	Date: 06/03/05	Check:	Date:	Description: S47-IG-xxx xxCustomer namexx		
ISO projektion 		 SONDEX Jernet 9 DK-6000 Kolding				Rev. date:	Rev. no.: 0	Drawing: XXXXXX

Sondex A/S PHE - Design & Datalist

V10A33

Innovative Air Inc
025Kerry
D3030503/28/2013
Ref: HEM HX

PHE-Type	S47-IG10-106-TKTM97-LIQUID	Hot side	Cold side
Flowrate	(g.p.m.)	400.00	340.00
Inlet temperature	(°F)	39.00	30.87
Outlet temperature	(°F)	34.00	37.00
Pressure drop	(PSI)	8.07	6.47
Heat exchanged	(Btu/h)	1006269	

Thermodynamic properties:		Water	25% PropGlycol
Density	(Lb/Ft ³)	62.42	64.11
Specific heat	(Btu/Lb*F)	1.00	0.95
Thermal conductivity	(Btu/h*Ft*F)	0.33	0.27
Mean viscosity	(cP)	1.65	5.06
Wall viscosity	(cP)	1.73	4.53
Inlet branch		F1	F3
Outlet branch		F4	F2

Design of Frame / Plates:

Plate arrangement (passes*channel)	1 x 53 + 0 x 0
Plate arrangement (passes*channel)	1 x 52 + 0 x 0
Number of plates	106
Effective heat surface (Ft ²)	575.54
Plate material	0.0197 inch AISI 304
Gasket material	EPDM HT SONDER LOCK (S)
Max. design temperature (°F)	230.00
Max. Working/test pressure (PSI)	150.00 195.00
Max. Differential pressure (PSIG)	-11/75 min/max
Approval	ASME less Stamp*
Liquid volume (Ft ³)	4.26
Frame length (Ft)	3.39
Net weight (Lb)	1402
Frame type	IG
Connections HOT side :	4 INCH Rubber lined studded end connection, #150
Connections COLD side:	4 INCH Rubber lined studded end connection, #150

Sondex Inc 7040 International Drive
Tel: (502)-933-9991Louisville, KY
Fax: (502)-933-9914

AUTOMATEDLOGIC

Graphics

Properties

Alarms

Trends

Logic

Reports

Central Plant

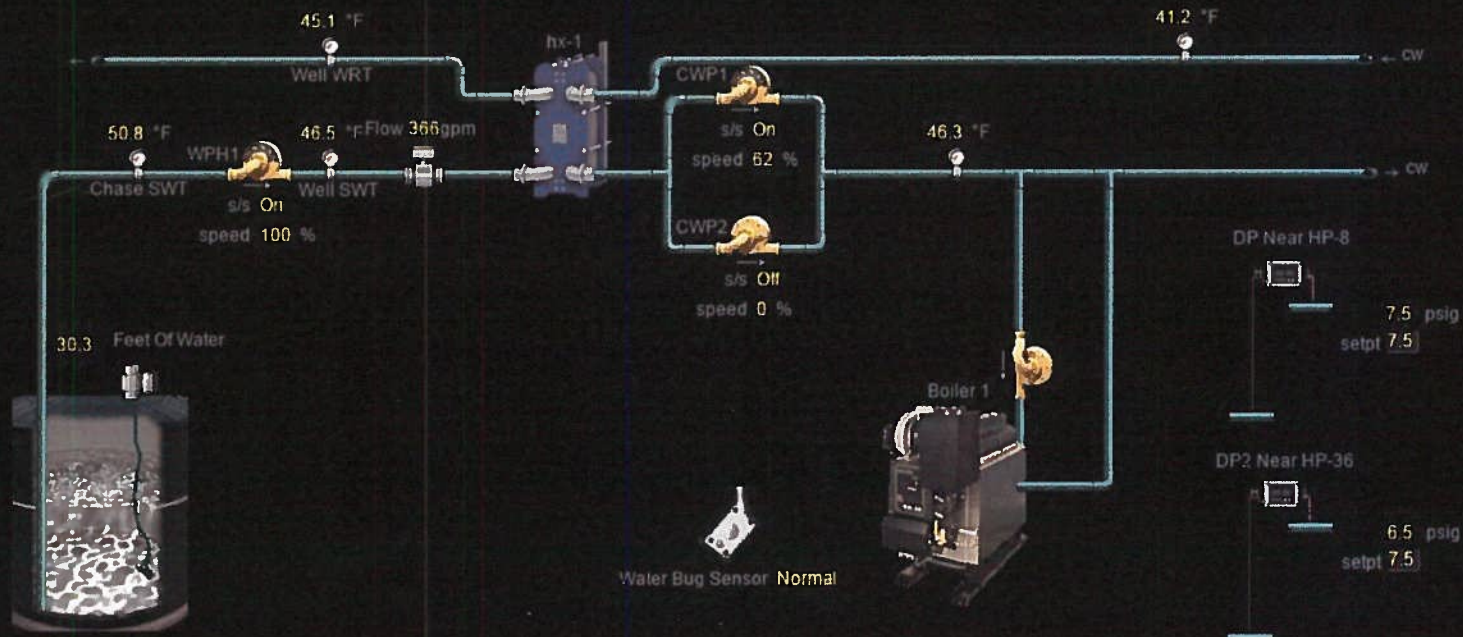


- Classroom B110 HP-3
- Classroom B111 HP-2
- Classroom B112 HP-1
- Classroom E101 HP-2
- Classroom E102 HP-2
- Classroom E103 HP-2
- Classroom E104 HP-2
- Classroom E105 HP-2
- Classroom E106 HP-2
- Classroom E107 HP-3
- Classroom E108 HP-3
- Computer Lab HP-8
- Library HP-15
- Tech. Rm. HP-35
- Administration HP-18
- Restrooms/Main Entry
- Music HP-40
- Cafeteria HP-34
- Cafe Slave HP-33
- South Hall HP-5
- East Hall HP-30
- Gym HP-36
- Gym HP-37
- Gym HP-38
- Gym HP-39
- Central Plant
- Outside Air Conditions
- ERV-1
- ERV-2
- ERV-3
- Alturas Elementary
- Weather Forecast



41.1 °F

Central Plant

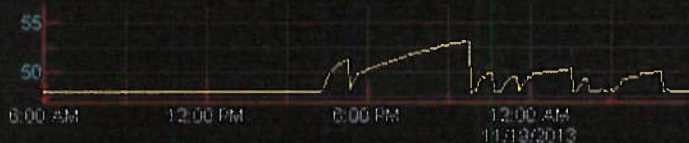




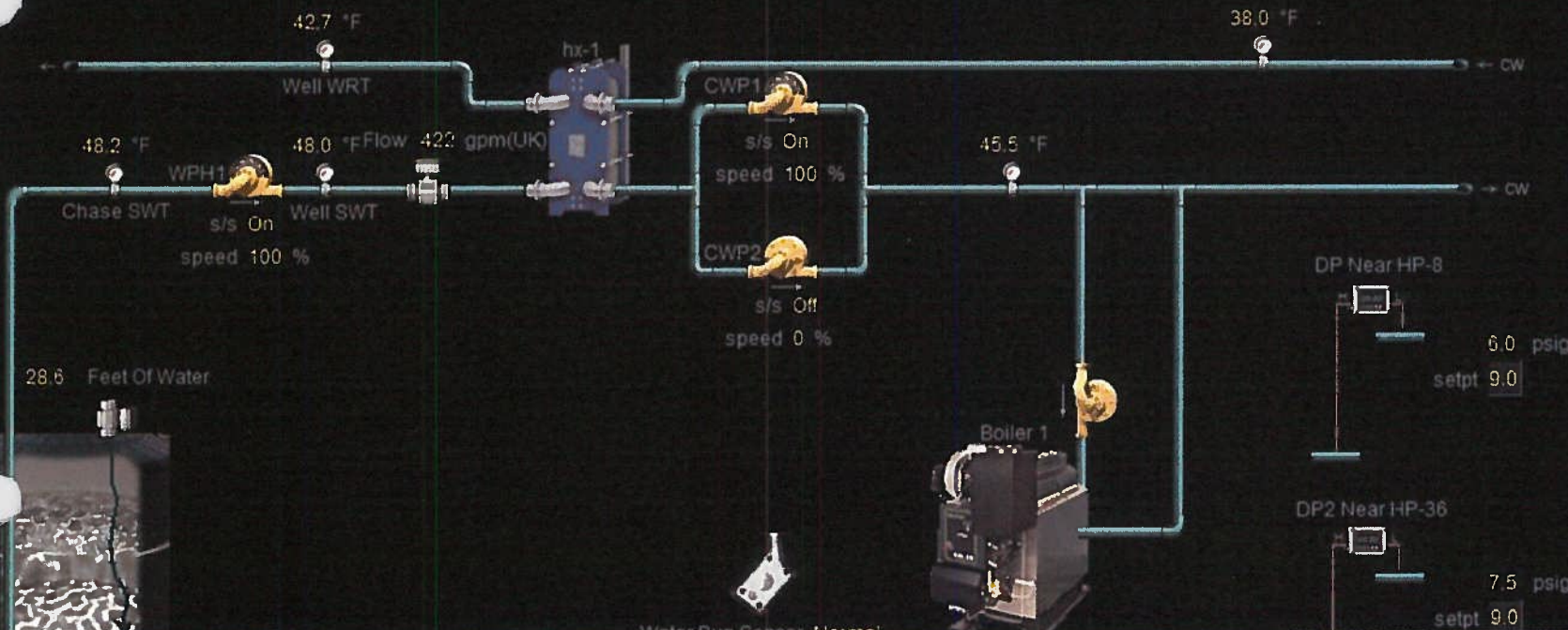
34.1 °F

Central Plant

WELL SUP TEMP

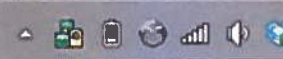


CW SUP TEMP



Water Pump Saver Normal

100%



5:56 AM
11/19/2013



Walker

WATER SYSTEMS

624 Pierce Street
Twin Falls, ID 83301
208-733-4744
208-726-5145
208-736-0795

Customer #

Location ID

Page

Pump Test / Well Test

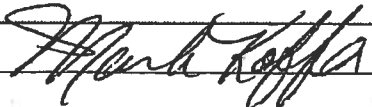
Customer / Project Date:

Location

Employee Well # Static Water Level

Time	11:43	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	
Time	11:45	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	Sand Test - 3 grains
Time	11:56	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	
Time	12:00	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	
Time	12:15	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	Overload tripped, was in sunlight
Time	12:20	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	
Time	12:36	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	Water Temperature 52° F
Time	12:45	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	
Time	1:00	Pumping Level		P-Tube		Flow (GPM)		Comments	Shut Down - recovered in 20 sec.
Time	1:10	Pumping Level		P-Tube		Flow (GPM)		Comments	On
Time	1:12	Pumping Level	24'4	P-Tube	13	Flow (GPM)	448	Comments	Sand Test - no sand
Time	1:50	Pumping Level		P-Tube	18	Flow (GPM)	524	Comments	Flood
Time	1:53	Pumping Level	22'	P-Tube	5	Flow (GPM)	280	Comments	
Time	2:00	Pumping Level		P-Tube		Flow (GPM)		Comments	Off
Time		Pumping Level		P-Tube		Flow (GPM)		Comments	
Time		Pumping Level		P-Tube		Flow (GPM)		Comments	
Time		Pumping Level		P-Tube		Flow (GPM)		Comments	
Time		Pumping Level		P-Tube		Flow (GPM)		Comments	

Additional Comments

Employee Signature  Date 8/13/13

HEM Cx
WELL 3/6/14

HEM WELL / HX TESTS

TRENDS SHOW WELL RUNNING @ 100% OFTEN FOR LONG PERIODS WITH HIGH & LOWER LOADS. NEED MORE MODULATION IF POSSIBLE. Cx TEST:

		WELL		Loop Pump							
VFD	GM	WRT	WSI	CWS	CWR	CWP VFD	OSA TEMP	Time			
100	366	44.7	45.7	45.7	42.2	60%	43°	11:19	3/6/14		
"	"	"	"	"	41.5	"	"	11:22			
100%		44.3-45	45.7 constant	45.9-45.6 only 0.1°F DT - too small	39.7-41.6			Trend			

GOING TO LOCK WELL VFD & SEE RESULT WATCH CWS & WRT

Mode	Pressure	Temp 1	Temp 2	Temp 3	Temp 4	Temp 5	Temp 6	Time
NORMAL - 100%	365	44.2	45.7	45.7	40.7	58%	43	11:33
LOCK TO - 90%	328	44.5/3	"	45.7	40.3/0	57	43	11:38
" 80%	292	44.7	45.6	45.7	40.8	58		11:43
" 70%	254	44.3	45.6	45.7	40.3	57		11:50
" 60%	214	45.0	45.6	45.7	40.2	57	43.5	11:55
" 50%	208	44.7	45.6	45.7	40.7	57%		12:00
" 40%	207	45.0	45.6	45.7	41.0	56 CWP VFD	44.2° OSA	12:05
" 30%	207	44.7	45.6	45.6				12:10
Don't want to go lower than 30% for now - now unlock well VFD:								
UNLOCK - 100%	364	44.8	45.6	45.7	42.7	60	45.1	12:16

ESSENTIALLY UNCHANGED & GETTING WARMER WATER POSSIBLE OUT OF HX W/ LOWER FLOWS ONLY 0.1°F ΔT APPROACH!

W/ F ACROSS HX UNCHANGED WITH LOWER WELL FLOWS 100% → 30%



AN EXISTING BUILDING:
HEMINGWAY ELEMENTARY
IDAHO KETCHUM

DATE
04 MAY 2013

M3.0

GROUND SOURCE AIR-WATER HIGH EFFICIENCY HEAT PUMP SCHEDULE - DIRECT PROCUED BY BCSD

[illegible][illegible]

HYDRONICS EQUIPMENT SCHEDULE - DIRECT PROCURED BY BCSD

[illegible]

ERV- ENERGY RECOVERY UNIT SCHEDULE - DIRECT PROCURED BY BCSD

TAG	NAME	MODEL	TYPE	SUPPLY VOL EXT CFM	RETURN VOL CFM	LOCATION	R.O. 250 Arrangement	CHASERS Arranged	GAZ FLOW OUT	ELECT	Misc. Cn Amps	Size	Supply Ft./Min	Ext. Hm	WEIGHT LBS	SPECIAL	PROB
ENW-1	GREEN-ICE	ENH-90A-30	ENTHALPY	5720	5400	INDOOR	SIDE	DISCH	77.0 gph	230/70V	8 1/4	90A	3	3	3.002	Unk. Disposed April 14, 1992	
ENW-2	GREEN-ICE	ENH-90A-30	ENTHALPY	6200	4000	INDOOR	DISCH	DISCH	77.0 gph	230/70V	8 1/4	90A	3	3	3.006		Chase & Service
ENW-2	GREEN-ICE	ENH-90A-30	ENTHALPY	3400	3000	INDOOR	DISCH	DISCH	9.0 gph	230/70V	7 1/2	80	1.1	1.1	2.938		none

[illegible]

ELECTRIC SCR DUCT HEATER SCHEDULE - DIRECT PROCURED BY BCSO

Disb	PIF-PDSE	MAAE	RW	MODEL	Draw Size	BLDCC	Min. Ckts	Prohibit Size	Control	Special	Min. Design Airflow, CFM	Control Parameter
Disb 1	PIF-GALF	IN-DELETED	23	Proportional Control	11432	204.73%	1	SCS	Intermittent requested SCS per sec	Intermittent requested SCS per sec	1,300	Discharge vent open 42 deg. F.
Disb 2	PIF-GALF	IN-DELETED	24	Proportional Control	32323	204.73%	1	SCS	Intermittent requested SCS per sec	Intermittent requested SCS per sec	1,300	Discharge vent open 42 deg. F.
Disb 3	PIF-GALF	IN-DELETED	27	Proportional Control	14313	204.73%	1	SCS	Intermittent requested SCS per sec	Intermittent requested SCS per sec	1,400	Discharge vent open 42 deg. F.
Disb 4	PIF-GALF	IN-DELETED	19	Proportional Control	34344	204.73%	1	SCS	Intermittent requested SCS per sec	Intermittent requested SCS per sec	1,275	Discharge vent open 42 deg. F.

AIR TERMINAL SCHEDULE

Tag	Make	Model	Use	Size	Max. GPM	Max. N.C.	Deflection	Location	Mount	Frame	Options	Finish
S-1	Titius	3400 FS	Supply	8-8	32	38	CEILING	CEILING	1 BAR	24x24 LxW IN	NO DAMPER	STD WHITE
S-2	Titius	3400 FS	Supply	8-8	150	24	DOUBLE	SIDEWALL	STD	ALUM	NO DAMPER	STD WHITE
S-3	Titius	3400 FS	Supply	24x10	500	24	DOUBLE	SIDEWALL	STD	ALUM	NO DAMPER	STD WHITE
S-4	Titius	3400 FS	Supply	300x8	750	19	DOUBLE	SIDEWALL	STD	ALUM	NO DAMPER	STD WHITE
S-5	Titius	3400 RL	Supply	300x18	1500	16	DOUBLE	SIDEWALL	HEAVY DUTY	STEEL	NO DAMPER	STD WHITE
S-6	Titius	3400 FS	Field measure		535			CEILING	1 BAR	24x24 LxW IN	NO DAMPER	STD WHITE
R-1	Titius	3500 RL	RET/FSH	12x12	27			CEILING	1 BAR	STEEL	NO DAMPER	STD WHITE
R-2	Titius	3500 RL	RET/FSH	30x16	570	16	DOUBLE	SIDEWALL	LOUVERED	STD	NO DAMPER	STD WHITE
R-3	Titius	3500 FS	RET/FSH	30x16	535	16	DOUBLE	SIDEWALL	LOUVERED	STD	NO DAMPER	STD WHITE
R-4	Titius	3500 FS	RET/FSH	30x16	1870	24	DOUBLE	SIDEWALL	LOUVERED	STD	NO DAMPER	STD WHITE
R-5	Titius	3500 FS	RET/FSH	18x6	440	25	DOUBLE	SIDEWALL	LOUVERED	STD	NO DAMPER	STD WHITE
R-6	Titius	355 FS	RET/FSH	24x14	1380	24	DOUBLE	SIDEWALL	LOUVERED	STD	NO DAMPER	STD WHITE
R-7	Titius	3500 FS	RET/FSH	24x14	1380	24	DOUBLE	SIDEWALL	LOUVERED	STEEL	NO DAMPER	STD WHITE
R-8	Titius	355 ZNS	RET/FSH	Field measure				SIDEWALL	STD	STEEL	NO DAMPER	STD WHITE

[illegible]

DATE
MAY 2013

13.1

Figure 1

ALL WORK MUST BE TIMELY COMPLETED, TESTED, BALANCED AND FULLY OPERATIONAL BY AUGUST 31ST 2013. WORK COMMENCES ON JUNE 10TH 2013. THE PROJECT IS DESIGN-BUILD (IN THAT THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL INSTALLATIONS AND PRE-APPROVING SHOP DRAWINGS PRIOR TO CONSTRUCTION WITH THE URSITE PROJECT MECHANICAL ENGINEER. REFER TO THE FOLLOWING SHEET NOTES FOR MORE INFORMATION. MUST HAVE EQUIPMENT IS BEING SELF-PROCEURED BY USCEL, REFER TO SCHEDULES FOR MORE INFORMATION. SUBMITTALS FOR ALL EQUIPMENT ARE AVAILABLE ON REQUEST.

[illegible]

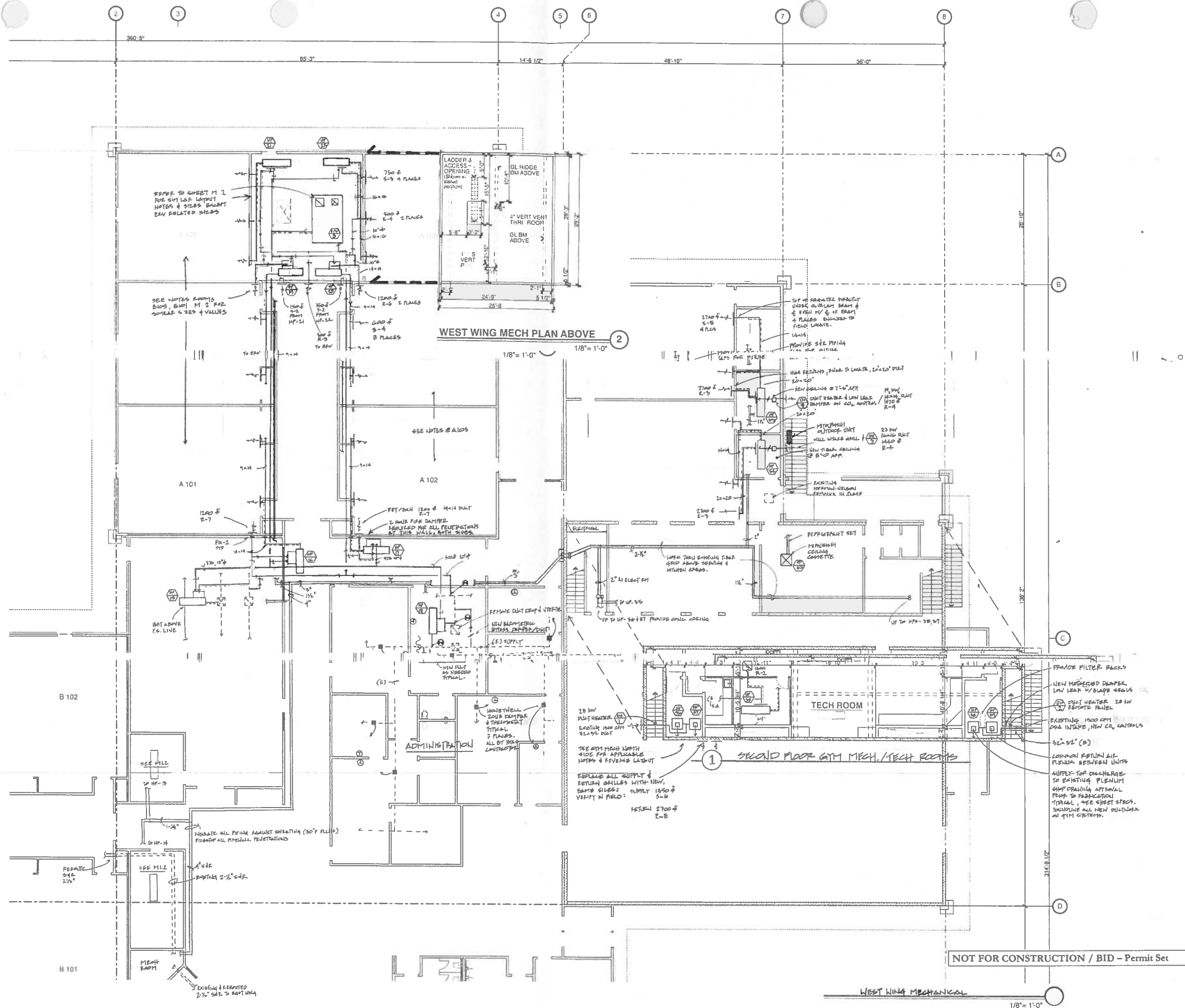
THE ARCHITECTURAL DRAWINGS FOR PROPOSED CEILING, OR ADDITIONAL CEILING, CONSTRUCTION, ARE RESPONSIBLE FOR DETERMINING AND DISPOSAL OF ALL EXISTING EQUIPMENT, DUCTWORK, AND PIPING, UNLESS OTHERWISE NOTED ON PLANS. DRYS MUST ASSEMBLE ALL NEW MATERIALS. REUSE OF MATERIALS IN RELATIVELY CLEAN CONDITIONS AND EXCELLENT FUNCTIONAL CONDITIONS IS ENCOURAGED IF NOT NOTED ON PLANS. WHEN NOT ALL SUCH CONSIDERATIONS, CENTRAL ENGINEER OR RECORD OR INSPECTOR, PRE-APPROVAL AND PROVIDE CREDIT TO CL-POWER FOR ANY REUSE OF MATERIAL. DISPOSAL OF ALL REMAINING MATERIAL IN A RESPONSIBLE MANNER.

ALL WORK SHALL MEET OR EXCEED CONSTRUCTION STANDARDS FOR PREVIOUS BCD HVAC IMPROVEMENT WORK; IF UNFAMILIAR WITH THESE STANDARDS OF CONSTRUCTION REVIEW RECENT WORK PERFORMED, CONSULT BCD OR ENGINEER OF RECORD AND A TEAM IN THESE FACILITIES WILL BE ARRANGED PRIOR TO BIDDING.

- [illegible]

[illegible]

- [illegible]



PROJECT NUMBER
5143
DATE
MAY 10, 2013

MECHANICAL WEST WING

AN EXISTING BUILDING:

HEMINGWAY ELEMENTARY

KETCHUM

Brian Formosa P.E. P.L.C.
Project Manager/Architect/MECHANICAL ENGINEER/DATE
11/20/2008 04:47 email:brianformosa@brianformosa.com 808.5.3.37

REVISIONS

DATE
MAY 6 2013

NOTED: 4/23/13 12:16 PM

M1.3

NOT FOR CONSTRUCTION / BID - Permit Set

WEST WING MECHANICAL

1/8" = 1'-0"