

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 47-17635
Exam Date: 05/11/2021

1. Current Owner:
TWIN FALLS SCHOOL DISTRICT #411 201 MAIN AVE W TWIN FALLS ID 83301-6103
2. Accompanied by: Bill Southwick
Phone No: 208-212-6902
Address: 1130 Highland Ave, Twin Falls ID 83301
Relationship to permit Holder: Assistant Director of Maintenance, T.F.S.D. #411

3. SOURCE: GROUND WATER

Method of Determination: On-site Inspection

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis
N/A			

Comments: School utilizes water from Twin Falls municipal system for culinary water and pressurized irrigation utilizing Twin Falls Canal Co. shares.

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

Water Right No.	Source	Purpose of Use	Basis
N/A			

Comments: _____

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER SE¼ NW¼ NW¼, Sec. 12, Twp 10S, Rge 17E, B.M. TWIN FALLS County

Method of Determination: On-site inspection

PLACE OF USE: HEATING

[illegible]

PLACE OF USE: COOLING

[illegible]

Method of Determination: On-site inspection

3. Delivery System Diagram Attached (required). Indicate all major components and distances between components.
☒ 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.
☒ 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
D0067041		20			

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Flow Meter	Ultrasonic	GE Panametrics	PT878	09045		4/6/2021

2. Measurements: Flow was measured simultaneously for 10 minutes using the Department's Panametrics flow meter and the installed in-line Badger meter; I monitored the in-line meter while David Graybill operated the Panametrics:
 Badger averaged 92.3 gpm
 Panametrics averaged 91.8 gpm
 The difference between measurements was within 1%.
 92.8 gpm was the highest flow rate observed during the measurement. 92.8 gpm $\approx$ 0.21cfs
 Figure 1 shows flow rate on the in-line meter at 92.747 gpm $\approx$ 0.21 cfs

E. FLOW CALCULATIONS N/A

_____ Additional Computation Sheets Attached

Measured Method:

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: N/A

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

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

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

2. Volume Calculations for Other Uses: Heating/Cooling

When filing Proof of Beneficial Use the school provided an average of water use based on the total meter reading taken in August of 2020 of 13,698,909 gallons. The school opened in August of 2016, so that is an average over 4 years:

$$13,698,909 \text{ gallons} / 325,850 \text{ gal/af} = 42.0 \text{ af} / 4 \text{ years} = 10.5 \text{ af}$$

Since the provided volumes were averaged over 4 years, I obtained additional volume readings and requested they report the volume monthly through the rest of 2021. I wasn't confident that an average of the total volume over four years would be representative of water use for any single year. During the field exam I was able to get additional readings recorded by the school custodian for 2020 & 2021 and they continued to report monthly volume to me throughout 2021. The results:

January 2021 volume = 14,428,575 gallons; January 5, 2022 = 17,278,512 gallons; $17,278,512 - 14,428,575 = 2,849,937$ gallons;

$$2,849,937 \text{ gallons} / 325,850 \text{ gallons per acre foot} = 8.75 \text{ af}$$

Since the averaged yearly volume is higher and it occurred during the beneficial use development period, I'm recommending a yearly volume of **10.5 af** for this non-consumptive use.

G. NARRATIVE/REMARKS/COMMENTS

David Graybill and I met with Bill Southwick and Josh Allen, Head Custodian for Pillar Falls Elementary School, on the morning of 5/11/2021 to calibrate their in-line meter, get a flow measurement and collect additional volume data if available.

The school has a closed loop heat pump that utilizes a heat exchanger to extract heat from either the ground water or the fluid in the closed loop system. Once the heating/cooling potential is utilized, the water is delivered to an injection well and returned to the aquifer. The heating/cooling system is a completely non-consumptive use of water. The school also has a natural gas boiler system with a closed loop refrigerant system that is utilized as the primary heat source during the winter months according to Emory Warren, Manager of Maintenance Operations for the school district. Emory also stated that no water is utilized in the boiler system and that the heat pump is used primarily for cooling but may also be used for heating throughout the year and serves as a back up to the boiler system in the winter. Based on that information I will be recommending both heating/cooling for year round use to allow the school the flexibility to utilize the system as a primary heating/cooling system in the spring/summer/fall, or as a backup when needed in the wintertime.

David and I ran a 10 minute measurement utilizing both the in-line meter and the Department's portable ultrasonic meter to calibrate the school's meter and obtain a measurement of the flow rate. The results indicate the accuracy of the school's in-line Badger M-2000 magnetic meter was within an acceptable 1% variance from the Department's meter and we measured a flow rate of 0.21 cfs for the system (see Figure 1 & Summary of Measurement Readings).

The volume data collected utilizes the average water use reported after four years that was filed with the proof of beneficial use, available monthly volumes recorded by the head custodian and monthly volumes reported monthly from June to December of 2021 via email by Bill Southwick. All are included with this field report.

Recommend licensing a flow rate of 0.21 cfs and a volume of 10.5 af.

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>
HEATING	01/01 to 12/31	0.21 CFS	10.5 AF
COOLING	01/01 to 12/31	0.21 CFS	10.5 AF

Totals: 0.21 CFS 10.5 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

Bill Mills -

Field Examiner's Name Ben Mott Date 1-26-2022Reviewer By Shm Date 1/28/2022



Figure 1: School's in-line magnetic meter (note the gallons per minute)



Figure 2: Full view of meter



Figure 3: Heat Exchanger

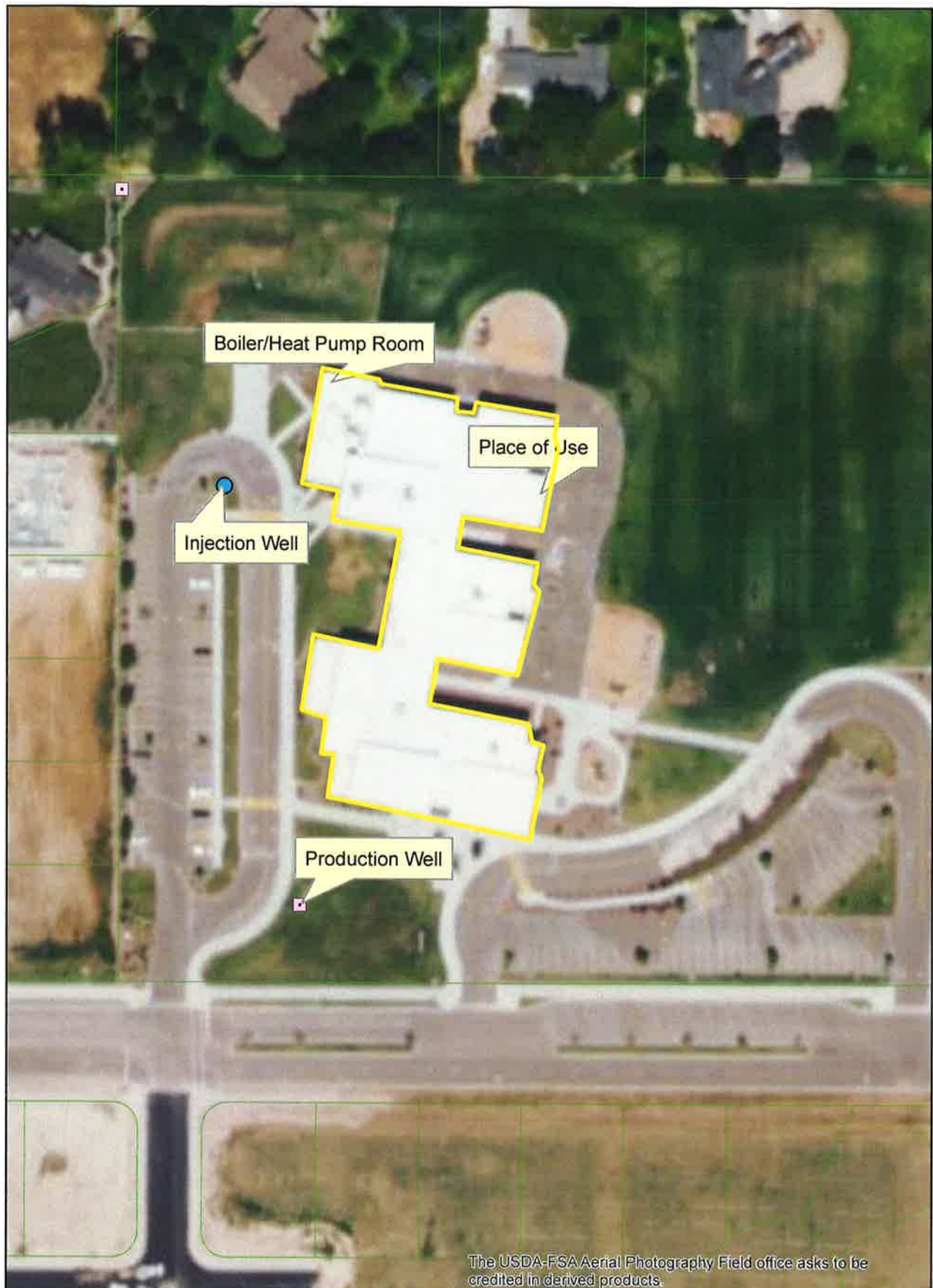


Figure 4: Data Plates on Heat Exchanger



Figure 5: Production Well

System Diagram 47-17635



Summary of Measurement Readings Pillar Falls Elementary School on 5/11/2021:

Josh Allen 208-539-8870 Head Custodian

First reading on 5/11 = 14051621 USG

Timed 14505654

- 14504731

= 923/10 minutes = 92.3 gpm $\approx$ 0.21 cfs

Flow meter averaged 91.87 gpm within 1.0%

High flow rate Observed was 92.8 gpm

Panametrics

Start 55061.6

End 55980.3

918.7/10 minutes = 91.8 gpm

Field Notes
5/11/2021 →

Pillar Falls

0.27 $\approx$ 121.2 gpm

5/11 14051621 USC

14502613 start
14503756 -

1,143 114.3 gpm

0.25

Soshva Allen

208 539 8870

4731

92.3

start

~~5071~~

91.87

14502613

14505654

2849

Barker M-scores-

Field Notes
pg 2

Rock Creek →
Elementary

~~Empty~~

208-212-6903

9 - Tues - Rock Creek

5294, 2143 us KG

121.2 gpm ≈ 0.27

5294, 6493

5294, 4039

52943999

Robert Watkins

208 539 8702

5294, 3210 us KG
5294, 3999

142.26 gpm

1, 922

5296321

5294, 399

Submitted with Proof of Beneficial use:

Pillar Falls Elementary School

Year	January	February	March	April	May	June	July	August	September	October	November	December	
2016	0	0	0	0	0	58.2	58.2	0	58.2	58.2	58.2	0	0
2017	0	0	0	0	0	58.2	58.2	0	58.2	58.2	58.2	0	0
2018	0	0	0	0	0	58.2	58.2	0	58.2	58.2	58.2	0	0
2019	0	0	0	0	0	58.2	58.2	0	58.2	58.2	58.2	0	0
2020	0	0	0	0	0	58.2	58.2	0	58.2			0	0

13,698,909 Gallons/98 days per year (avg.) = 139,784.79 gallons per day per year (reflecting a yearly average over 4 yrs. of operation)

139,784.79 gallons per year/4 years = 34,946.20 gallons per day

34,946.20 gallons per day/10 hours of operation per day = 3494.62 gallons per hour

3494.62 gallons per hour/60 minutes per hour = 58.2 gallons per minute (average)

The reading was not done on a consistent basis thus we took the average usage over the time span of the operation.

The system was designed to accommodate 120gpm flows.

RECEIVED

SEP 01 2020

DEPT OF WATER RESOURCES
SOUTHERN REGION

Mills, Bill

From: Bill Southwick <southwickbi@tfsd.org>
Sent: Wednesday, January 5, 2022 6:46 AM
To: Mills, Bill
Subject: well readings

Pillar Falls 17278512

Rock Creek 7690.9175

Mills, Bill

From: Bill Southwick <southwickbi@tfsd.org>
Sent: Thursday, December 2, 2021 8:01 AM
To: Mills, Bill
Subject: water readings

Pillar Falls Elementary 17271190

Rock Creek Elementary 7688.4859

Mills, Bill

From: Bill Southwick <southwickbi@tfsd.org>
Sent: Monday, November 1, 2021 8:35 AM
To: Mills, Bill
Subject: WELL READINGS

BILL HERE IS THE WELL READINGS FOR NOVEMBER

ROCK CREEK 7675.3492

PILLAR FALLS 17247492

Mills, Bill

From: Bill Southwick <southwickbi@tfsd.org>
Sent: Friday, October 1, 2021 7:47 AM
To: Mills, Bill
Subject: RE: Thanks Bill

Here are the water readings for October Rock Creek 7538.6774 and Pillar Falls 17144490

From: Mills, Bill <Bill.Mills@idwr.idaho.gov>
Sent: Wednesday, September 1, 2021 12:43 PM
To: Bill Southwick <southwickbi@tfsd.org>
Subject: Thanks Bill

Thanks Bill!

From: Bill Southwick [<mailto:southwickbi@tfsd.org>]
Sent: Wednesday, September 1, 2021 8:58 AM
To: Mills, Bill <Bill.Mills@idwr.idaho.gov>
Subject: Re: My email at IDWR

The water reading for Pillar Falls is 16536693. The water reading for Rock creek is 6947.4392. Thanks Bill

Sent from my iPhone

On Aug 17, 2021, at 1:35 PM, Mills, Bill <Bill.Mills@idwr.idaho.gov> wrote:

Hey Bill,
You now have my email and it would be great if you could send the meter readings for Pillar Falls & Rock Creek elementary schools each month,
Thanks!
Bill

Mills, Bill

From: Bill Southwick <southwickbi@tfsd.org>
Sent: Wednesday, September 1, 2021 8:58 AM
To: Mills, Bill
Subject: Re: My email at IDWR

The water reading for Pillar Falls is 16536693. The water reading for Rock creek is 6947.4392. Thanks Bill

Sent from my iPhone

On Aug 17, 2021, at 1:35 PM, Mills, Bill <Bill.Mills@idwr.idaho.gov> wrote:

Hey Bill,
You now have my email and it would be great if you could send the meter readings for Pillar Falls & Rock Creek elementary schools each month,
Thanks!
Bill

TFSD

Monthly Flow Meter Reading

Year 20 21

School: Piller Falls

Date	Beginning Reading	Amount Used	Initial
July '2021	15043885		
Aug 1 2021	15762930		
Sep			
Oct			
Nov			
Dec			
Jan			
Feb			
Mar			
Apr			
May			
June			

Pillar Falls Elementary

2020

Monthly Flow Meter Readings

Date	Beginning Reading	Ending Reading	Signature
July			
Aug ✓			
Sept			
Oct 2020		14414589	
Nov 2020	14414589	14428575	
Dec 2020 END	14428575	14428575	
Jan 2021	14428575	14428575	
Feb 2021	14428575	14428575	
Mar 2021	14428575	14428579	
Apr	14428579	14453646	
May	14453686		
June			

10786
0