

WATER PERMIT NO. 2812-2

Name of Applicant: Canyon Springs Sanitary District

Address: 9191 Emerald Ridge Rd, Rapid City SD 57701

Phone: 509 492-8185

Amount of Water Claimed: 0.22 cfs

Total Acres: NA

Source of Water Supply: groundwater (one well)

Water to be used for: water distribution system

County: Pennington

Type of Waste Disposal System:

Location: approximately 4 miles northwest of Rapid City

PRIORITY

Date Received: 6-18-20

Application/License Fee: \$ 950 (needs refund)

Corrected Application Received:

Period of Annual Use: January 1 – December 31

Remarks: Water Right No. 2576-2 authorizes 1 well for the district

Diversion Point: SE 1/4 SW 1/4 Sec 23-T2N-R6E

Land to be Irrigated: NA

Depth of Well: 550

Well Driller:

Remarks:

Type of Map:

Prepared by:

			23		
		⊗			

Reviewed and the Number Assigned on: 6-18-20

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

SD EForm - 1585LD V5

FORM 2: Application for uses other than irrigation
(type or print)

RECEIVED

JUN 18 2020

WATER RIGHTS
PROGRAM

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>2812-2</u> (office use only) Hydrologic Unit <u>10120110</u>
	Basin <u>Upper Cheyenne</u>
	Newspaper <u>Rapid City Journal</u>

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

- | | | | |
|---|---|--|--|
| ☐ Municipal | ☒ Water Distribution System | ☐ Recreational | ☐ Institutional |
| ☐ Rural Water System | ☐ Commercial | ☐ Fish & Wildlife | ☐ Geothermal |
| ☐ Domestic (over 18 gpm) | ☐ Industrial | ☐ Other | |

Type of Application:
(check one)

- ☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation
- ☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____
- ☐ Amendment/Correction to Permit No. _____

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

Existing Water Right No. 2576-21. Name to Appear on Water Permit Canyon Springs Sanitary DistrictMailing Address 9191 Emerald Ridge Rd. Rapid City SD 57702
(Address) (City) (State) (Zip Code)Phone 509-492-8185 Mobile _____ Email mjubie@scullconst.com2. Amount of water claimed 0.22 *CFS or 100 **GPM and 25 ***AF or 8,066,500 Gallons
Flow rate and volume are both required. (*Cubic Feet per Second) (**Gallons per Minute) (***Acre Feet - storage capacity of dam/dugout or annual use)3. Source of water supply Madison Formation4. Location of point of diversion Area 8, Block 1, SE1/4, SW1/4 Section 23, T2N R6E County Pennington
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☐ Yes ☐ NoIf "Yes," where will water be used? SW1/4 Sec 23, NW1/4 NW1/4 Sec 26, S1/2 SE1/4, NE1/4 SE1/4
(example - NW1/4 section 12-T104N-R53W) Sec 22; T2N-R6E5. County or counties where water will be used Pennington6. Annual period during which water is to be used Jan 1 to December 31

7. Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

The Canyon Springs Sanitary District plans to construct Well #2 to increase the water supply capacity for the residents of the Canyon Springs Sanitary District. The proposed well will increase the capacity of the water system by 100 gpm (actual capacity dependent on well construction). Currently the system is operating on Well #1 and the proposed Well #2 will provide redundancy to the system. See attached Preliminary Engineering Report.

I, Mike Jubie President CSWSD, the applicant, certify under
Name of Person Title (if applicable)

penalty of perjury that I have read this application, examined the attached map, and that the matters stated are true. I further certify, if acting on behalf of an entity or individual other than myself, that I am authorized to submit this application.

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Also, attach map and any other technical information. (see instructions)

Supplemental Information

(type or print)

1. Well Information (check one or both as applicable) ☒ Drilling new well(s) ☐ Using existing well(s)

a) If new wells, how many 1 Have test holes been drilled ☐ Yes ☒ No Drilled by _____
(if yes, please provide copies of logs)

b) If existing wells, how many 1 Provide copy of log(s), if available. Drilled by Taylor Drilling

For either Existing or Proposed Wells:

c) Well Depth (required) 550 Depth to Top of Water Bearing Material 300 Depth to Water from Surface 300

d) Distance to nearest domestic well on applicant's property 625 ft Property owned by others 350 Doty Fire Dept.

2. Wastewater Disposal System Information

a) Type of System (i.e. septic tank, drain field) septic drainfield

b) System Capacity (gallons) 750-1000 gal Year Constructed 2015

c) Connected to the City of Canyon Springs Sanitary Dist. Sanitary System

3. Dugout Information

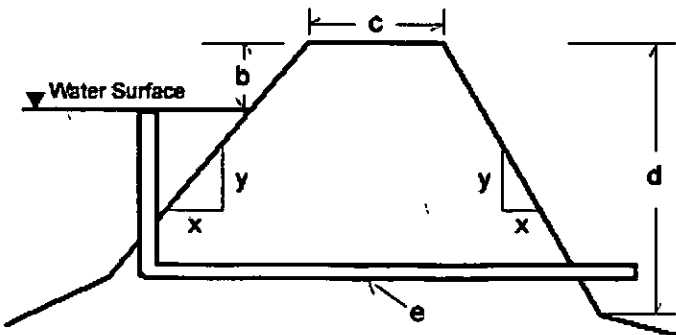
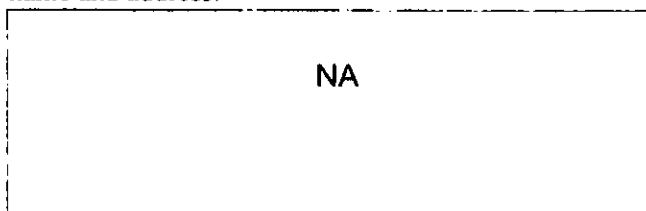
a) Surface Dimensions NA Depth NA

b) Depth to water (ground surface to water level) NA

4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:



b) Freeboard NA

c) Crest Width NA

Crest Length NA

d) Height NA

e) Primary Outlet Capacity NA

If pipe, diameter NA

f) Secondary Spillway Capacity NA

Spillway Width NA

g) X & Y Slope (e.g. 3 to 1 is a typical slope)

Upstream NA

Downstream NA

h) Surface Area of Impoundment NA

i) Storage NA Acre Feet

j) Drainage Area Above Dam NA Acres

**SOUTH DAKOTA
WATER PERMIT NO. 2812-2**

Date of first receipt of application June 18, 2020.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2812-2 to Canyon Springs Sanitary District, c/o Mike Jubie, 9191 Emerald Ridge Rd, Rapid City SD 57702 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 2812-2 appropriates 25 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet of water per second (cfs) from one well to be completed into the Madison Aquifer (550 feet deep) located in the SE 1/4 SW 1/4 Section 23-T2N-R6E. Water Right No. 2576-2 authorizes 0.25 cfs from one well located in the SE 1/4 SW 1/4 Sec 23-T2N-R6E for use by the sanitary district. This additional well will serve the sanitary district located in portions of the SW 1/4 Section 23, NW 1/4 NW 1/4 Section 26, S 1/2 SE 1/4, NE 1/4 SE 1/4 Section 22; all in T2N-R6E. The proposed well site is located approximately 4 miles northwest of Rapid City SD.
2. The water appropriated shall be used for the purpose of water distribution system and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 2812-2 is September 8, 2020.
5. The date from which applicant may claim right is June 18, 2020.
6. One-fifth of the construction is to be completed on or before March 8, 2023.
7. All construction is to be completed on or before September 8, 2025.
8. Water is to be put to beneficial use on or before September 8, 2029.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2812-2 is issued for a twenty year term. Pursuant to SDCL 46-2A-21, the twenty year term may be deleted at any time during the twenty year period or following its expiration. If the twenty year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2812-2 may also be cancelled for nonconstruction, forfeiture, abandonment or three permit violations pursuant to SDCL 46-1-12, 46-5-37.1 and ARSD 74:02:01:37.
2. The well will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner, under these Permits shall control withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.

(continued)

3. The well authorized by Permit No. 2812-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
4. The Permit holder shall report to the Chief Engineer annually the amount of water withdrawn from the Madison aquifer.
5. Water Permit No. 2812-2 and Water Right No. 2576-2, combined, appropriate up to 25 acre feet of water annually.

WATER MANAGEMENT BOARD

By: Eric Gronlund
Eric Gronlund, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

OCT 06 2020

date



RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

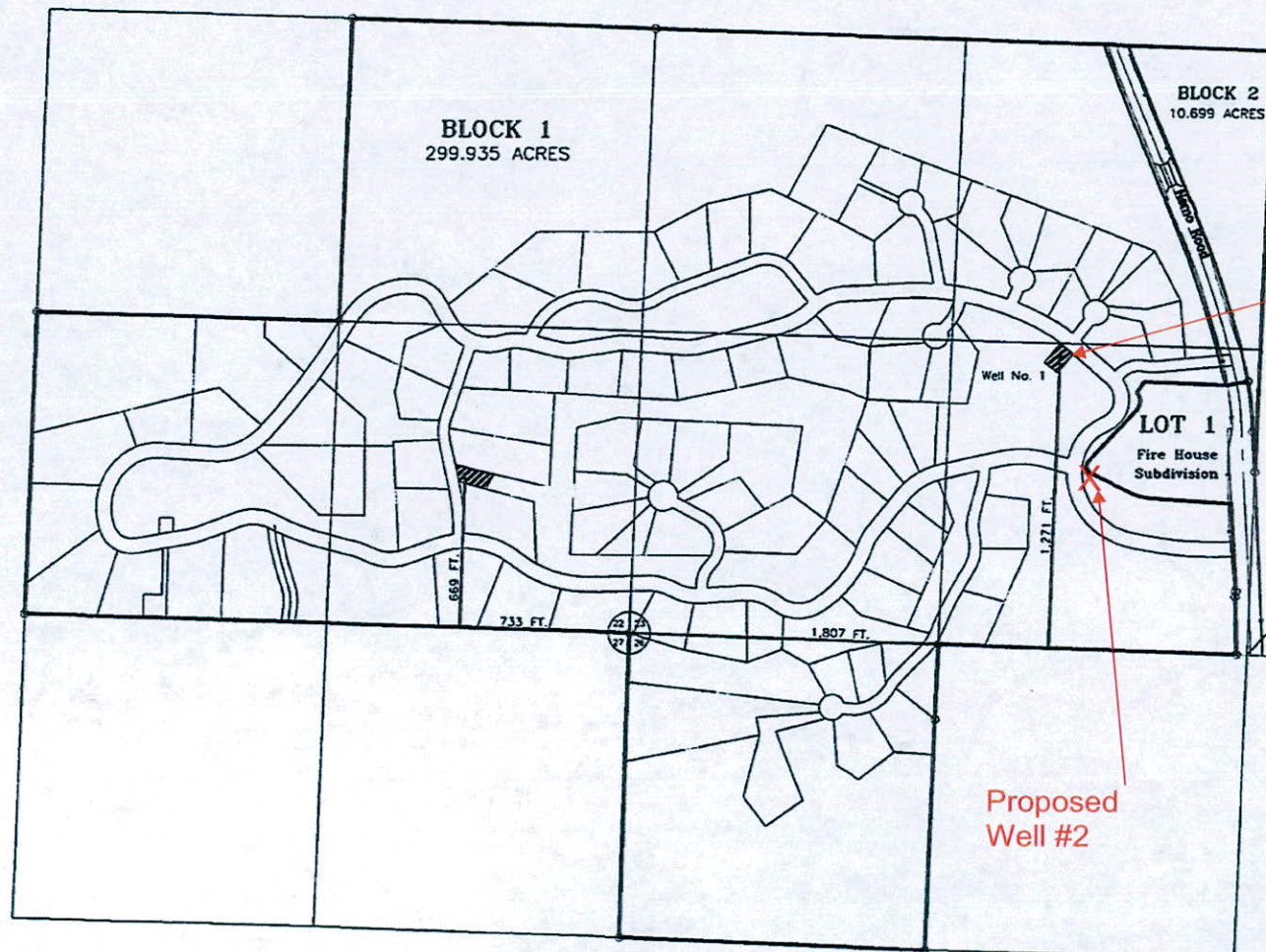
Date May 21, 2020

RECEIVED OF Canyon Springs Sanitary & Water District 787 N Emerald Ridge Rd Rapid City SD 57702

The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>2812-2</u> to Appropriate Water, to construct and to put water to beneficial use	\$750.00
Fee for Application for Permit No. _____ to Appropriate Water for Future use	\$
Fee to retain Future Use Permit No. _____ after period of seven years.	\$
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>2812-2</u>	\$200.00
Fee for Filing Transfer Form _____	\$
Fee for _____	\$
Fee for Issuing New Well Driller's License No. _____	\$
Fee for Renewal of Well Driller's License No. _____	\$
Fee for Issuing Well Pump Installer's License No. _____	\$
Fee for Renewal of Well Pump Installer's License No. _____	\$
(Any Other Work Provided by Law)	
TOTAL	\$950.00

By Eric Swankland
Chief Engineer DS

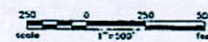


WATER WELL PLAT MAP

- Well No. 1 - NW 1/4, SE 1/4, SW 1/4,
SEC. 23, T2N, R6E
- Well No. 2 - AREA 8, BLOCK 1, SE1/4,
SW1/4, SEC. 23, T2N,
R6E



CANYON SPRINGS PRESERVE		SHEET NO. 1	
WPS 45500		PENNINGTON COUNTY, SOUTH DAKOTA	
Kadmas Lee & Jackson		WATER WELL PLAT MAP	
Prepared by	Checked by	Drawn by	Date
KL	KL	KL	12/16/2005
J:\municipal\10629110\10629110WELLLOT1.dwg			
© Kadmas, Lee & Jackson 2005			



CANYON SPRINGS WELL NO. 2 AND WELLHOUSE

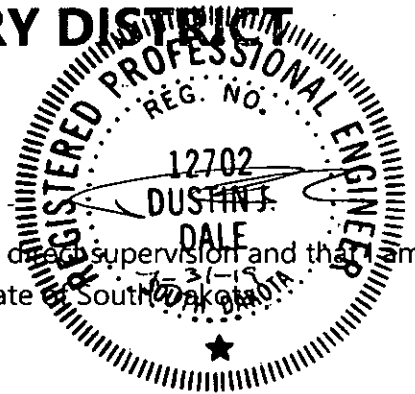
PRELIMINARY ENGINEERING REPORT

FOR

CANYON SPRINGS SANITARY DISTRICT

July 2019

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of South Dakota.



Dustin Dale, PE CFM

Date: 7-31-19

Reg. No. 12702

Prepared by:

Advanced Engineering and Environmental Services, Inc.

1560 Concourse Drive
Rapid City, SD 57703
Phone: 605-341-7800
Fax: 605-341-7864

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LIST OF ATTACHMENTS

- A. 30 Percent Preliminary Drawings
- B. 30 Percent Preliminary Specifications Table of Contents
- C. Opinion of Probable Cost

Chapter 1 - Introduction and Background

1.1 Project Area

The Canyon Springs Sanitary District is located in Pennington County, South Dakota just west of Rapid City. The proposed new Well No. 2 and Wellhouse are located along Spotted Falcon Lane within the Canyon Springs Sanitary District. The property is owned by the Canyon Springs Sanitary District. Attachment A includes the 30 Percent Preliminary Design Drawings. The project location and project area are presented on Sheet G2 of Attachment A.

1.2 Project Background

The Canyon Springs Sanitary District plans to construct Well No. 2 and Wellhouse to increase the water supply capacity for the residents of the Canyon Springs Sanitary District. The proposed well will increase the capacity of the water system by 100 gpm (actual well production will be verified upon test pumping of the bored well). The Wellhouse will contain a flow meter, valving, and disinfection equipment along with related electrical and HVAC equipment in compliance with South Dakota Department of Environment and Natural Resources (SD DENR) requirements.

Chapter 2 - Design Criteria

2.1 Design Flows

Well No. 2 is anticipated to be capable of producing approximately 100 gpm, similar to Well No. 1 located approximately 0.5 miles away. 100 gpm capacity at Well No. 2 would effectively double the water supply available for the Canyon Springs Sanitary District. The well, wellhouse, flow meter, disinfection system, site piping, and appurtenances are to be sized based on the assumption of the well producing 100 gpm.

2.2 Project Design Features

The primary design features of the Well No. 2 and Wellhouse project are summarized in Table 2.1. These design features were used to develop the preliminary design plans, sections, specifications, and opinions of cost for the Well No. 2 and Wellhouse project.

Table 2.1 Well No. 2 and Wellhouse Design Features

Well No. 2	
Type	• Pitless well with submersible pump.
Approximate Depth (Estimated)	• 558 feet (estimated water drawdown at 100 gpm) based on data from Well No. 1 approximately 0.5 miles away
Minimum Bore Diameter	• 7 7/8" (assumed based on Well No. 1)
Estimated Static Water Level	• 250 ft below surface (assumed based on Well No. 1)
Site Piping	
Type	• PVC, DR25 (165 psi)
Fittings	• Ductile Iron
Valves	• Resilient Wedge Gate Valves
Wellhouse	
Location	• Located a minimum distance of 100 ft from the existing sanitary drain field.
Size	• Estimated to be 12 ft x 12 ft.
Exterior	• Match exterior of Wellhouse No. 1.
Process Piping	• CL350 Ductile Iron Pipe and Fittings
Metering	• Magnetic Flow Meter
Disinfection	• Sodium Hypochlorite
Chlorine Residual Analyzer	• Continuous Residual Analyzer (Hach CL17)

Electrical and SCADA	
Electrical service	• Size and voltage to be determined during final design
Control System	• On-site control and manual overrides provided • Alarms to be provided by DPI, Inc. and be consistent with Well No. 1.
Site	
Site	• Landscaped and graded. • Seeded. • Flush hydrant provided for flushing the well before the wellhouse and a flush hydrant for flushing/sampling chlorine after the wellhouse.
Access	• Access road will be concrete • Suitable for chemical deliveries

Chapter 3 - Facility Description

3.1 Well No. 2

The proposed Well No. 2 will be located at least 100 feet from the existing sanitary sewer drain field along Spotted Fawn Lane which is in accordance with the minimum recommended setback distance from a sanitary sewer drain field. The design of Well No. 2 is based on information provided for the existing Well No. 1 which has a pumping rate of 100 gpm at a drawdown depth of 558 ft and is a steel cased well. Similar to Well No. 1, the proposed Well No. 2 is anticipated to have an approximate depth of 558 ft and be steel cased. The minimum steel casing diameter will be 7 7/8 – inch. Well No. 2 is anticipated to provide approximately 100 gpm. A preliminary site plan for the Well No. 2 site is presented on Sheet C2 of Attachment A. This site plan includes information gathered from site visits as well as a site survey.

The pump for Well No. 2 will consist of a pitless, submersible pump located within the steel casing. The motor is preliminarily sized to consist of a 30 hp motor capable of pumping up to 100 gpm with a head rating of at least 730 feet to deliver water leaving the well house at a pressure of approximately 60 to 70 psi. The discharge pipe after the wellhouse will connect directly to the Canyon Springs distribution system to supply water to the surrounding residences. Site piping consisting of DR25 PVC pipe will be installed to convey the water to the wellhouse, as well as the connection of the wellhouse to the distribution system piping. A flush hydrant will be installed near the well to permit the well to be flushed or sampled when needed prior to the wellhouse, minimizing sediment or other debris from entering the process piping, valves, and meters located within the wellhouse. A second flush hydrant will be installed after the wellhouse to permit flushing or sampling of the water prior to it entering the distribution system. This second hydrant can be used to flush chlorine from the pipeline as the disinfection system is set up or adjusted. A 30 Percent Preliminary Design Project Specifications Table of Contents is included as Attachment B.

3.2 Wellhouse

The wellhouse building will be constructed to have a similar exterior appearance to the existing Wellhouse No. 1. The interior of the wellhouse will include a flow meter, the disinfection equipment, valves, appurtenances, and electrical equipment. The flow meter is anticipated to include a magnetic flow meter to provide accurate, recordable data on the total volume of water pumped through the wellhouse. Based on an assumed flow rate of up to 100 gpm, the flow meter will likely be sized to be 3-inch. A 3-inch magnetic flow meter will provide a flow velocity of approximately 4.5 feet per second which will provide accurate results while minimizing head loss through the wellhouse.

The disinfection system will consist of a sodium hypochlorite feed system and is scheduled to include a 100-gallon capacity polyethylene tank, a small peristaltic chemical feed pump, and an online continuous chlorine residual analyzer that can continuously measure and record the chlorine residual. A small sample pipe will be connected to the discharge pipe approximately 40 feet downstream of the wellhouse to obtain a well-mixed chlorine residual sample that can then be provided to the chlorine residual analyzer. The chlorine residual analyzer can be set to control the chlorine feed rate based on the residual chlorine level detected and either increase or decrease the feed rate, as needed. The wellhouse will also include the electrical equipment for the well pump, security and access items such as door intrusion alarms, as well as various HVAC equipment such as a unit heater, ventilation, and air conditioning unit.

3.3 Site Layout

The well will be located a minimum of 100 feet from the existing sanitary sewer drain field to satisfy all minimum setback requirements and to ensure a safe and publicly acceptable water supply source. The wellhouse will be constructed near the well so that both are located on the same property owned by the Canyon Springs Sanitary District and to minimize construction costs. A gravel access road or driveway will be constructed to permit access to the wellhouse by operation and maintenance staff as well as by chemical delivery trucks which will periodically need to deliver up to 100 gallons of sodium hypochlorite disinfectant (chlorine bleach). The remainder of the site will be graded and landscaped to drain properly and seeded to match the surrounding residential areas.

3.4 Electrical Systems and Controls

3.4.1 Electrical

Well No. 2 and the wellhouse will be served with a main electrical service of which shall include the following:

- Individual pad mount utility transformer located outside the building.
- A Main Fusible Switch with GFCI protection. (exact size of the service will be determined during final design).
- An Automatic Transfer Switch (ATS), closed transition, 3 pole, solid neutral.
- A Motor Control Center (MCC) for motor loads and miscellaneous electrical distribution loads in the building.

- MCC mounted VFD, for the well pump.
- Active Filter connected ahead of MCC to mitigate harmonic distortion due to VFD and other non-linear loads.

3.4.2 Controls

Well No. 2 and the wellhouse operation will operate similarly to the existing well and wellhouse. The controls will be done through a separate contract with Dakota Pump, Inc. for consistency with current operations.

3.5 Additional Considerations

The project specifications will require that the contractor or contractors involved with construction of the well and wellhouse be responsible for meeting all federal, state, and local requirements for the following elements:

- Safety during construction – contractor will be responsible for submitting plans, designating appropriate safety personnel, and administering safety programs.
- Environmental management during construction – contractor will be responsible for managing all fuels and materials brought on site during construction, and to address any spills or releases.
- Erosion control – contractor will be responsible for managing storm and ground water during construction to meet erosion control requirements during excavation activities.

Chapter 4 - Project Implementation

4.1 Opinion of Probable Costs

The 30 Percent Preliminary Design Opinion of Total Probable Construction Cost and Opinion of Probable Operation and Maintenance Costs is included in Attachment C. The construction cost for Well No. 2 and Wellhouse as conceived at this 30 percent preliminary design stage is approximately \$348,018.00. This cost estimate is based on July 2019 dollars and includes a markup for estimate contingencies.

The estimated contingency factor of ten percent is intended to cover additional design details that will be determined through final design of the well and wellhouse. As greater engineering detail is provided, the estimated contingency factor can be reduced.

4.2 Permits

The construction site for Well No. 2 and Wellhouse is located as shown in Attachment A. In accordance with the planned construction at this site, the following permits will be required:

- The Owner will need to obtain a permit for drilling a water well and water rights prior to proceeding with the work. The permit will be applied for during the final design phase of the project once project funding has been secured.
- The contractor will be required to comply with all regulations relating to storm water management and obtain the necessary permits for the construction activities.

4.3 Project Schedule

It is anticipated that the final design phase will commence on August 1, 2019, bids will be opened in the fall/winter of 2019, construction will proceed in the Spring of 2020, construction will be Substantially Complete in the summer of 2020, and construction will be complete and ready for final payment by the Fall of 2020. Exact dates for final design through completion of construction will be determined once project funding is secured and the final design phase of the project begins.

Schlaak, Karen

Subject: FW: [EXT] Canyon Springs Well #2 - revised permit application

From: Dana Foreman <Dana.Foreman@kljeng.com>
Sent: Friday, June 19, 2020 1:04 PM
To: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Cc: Mike Jubie <mjubie@scullconst.com>; Schlaak, Karen <Karen.Schlaak@state.sd.us>
Subject: RE: [EXT] Canyon Springs Well #2 - revised permit application

Thanks Eric. The 8,066,500 is for Well #2 only.

Dana Foreman PE
KLJ
605-721-5553 Direct
605-484-1626 Cell
330 Knollwood Drive
Rapid City, SD 57701-6611
kljeng.com

From: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Sent: Thursday, June 18, 2020 10:00 AM
To: Dana Foreman <Dana.Foreman@kljeng.com>
Cc: Mike Jubie <mjubie@scullconst.com>; Schlaak, Karen <Karen.Schlaak@state.sd.us>
Subject: RE: Canyon Springs Well #2 - revised permit application

Dana – everything looks okay and the application is being assigned to a staff engineer for review. I do have one question – This application states the annual volume of water is 8,066,500 (24.7 acre feet of water annually). Is that volume for both wells used by Canyon Springs or just the new well. My understanding from your prior email is Canyon Springs wants the additional diversion rate authority from the new well but really well No. 2 is for if well No. 1 no longer produces. Thanks - Eric

From: Dana Foreman <Dana.Foreman@kljeng.com>
Sent: Thursday, June 18, 2020 9:57 AM
To: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Cc: Mike Jubie <mjubie@scullconst.com>
Subject: [EXT] Canyon Springs Well #2 - revised permit application

Hi Eric,

As discussed, attached is the revised Canyon Springs Well #2 permit and map. Please note the Owner is applying for the full annual amount in-case Well #1 no longer produces in the future. Please let me know if you need anything else regarding this application.

Thanks,

Dana Foreman PE
KLJ
605-721-5553 Direct
605-484-1626 Cell
330 Knollwood Drive
Rapid City, SD 57701-6611
kljeng.com

Schlaak, Karen

From: Schlaak, Karen
Sent: Monday, July 13, 2020 4:41 PM
To: Dana Foreman
Cc: Mike Jubie; Gronlund, Eric
Subject: RE: [EXT] Canyon Springs Well #2 permit - status

Dana,
The amended application was received on June 18, 2020. We have 60 days (August 18, 2020) to complete our review which includes the staff engineer report (currently being worked on) and the chief engineers recommendation. Once the report is complete, the applicant and you will be notified with instructions regarding the public notice process. If you have further questions, please let me know.

Karen Schlaak

Water Rights Program
(605) 773-3352



From: Dana Foreman <Dana.Foreman@kljeng.com>
Sent: Monday, July 13, 2020 3:58 PM
To: Gronlund, Eric <Eric.Gronlund@state.sd.us>; Schlaak, Karen <Karen.Schlaak@state.sd.us>
Cc: Mike Jubie <mjubie@scullconst.com>
Subject: [EXT] Canyon Springs Well #2 permit - status

Hi Eric and Karen,

I wanted to check in with you regarding Well #2 permit application and when you anticipate completion of review. Please let me know if you need anything from me.

Thanks,

Dana Foreman PE
KLJ
605-721-5553 Direct
605-484-1626 Cell
330 Knottwood Drive
Rapid City, SD 57701-6611
kljeng.com

Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, August 19, 2020 9:15 AM
To: Mike Jubie
Cc: Dana Foreman
Subject: Application No. 2812-2, Canyon Springs Sanitary District
Attachments: 2812-2.pdf

Attached is a copy of the report, chief engineer recommendation and information regarding the public notice for your water permit application. As stated in the letter, please contact the Rapid City Journal as soon as possible to authorize publication and arrange for payment. This information is being mailed to you today.

Karen Schlaak
Water Rights Program
(605) 773-3352



DENR
SOUTH DAKOTA



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2812-2, Canyon Springs Sanitary District**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 2812-2, Canyon Springs Sanitary District, c/o Mike Jubie, President, 9191 Emerald Ridge Rd, Rapid City SD 57702.

The Chief Engineer is recommending APPROVAL of Application No. 2812-2 with a 20 year term pursuant to SDCL 46-1-14 and 46-2A-20 because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and, 4) it is in the public interest with the following qualifications:

1. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 2812-2 is issued for a twenty year term. Pursuant to SDCL 46-2A-21, the twenty year term may be deleted at any time during the twenty year period or following its expiration. If the twenty year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 2812-2 may also be cancelled for nonconstruction, forfeiture, abandonment or three permit violations pursuant to SDCL 46-1-12, 46-5-37.1 and ARSD 74:02:01:37.
2. The well will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner, under these Permits shall control withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
3. The well authorized by Permit No. 2812-2 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
4. The Permit holder shall report to the Chief Engineer annually the amount of water withdrawn from the Madison aquifer.
5. Water Permit No. 2812-2 and Water Right No. 2576-2, combined, appropriate up to 25 acre feet of water annually.

See report on application for additional information.

Eric Gronlund, Chief Engineer
August 18, 2020

REPORT ON PERMIT APPLICATION NO. 2812-2

Canyon Springs Sanitary District

Aug 18, 2020

Water Permit Application No. 2812-2 requests the appropriation of 25 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet per second (cfs) from one well to be completed into the Madison aquifer (550 feet deep) located in the SE ¼ SW ¼ Section 23-T2N-R6E for use by the sanitary district as an additional well to the one granted by Water Right No. 2576-2 to serve portions of the SW ¼ Section 23, NW ¼ NW ¼ Section 26, S ½ SE ¼, NE ¼ SE ¼ Section 22; all in T2N-R6E. The well site for this application and Water Right No. 2576-2 is located approximately 4 miles northwest of Rapid City SD.

Water Right No. 2576-2 has a maximum pump rate of 0.25 cfs from one well completed into the Madison aquifer (558 feet deep) located in the SE ¼ SW ¼ Sec 23-T2N-R6E for use by the sanitary district. Combined, Water Right No. 2576-2 and this application, if approved, would authorize the appropriation of 25 ac-ft/yr at a maximum pump rate of 0.47 cfs.

Aquifer: Madison (MDSN)

Hydrogeology

The Madison Group in South Dakota is a Lower Mississippian and Upper Devonian Age group composed of the overlying Pahasapa Limestone and underlying Englewood Limestone (Fahrenbach, et al., 2010). The Pahasapa Limestone is a Lower Mississippian Age white, light-gray to tan, fine- to medium-grained limestone and dolomite containing brown to grey chert (Martin, Sawyer, Fahrenbach, Tomhave, & Schulz, 2004). The Englewood Limestone is a Lower Mississippian and Upper Devonian Age pink to lavender to light-gray, thin- to medium-bedded, fine- to medium-grained, argillaceous, dolomitic limestone (Martin, Sawyer, Fahrenbach, Tomhave, & Schulz, 2004). The Madison Group extends into eastern South Dakota, Nebraska, Wyoming, Montana, and North Dakota. In Western South Dakota The Madison Group is estimated to have an area of 19,116,160 acres (Allen, Illes, & Petres, 1985).

The Madison aquifer consists of the portions of the Madison Group, where there is both sufficient saturation and permeability to deliver water at an economical rate. The Madison aquifer is mostly under confined conditions except near where it outcrops around the Black Hills in South Dakota (Water Rights, 2020b; Water Rights, 2020c). In the area of this application, the Madison aquifer is confined with the potentiometric surface rising approximately 150 feet above the top of the aquifer (Water Rights, 2020a; Water Rights, 2020b; Water Rights, 2020c).

South Dakota Codified Law 46-2A-9

Pursuant to SDCL 46-2A-9, "A permit to appropriate water may be issued only if there is reasonable probability that there is unappropriated water available for the applicant's proposed use, that the proposed diversion can be developed without unlawful impairment of existing rights and that the proposed use is a beneficial use and in the public interest." This report will address the availability of unappropriated water and potential impacts to existing rights within the Madison aquifer.

Water Availability

SDCL 46-6-3.1 is considered when evaluating the probability of unappropriated water from an aquifer and states "No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source. An application may be approved, however, for withdrawals of groundwater from any groundwater formation older than or stratigraphically lower than the greenhorn formation in excess of the average estimated annual recharge for use by water distribution systems." The Madison aquifer is older and lower than the Greenhorn Formation, and there is a water distribution system involved. Although a hydrologic budget is not required, one will be included for the benefit of the Water Management Board and the Chief Engineer.

Pursuant to SDCL 46-2A-20, "No water permit for construction of works to withdraw water from the Madison formation in Butte, Fall River, Custer, Lawrence, Meade and Pennington counties may be issued for a term of more than twenty years, unless the Water Management Board determines, based upon the evidence presented at a hearing that:

- (1) Sufficient information is available to determine whether any significant adverse hydrologic effects on the supply of water in the Madison formation would result if the proposed withdrawal were approved; and
- (2) The information, whether provided by the applicant or by other means, shows that there is a reasonable probability that issuance of the proposed permit would not have a significant adverse effect on nearby Madison formation wells and springs."

This application proposes to withdraw water from the Madison Formation in Pennington County, and therefore SDCL 46-2A-20 applies.

Hydrologic Budget

Recharge

The Madison aquifer receives recharge from infiltration of precipitation and streamflow on the outcrop area and may also receive inflow from the underlying Deadwood aquifer (Carter, Driscoll, & Hamade, 2001; Long & Putnam, 2002). There are several studies that have been conducted regarding the Madison and Minnelusa aquifers recharge. Rahn & Gries (1973) estimated that the minimum amount of water recharge to the Carbonate aquifer (The Madison aquifer is a part of the Carbonate aquifer) by precipitation falling directly on the outcrop to be 146.14 cfs (105,870 ac-ft/yr) and 43.87 cfs (31,780 ac-ft/yr) from streamflow contributions. Woodward-Clyde Consultants (1981) estimated an upper bound recharge to the Madison aquifer by taking into account Rahn & Gries (1973) streamflow contributions estimate. Accounting for evapotranspiration of precipitation that falls on the Madison and Minnelusa Formation outcrops and streamflow contributions Woodward-Clyde Consultants (1981) estimated the upper bound on average annual recharge to the Madison aquifer to be 400,000 ac-ft/yr. While these reports provide a possible range for the average annual recharge to the Madison aquifer and have been used by the Water Rights Program in the past, there has been a more recent study conducted that includes newer data and is aquifer specific.

Carter, Driscoll, & Hamade (2001) analyzed streamflow and precipitation data from 1931 to 1998 in the Black Hills area in South Dakota and Wyoming to determine the average annual recharge to the Madison and Minnelusa aquifers. They estimated a combined average annual recharge to both the Madison and Minnelusa aquifers from streamflow contributions to be an estimated 67,500 ac-ft/yr and 181,760 ac-ft/yr from precipitation on the outcrop areas in the Black Hills resulting in a combined estimated average annual recharge rate of 249,260 ac-ft/yr. It was also determined that of the combined recharge to both aquifers that approximately 55% of the total recharge goes to the Madison aquifer, and the remaining 45% recharges the Minnelusa aquifer. Therefore the estimated average annual recharge to the Madison aquifer is 137,093 ac-ft/yr.

Discharge

Currently, there are 155 active water rights/permits authorized to withdraw water from the Madison aquifer, and 10 future use water rights/permits (Table 1) (Water Rights, 2020a).

Table 1. Future use permits reserving water from the Madison aquifer (Water Rights, 2020a).

Permit No.	Use Type	Permit Holder	Priority date	Reserved Water (ac-ft/yr)
369-1	MUN	City of Belle Fourche	12/10/1958	620
439-2	MUN	City of Rapid City	09/22/1956	3,367
1833-2	RWS	Weston Heights Home Owners	02/18/1983	211
1872-1	MUN	City of Spearfish	11/13/2006	2,704
1995-1	RWS	Black Hawk Water User District	04/15/2020	1,300
2086-2	MUN	City of Rapid City	05/18/1989	4,075
2560-2	RWS	Fall River Water Users District	05/16/2005	358
2560A-2	RWS	Fall River Water Users District	05/16/2005	0
2560B-2	RWS	Fall River Water Users District	05/16/2005	0
2580-2	RWS	Southern Black Hills Water System	03/02/2006	1,474
Mun = Municipal, RWS = Rural Water System			Sum	14,109

All current non-irrigation water rights/permits appropriating water from the Madison aquifer are summarized in Table 2. The amount of water that can be expected to be withdrawn by non-irrigation water rights/permits can be estimated by assuming water rights/permits limited only by diversion rate will pump at the maximum permitted diversion rate 60 percent of the time, and those limited by an annual volume will use the entire permitted volume annually.

There are some municipalities that are served by rural water systems (Table 3); as such, the wells for these municipal water rights are maintained for standby use only. Therefore, the water use for these rights have been set to zero in Table 2 as the usage for them is reflected in the rural water systems permits/rights they are served by.

Table 2: Summary of expected use of non-irrigation water rights/permits from the Madison aquifer (Water Rights, 2020a)

Use Type	No. of Water Rights/Permits	Permitted Diversion Rate (cfs)	Permitted Volume (ac-ft)	Expected Annual Use (ac-ft)
REC	1	1	N/A	434
MUN	35	16.82	16,026	23,337
IND	11	4.88	301	2,423
INS	2	0.2	N/A	87
DOM	4	0.22	71	167
RWS	14	3.343	3,123	4,576
COM	12	1.121	1,024	1,511
SHD	42	6.995	680	3,721
GEO	2	1.43	N/A	621
Total	123	35.499	21,226	36,877
REC = Recreation, MUN = Municipal, IND = Industrial, INS = Institutional, DOM = Domestic, RWS = Rural Water System, COM = Commercial, SHD = Suburban Housing Development, GEO = Geothermal				

Table 3: Municipalities served full time by rural water systems (DENR, 2020).

Permit No	Name	Status	Use Type	Licensed Diversion Rate (cfs)	Served By
272-1	City Of Eagle Butte	LC	MUN	0.600	TRI-COUNTY RWS
568-2	Town Of Midland	LC	MUN	1.330	WR/LJ-NORTH STANLEY
574-2	City Of Philip	LC	MUN	0.800	WR/LJ-NORTH STANLEY
743-1	City Of Dupree	LC	MUN	0.190	TRI-COUNTY RWS
1858-2	City Of Philip	LC	MUN	0.420	WR/LJ-NORTH STANLEY

There are three water rights/permits currently pending approval. Water Permit Application No. 1997-1 seeks to appropriate 200 ac-ft/yr for a rural water system. If approved, Water Right No. 1928-1 and Water Permit Application No. 1997-1 will have a combined maximum annual volume of 200 ac-ft/yr this has already been taken into account in Table 2. Water Permit Application No. 2585-2 for Southern Black Hills Water System proposes to appropriate 1,600 ac-ft/yr from the Madison aquifer and is currently deferred until the potential impacts on cave pools in Wind Cave National Park and to Beaver Creek are assessed (Water Rights, 2020a). Water Permit Application No. 2685-3 for Powertech (USA) Inc. proposes to appropriate 888.8 ac-ft/yr from the Madison aquifer and is held in abeyance until other permitting processes are completed (SD-DENR, 2020).

There are 32 water rights/permits for irrigation, with 15 of those having more than one use type listed and authorized to appropriate water from the Madison aquifer. The water appropriation for water rights/permits that have multiple uses is calculated, assuming they will pump at their maximum diversion rate 60% of the time. The majority of irrigation water rights/permits are required to report water usage each year in the form of an irrigation questionnaire this allows for more accurate budget calculations. Table 4 consists of water rights/permits that have reported for at least 10 years and includes any estimated non-irrigation uses if applicable.

Table 4. Water rights/permits with more than 10 years of reported irrigation and the average reported irrigation use for the years 1982 to 2019 and estimated non-irrigation use for multiple use type water rights/permits assuming they pump at the maximum diversion rate 60% of the time (Water Rights, 2020a; Water Rights, 2020d).

Permit No.	Name/Business	Priority	Years of Reported Irrigation	Authorized Acres	Diversion Rate (cfs)	Average Reported Irrigation Use (ac-ft/yr)	Estimated Non Irrigation Use (ac-ft/yr)	Total Estimated Withdrawal (ac-ft/yr)
858-2	John & Heidi McBride	02/05/1965	36	655.75	9.36	7.1	N/A	7.1
1009-1	Donald F/Ann J Brady	02/01/1974	38	53.73	0.78	31.6	N/A	31.6
1185-1	Donald F/Ann J Brady	01/18/1979	38	22.52	0.38	107	N/A	107
1223-1	Montana Dakota Land LLC	03/10/1981	38	263	0.67	205.6	N/A	205.6
1363-1	Spearfish Canyon Cntry Cl	09/15/1986	33	80.1	0.9	60.7	N/A	60.7
1452-1	Black Hills State College	12/19/1988	31	25.44	3.33	17.9	1,447	1,464.9
1635-1	Black Hills Nat'l Cemetery	04/02/1990	24	54.5	0.82	96.4	356	452.4
1725-2	Janice R Crowser	08/20/1980	21	75.1	1.07	1.1	N/A	1.1
1842-1	Tom C Davis	04/05/2005	15	330	0.44	0	N/A	0
1858-1	Glencoe Camp Resort II LLC	03/08/2006	14	34	0.86	0	374	374
1899-1	Davis Ranches Inc	08/25/2008	11	100	1.43	0	N/A	0
1911-2	Hart Ranch Development Co	09/27/1984	26	124	0.88	124.6	383	507.6
2106-2	Stuart Rice	06/06/1990	27	2.8	0.08	0.9	35	35.9
2286-2	Donald Konecne	04/28/1993	26	38.5	0.1	10.9	N/A	10.9
2313-2	Coca-Cola Bottling	04/08/1994	25	3	0.33	7.4	143	150.4
2458-2	City of Rapid City	03/30/2001	19	107	0.8	104.7	N/A	104.7
2593-2	Hart Ranch Development	06/15/2006	13	72.5	0.49	14	213	227
Sum				2,041.94	22.72	789.9	2,951	3,740.7

Using the same method as Kilts (2017) irrigation rights/permits that are new (less than 10 years) or are not required to report their usage are estimated to use 2 ac-ft/yr per authorized acre (Table 5).

Table 5. Water rights/permits with less than 10 years of reported irrigation or that are not required to report their usage and their estimated irrigation appropriation using 2 ac-ft/yr per acre, and estimated non-irrigation use for multiple use type water rights/permits assuming they pump at the maximum diversion rate 60% of the time (Water Rights, 2020a; Water Rights, 2020d).

Permit No.	Name/Business	Priority	Years of Reported Irrigation	Authorized Acres	Diversion Rate (cfs)	Estimated Irrigation Use (ac-ft/yr)	Estimated Non Irrigation Use (ac-ft/yr)	Total Estimated Withdrawal (ac-ft/yr)
419-2	Wind Cave National Park	12/29/1955	N/A	6	0.15	12	65	77
1707A-1	Elkhorn Ridge @ Frawley Ranches LLC	01/06/2000	N/A	100	3.71	200	1,610	1,810
1707E-1	Elkhorn Ridge @ Frawley Ranches LLC	01/06/2000	13	N/A	N/A	2.3	0 *	0 *
1885-1	John T & Veronica Widdoss	04/09/2007	3	22	0.11	44	36 **	80 **
1923-1	Jim Montieth	02/15/2011	8	3	0.11	6	48	54
1931-1	Elkhorn Ridge @ Frawley Ranches LLC	08/17/2012	7	3.3	0.17	6.6	74	80.6
1945-1	Frawley Ranches LLC	02/10/2014	6	265	1.11	530	N/A	530
1960-1	One Diamond Inc	04/11/2016	4	150	1.28	300	556	856
2673-2	Diocese of Rapid City	05/27/2011	7	7	0.12	14	N/A	14
2741-2	Tubbs Land & Cattle LLC	08/20/2018	1	567	3.34	1,134	N/A	1,134
2773-2	Arrowhead Country Club	07/27/2017	2	100	1.11	200	N/A	200
Sum				1,223.30	11.21	2,448.9	2,353	4,835.6
* Is an extension of time to place water to beneficial use for Water Permit No. 1707A-1								
** Is assumed to pump at maximum diversion rate 100% of the time due to the sum of the estimated withdrawal for irrigation and estimated non-irrigation use is greater than is physically possible at the licensed diversion rate.								

There are 5 water rights/permits for irrigation currently authorized to withdraw from the Madison aquifer that have an estimated use that is calculated separately (Table 6). Water Right No. 1650-1 is not required to report annual withdrawals and has no authorized acres for irrigation; however, it

supplies water for Water Right No. 1231-1, which permits a 110 ac-ft dam for commercial livestock and irrigation of 134 acres (Water Rights, 2020a). Kilts (2017) estimated the withdrawal of Water Right No. 1650-1 based on the irrigation reported for Water Right No. 1231-1 to be 55.9 ac-ft/yr.

Water Rights/Permits 1096-1, 1096A-1, 1496-1, and 1670-1 withdraw water from one dam and one well completed into the Madison aquifer for either irrigation or rural water system use. Water Right No. 1096A-1 and Water Permit No. 1496-1 are authorized to withdraw water during the entire year for rural water system use (Water Rights, 2020a). The administrative file for Water Right No. 1670-1 indicates the well was not valved and cannot be shut off when flow is not being put to beneficial use. A letter dated September 9, 1998, submitted as part of the public comments prior to approval of Water Right No. 1670-1, stated that when water is not used for irrigation or rural water system use, it is used for fish and wildlife propagation. The letter requested the well's flow remain unrestricted when not used for irrigation or rural water system use (Water Rights, 2020a). Assuming the well is still flowing at the diversion rate authorized by Water Right No. 1096A-1 of 1.33 cfs, the well withdraws an estimated 964 ac-ft/yr for all four water rights/permits combined.

Table 6. Water Rights/Permits and estimated withdrawal calculated separately (Water Rights, 2020a).

Permit No.	Name/Business	Priority	Years of Reported Irrigation	Authorized Acres	Diversion Rate (cfs)	Average Reported Irrigation Use (ac-ft/yr)	Total Estimated Withdrawal (ac-ft/yr)
1096-1	Bar Bar V Livestock LLC	04/16/1976	29	216	1.88	65.3	964
1670-1	Bar Bar V Livestock LLC	06/09/1998	22	253	3.61	51.7	
1096A-1	Butte Meade Sanitary Dist	04/16/1976	N/A	N/A	1.33	N/A	
1496-1	Butte Meade Sanitary Dist	06/20/1990	N/A	N/A	1.33	N/A	
1650-1	Foothill Land & Cattle LLC	04/03/1997	N/A	N/A	0.89	N/A	55.9
Sum				469	9.04	117	1,019.9

Hydrologic Budget Summary

The estimated average annual recharge to the Madison aquifer from streamflow contributions and precipitation on the outcrop in the Black Hills area is 137,093 ac-ft/yr (Carter, Driscoll, & Hamade, 2001). The estimated average annual well withdrawals for the Madison aquifer is 63,263 ac-ft/yr, including this application (Table 7). Therefore there is a reasonable probability that water is available for this appropriation.

Table 7. Summary of well withdrawals from the Madison aquifer.

Well Withdrawal Type	Amount (ac-ft/yr)
This Application If Approved	25
Future use (Table 1)	14,109
Non Irrigation (Tables 2, 4, 5)	42,181
Permits Pending Approval	2,688.8
Average Reported Irrigation Use (Table 4)	789.9
Estimated Irrigation Use (Table 5)	2,448.9
Other (Table 6)	1,019.9
Sum	63,263

Localized Hydrologic Budget

Carter, Driscoll, Hamade, & Jarrell (2001) calculated hydrologic budgets for the Madison and Minnelusa aquifers for the Black Hills area during the water years of 1987 to 1996. This was accomplished by dividing the Black Hills into nine subareas to minimize apparent flow across the boundaries. These subareas were determined based on several factors, including locations of major artesian springs, streamflow loss zones, and areas dominated by precipitation recharge. The proposed diversion point for this application is in subarea 4 (Figure 1). The hydrologic budget for subarea 4 is shown in Table 8.

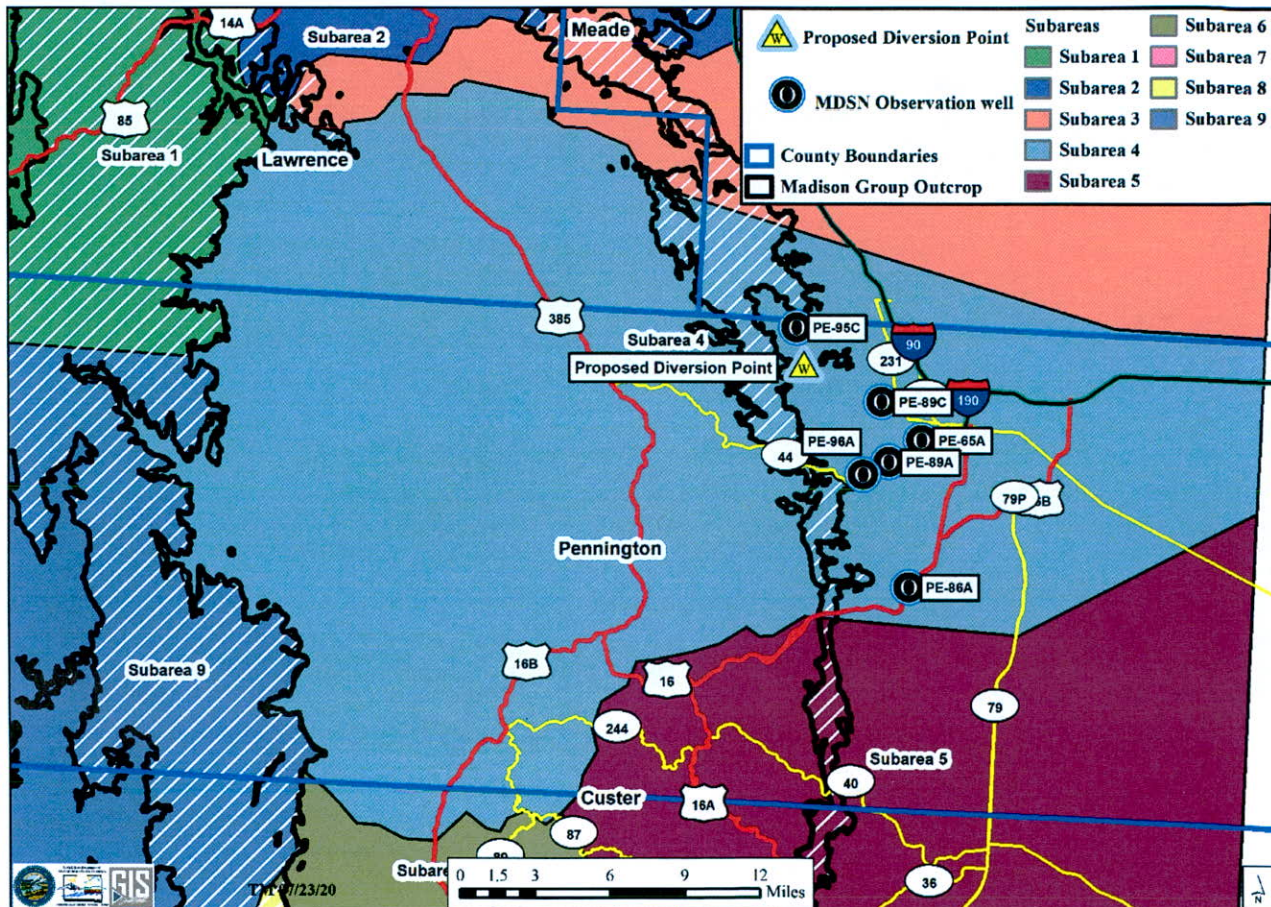


Figure 1: Subareas used for Madison and Minnelusa aquifer localized hydrologic budgets, the Madison Group outcrop, the proposed diversion point, and observation wells monitoring the Madison aquifer (Carter, Driscoll, Hamade, & Jarrell, 2001; Water Rights, 2020c).

Table 8. Estimated average annual hydrologic budget for subarea 4 for the Madison and Minnelusa aquifers in the Black Hills area for the water years 1987-1996 modified from Carter, Driscoll, Hamade, & Jarrell (2001).

Subarea 4	Inflows			Outflows		
	Streamflow Recharge	Precipitation Recharge	Net groundwater Inflow	Artesian Springflow	Wells	Net Groundwater Outflow
cfs	33.7	5.7	0	26.2	7.2	5.9
ac-ft/yr	24,414.3	4,129.4	0.0	18,980.8	5,216.1	4,274.3

As shown in Table 8, Carter, Driscoll, Hamade, & Jarrell (2001) estimated the average annual recharge to subarea 4 for the Madison and Minnelusa aquifers due to streamflow, precipitation, and groundwater inflow to be 28,543.7 ac-ft/yr. Carter, Driscoll, & Hamade (2001) estimated that approximately 55% of recharge occurring to the Madison and Minnelusa aquifers contributes to the Madison aquifer which results in an estimated average annual recharge to the Madison aquifer of 15,699 ac-ft/yr. Currently in subarea 4 there are 43 water rights/permits (estimated usage 20,894 ac-ft/yr) and 4 future use permits (reserving 8,953 ac-ft/yr) (Water Rights, 2020a). Using the same methods used to calculate withdrawals from the previous discharge section and including this application, the estimated average annual withdrawal for the Madison aquifer in subarea 4 is 29,872 ac-ft/yr.

Long & Putnam (2002) calculated the hydrologic budget for the Madison aquifer in the Rapid City area for the water years 1988 to 1997 (Table 9).

Table 9. Estimated average annual hydrologic budget for the Rapid City area for the Madison aquifer for the water years 1988-1997 modified from Long & Putnam (2002).

Long & Putnam (2002)	Inflows			Outflows			
	Streamflow Recharge	Areal Recharge	Seepage From Deadwood Aquifer	Spring Flow	Water use	Leakage To Minnelusa	Regional Outflow
cfs	38.8	16.1	6.3	30.8	6.7	7.6	11
ac-ft/yr	28,108.7	11,663.6	4,564	22,313.1	4,853.8	5,505.8	7,969

As shown in Table 9 Long & Putnam (2002) estimated the average annual recharge to the Madison aquifer in the Rapid City area to be 44,336 ac-ft/yr. There are 56 water rights/permits (estimated usage 18,594 ac-ft/yr), and 4 future use permits (reserving 8,953 ac-ft/yr) authorized to withdraw water from the Madison aquifer in the area defined by Long & Putnam (2002). Using the same methods used to calculate withdrawals from the previous discharge section and including this application, the estimated average annual withdrawal for the Madison aquifer in the area defined by Long & Putnam (2002) is 27,572 ac-ft/yr.

Groundwater models rely on a number of assumptions and do not account for all possible recharge sources, and there is more data now available for this reason, observation well analysis is necessary and detailed in this report documenting that there is a reasonable probability that unappropriated water is available for this application.

Observation Well Data

In determining the availability of unappropriated water for a permit application, Administrative Rule of South Dakota (ARSD) 74:02:05:07 requires the Water Management Board to rely on the record of observation well measurements, in addition to other data, to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated average annual recharge to the aquifer.

The DENR-Water Rights Program monitors 26 observation wells completed into the Madison aquifer (Water Rights, 2020c). Observation wells provide data on how the aquifer reacts to regional climatic conditions and pumping in the immediate vicinity of those observation wells. The nearest observation wells that can be used for analysis are PE-95C (1.6 miles north), PE-89C (3.4 miles southeast), PE-96A (4.9 miles southeast), PE-89A (5.1 miles southeast), PE-65A (5.5

miles southeast), PE-86A (9.9 miles southeast). The hydrographs for these wells are shown in Figure 2. All of these observation wells are within five miles of where the Madison outcrops in the Black Hills. The Black Hills Madison outcrop is the primary recharge area for the Madison aquifer, and as such, observation wells near the outcrop will show higher recharge than areas downgradient of them. As a result, observation wells near the outcrop show greater fluctuations due to seasonal recharge and withdrawals, while observation wells further away show more attenuated readings.

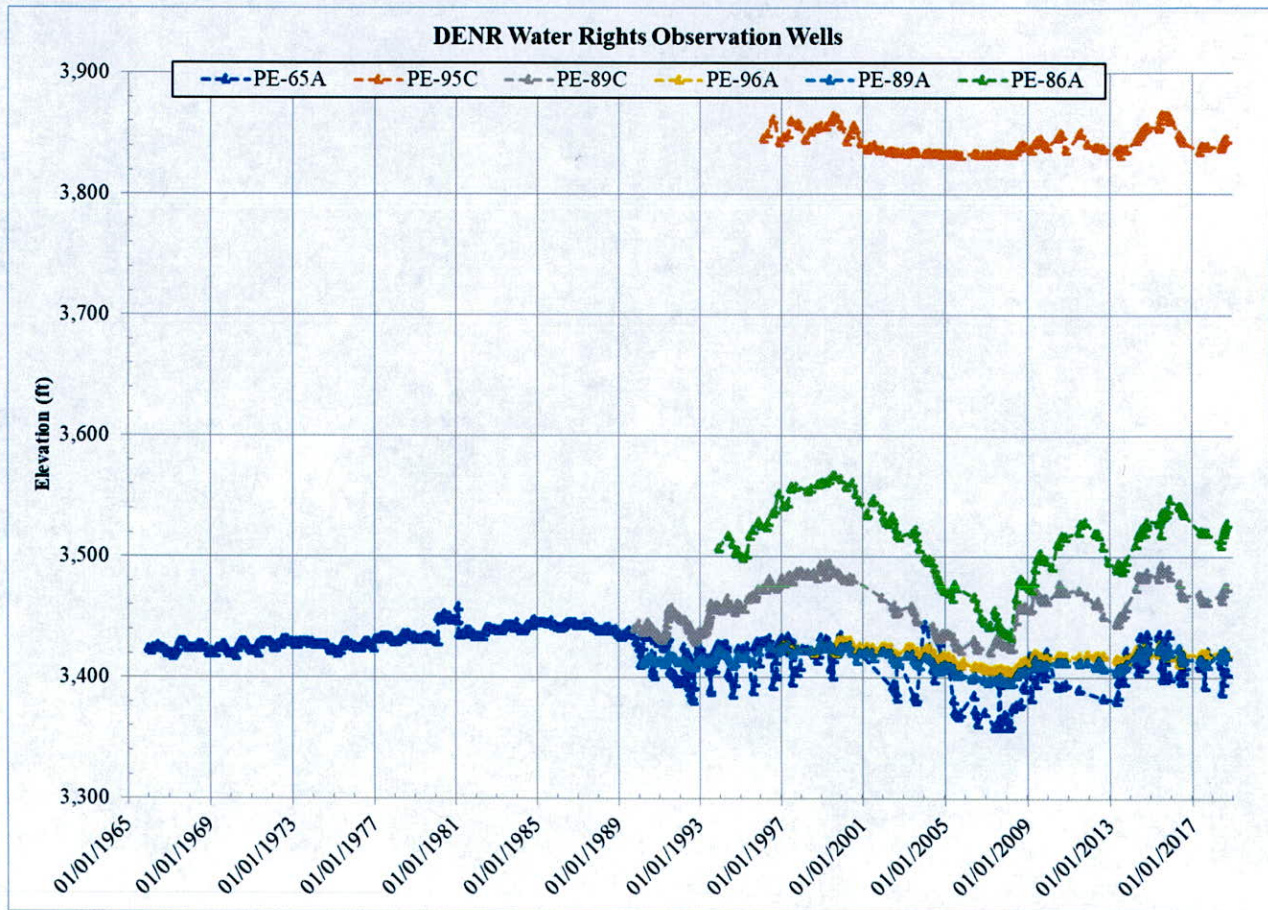


Figure 2: Hydrograph for observation wells PE-95C (1.6 miles north), PE-89C (3.4 miles southeast), PE-96A (4.9 miles southeast), PE-89A (5.1 miles southeast), PE-65A (5.5 miles southeast), PE-86A (9.9 miles southeast) (Water Rights, 2020c).

Water levels shown in the observation wells change in response to climatic conditions declining during drier periods and rising during wetter periods and show no or minimal responses to pumping. Any responses to pumping are relatively short term and are masked by recharge to and natural discharge from the aquifer. Recognizing recharge to and natural discharge from the Madison aquifer can be captured for pumping, the hydrographs document that unappropriated water is available for this proposed appropriation.

Potential For Unlawful Impairment Of Existing Water Rights

Currently, there are 155 water rights/permits appropriating water from the Madison aquifer (Water Rights, 2020a). The nearest water right/permit to the applicant's proposed diversion point is

approximately 1.15 miles to the northwest (Table 10 and Figure 3). There are a number of domestic wells on file with the SD DENR-Water Rights Program, which appear to be completed into the Madison within the area illustrated in Figure 3 (Water Rights, 2020b).

Table 10: Nearby water rights/permits currently authorized to withdraw water from the Madison aquifer, illustrated in Figure 3 (Water Rights, 2020a).

Permit No.	Name	Status	Use	Rate (cfs)	Acres
1154-2	Westberry Trails Water	LC	SHD	0.25	N/A
1852-2	Ponderosa Water & Homeowners Assn	LC	SHD	0.11	N/A
2245-2	Calvary Trail Homeowners	LC	SHD	0.03	N/A
2273-2	City Of Rapid City	LC	MUN	11.06	N/A
2576-2	Canyon Springs Sanitary & Water District	LC	SHD	0.25	N/A
2673-2	Diocese Of Rapid City	LC	IRR	0.12	N/A
2694-2	Pete Lien & Sons Inc	PE	IND	1.56	N/A

LC = Water Right, SHD = Suburban Housing Development, MUN = Municipal, IRR = Irrigation, PE = Water Permit, IND = Industrial

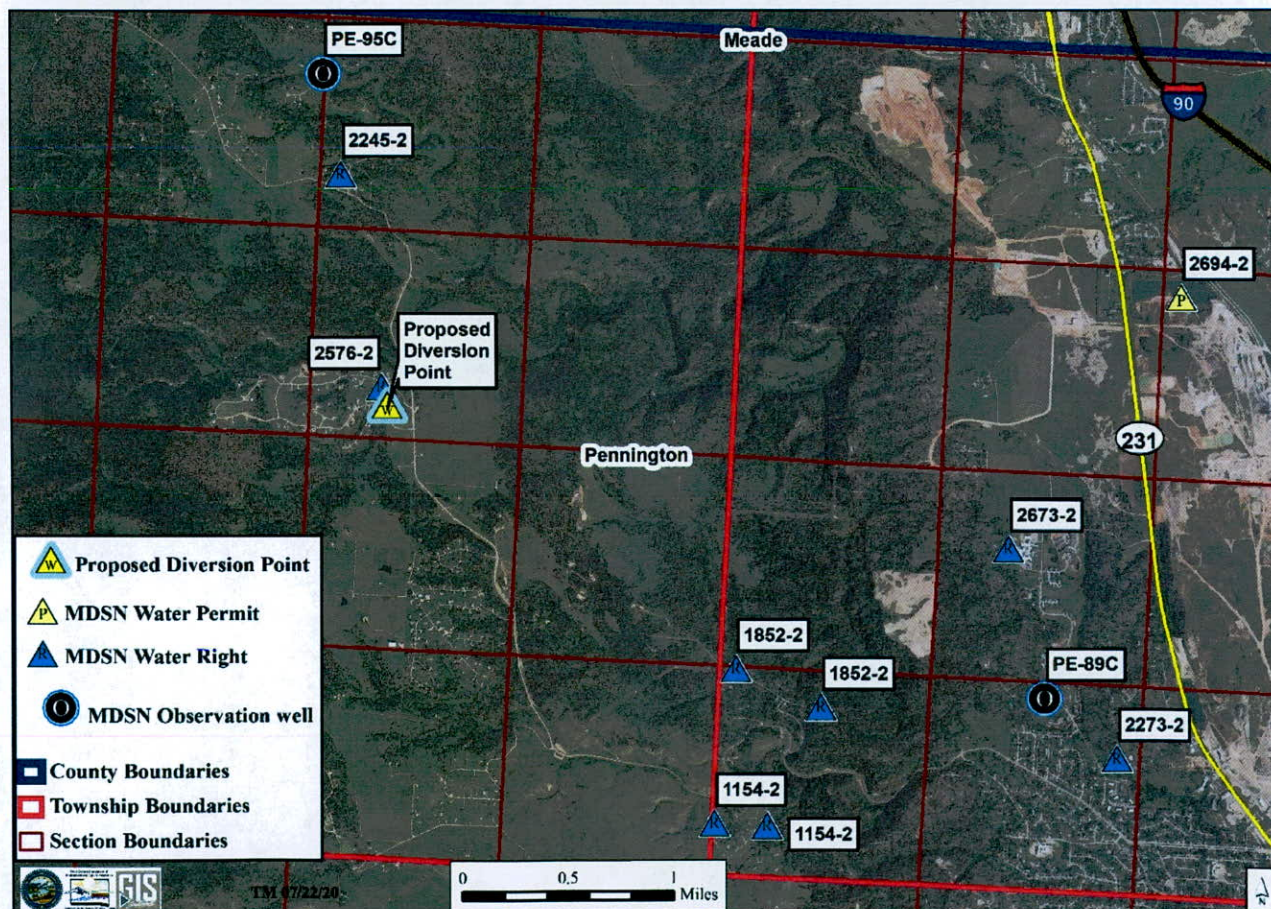


Figure 3: Map showing the location of the proposed diversion point, nearby water rights/permits, and nearby observation wells (Water Rights, 2020a; Water Rights, 2020c).

The Madison aquifer is confined in this area, so drawdown from pumping could extend a significant distance from the proposed well site. The thickness of the Madison aquifer in the area

of this application is expected to be approximately 450 feet. This would allow sufficient thickness for a pump to be placed 20 feet below the top of the aquifer. Nearby adequate wells should not be adversely impacted by pumping at this proposed diversion rate.

An adequate well as defined in ARSD 74:02:04:20(6):

“A well constructed or rehabilitated to allow various withdrawal methods to be used, to allow the inlet to the pump to be placed not less than 20 feet into the saturated aquifer or formation material when the well is constructed, or to allow the pump to be placed as near to the bottom of the aquifer as is practical if the aquifer thickness is less than 20 feet.”

SDCL 46-6-6.1 does not necessarily protect artesian head pressure as a means of delivery, and in the past, the Water Management Board has recognized that to place water to maximum beneficial use, a certain amount of drawdown may occur (Water Rights, 1995). The Water Management Board has also found if increased cost or decreased production as a result of impacts on artesian head pressure by legitimate users is to be considered an adverse impact, it would also be in conflict with SDCL 46-1-4 (Water Rights, 1995). With that in mind, some existing well owners may need to lower their pumps to accommodate deeper water levels. Given the artesian head pressure at the well site is expected to be approximately 150 feet, the thickness of the Madison aquifer in the area (450 ft), and the nearest water right/permit being approximately 1.15 miles to the northwest well interference from this proposed diversion is not expected to cause an adverse impact. Therefore, there is a reasonable probability that any interference created by pumping for this proposed appropriation will not be adverse.

Springs

In the past, there have been concerns, the development of the Madison aquifer will affect spring discharge. The nearest major spring that is sourced primarily by water from the Madison aquifer is City Springs located approximately 4 miles to the southeast of the well site for this application (Naus, Driscoll, & Carter, 2001). In considering the deferral of Water Permit Application No. 2585-2 for the Southern Black Hills Water System, the Water Management Board adopted a conclusion of law stating in part, “...The only protection South Dakota law provides when considering an application for an underground water permit for flow from an artesian spring is under the public interest criteria” (Water Rights, 1997). Given the distance between the proposed well site and City Springs, there is reasonable probability this application can be developed without making an impact that would be measurable above the natural fluctuations of the nearest springs.

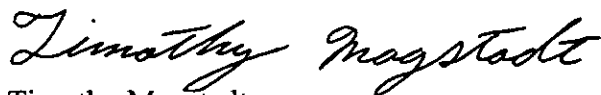
Term Limit

Although there is reasonable probability unappropriated water is available, and the applicant can develop the proposed use without unlawful impairment of existing rights, the Water Management Board has not determined in a hearing that the requirements of SDCL 46-2A-20 to

remove the requirement of the term limit are met. Therefore, this application is subject to a 20-year term limit.

Conclusions

1. Water Permit Application No. 2812-2 requests the appropriation of 25 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet per second (cfs) from one well to be completed into the Madison aquifer (550 feet deep) located in the SE ¼ SW ¼ Section 23-T2N-R6E for use by the sanitary district as an additional well to the one granted by Water Right No. 2576-2.
2. Water Right No. 2576-2 has a maximum pump rate of 0.25 cfs from one well completed into the Madison aquifer (558 feet deep) located in the SE ¼ SW ¼ Sec 23-T2N-R6E for use by the sanitary district.
3. Based on observation well data and the hydrologic budget, there is a reasonable probability that unappropriated water is available from the Madison aquifer.
4. There is a reasonable probability that the diversion proposed by this application will not unlawfully impair adequate wells for existing water rights and domestic use.
5. This application is subject to a 20-year term limit.



Timothy Magstadt

Natural Resources Engineer I

SD DENR – Water Rights Program

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Affidavit of Publication

August 27 L16668

NOTICE OF APPLICATION NO. 2812-2 to Appropriate Water

Notice is given that Canyon Springs Sanitary District, c/o Mike Jubie, President, 9191 Emerald Ridge Rd, Rapid City SD 57702 has filed an application for a water permit to appropriate 25 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet of water per second (cfs) from one well to be completed into the Madison Aquifer (550 feet deep) located in the SE 1/4 SW 1/4 Section 23-T2N-R6E. Water Right No. 2576-2 authorizes 0.25 cfs from one well located in the SE 1/4 SW 1/4 Sec 23-T2N-R6E for use by the sanitary district. This request is for an additional well to serve the sanitary district located in portions of the SW 1/4 Section 23, NW 1/4 NW 1/4 Section 26, S 1/2 SE 1/4, NE 1/4 SE 1/4 Section 22; all in T2N-R6E. The proposed well site is located approximately 4 miles northwest of Rapid City SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2812-2 with qualifications because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and, 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duval for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by September 8, 2020.

The petition may be informal but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

(Published once at the approximate cost of \$57.69)

STATE OF SOUTH DAKOTA

County of Pennington SS:

Sheri Sponder being first duly sworn, upon his/her oath says: That he/she is now and was at all time hereinafter mentioned, an employee of the RAPID CITY JOURNAL, a corporation of Rapid City, South Dakota, the owner and publisher of the RAPID CITY JOURNAL, a legal and daily newspaper printed and published in Rapid City, in said County of Pennington, and has full and personal knowledge of all the facts herein stated as follows: that said newspaper is and at all of the times herein mentioned has been a legal and daily newspaper with a bonafide paid circulation of at least Two Hundred copies daily, and has been printed and published in the English language, at and within an office maintained by the owner and publisher thereof, at Rapid City, in said Pennington County, and has been admitted to the United States mail under the second class mailing privilege for at least one year prior to the publication herein mentioned; that the advertisement, a printed copy of which, taken from said Rapid City Journal, the paper in which the same was published, is attached to this sheet and made a part of this affidavit, was published in said paper once each

day for one successive day, the first publication there of being on the 27th day of Aug 2020 that the fees charged for the publication there of are 57 dollars and 69 cents.

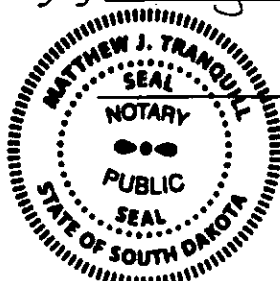
Sheri Sponder

Subscribed and sworn to before me this 28th day of August, 2020.

RECEIVED

AUG 31 2020

WATER RIGHTS PROGRAM



Matthew J. Tranquill

Notary public

December 5, 2025

My commission expires

Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, August 19, 2020 9:08 AM
To: Rapid City Journal (legals@rapidcityjournal.com)
Subject: 2812-2, Canyon Springs Sanitary District
Attachments: 2812-2public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on August 27, 2020.

Canyon Springs Sanitary District, c/o Mike Jubie, 9191 Emerald Ridge Rd, Rapid City SD 57702 (509 492-8185) has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol, Pierre SD 57501.

Let me know if you have questions. Please acknowledge receipt of this email.

Karen Schlaak
Water Rights Program
(605) 773-3352





DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.**

August 19, 2020

Canyon Springs Sanitary District
c/o Mike Jubie
9191 Emerald Ridge Rd
Rapid City SD 57702

Dear Mr. Jubie

Water Permit Application No. 2812-2 for water distribution use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Rapid City Journal (Ph # 605 394-8336). You will need to contact the newspapers and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspapers to authorize publication of your Notice and to arrange for payment. Early contact with the papers can eliminate delays. Upon receiving authorization from you, the publisher has been instructed to publish your notice. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

NOTICE OF APPLICATION NO. 2812-2 to Appropriate Water

Notice is given that Canyon Springs Sanitary District, c/o Mike Jubie, President, 9191 Emerald Ridge Rd, Rapid City SD 57702 has filed an application for a water permit to appropriate 25 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet of water per second (cfs) from one well to be completed into the Madison Aquifer (550 feet deep) located in the SE 1/4 SW 1/4 Section 23-T2N-R6E. Water Right No. 2576-2 authorizes 0.25 cfs from one well located in the SE 1/4 SW 1/4 Sec 23-T2N-R6E for use by the sanitary district. This request is for an additional well to serve the sanitary district located in portions of the SW 1/4 Section 23, NW 1/4 NW 1/4 Section 26, S 1/2 SE 1/4, NE 1/4 SE 1/4 Section 22; all in T2N-R6E. The proposed well site is located approximately 4 miles northwest of Rapid City SD.

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Published once at the total approximate cost of_

October 5, 2020

PAYMENT REQUEST FORM

PAYEE: Canyon Springs Sanitary District
c/o Mike Jubie
9191 Emerald Ridge Rd
Rapid City SD 57702

FROM: DENR Water Rights Program
523 E. Capitol Ave
Pierre, SD 57501-3181

DESCRIPTION OF SERVICE, PRODUCE OR TRANSFER

Over Payment of Water Permit Application

AMOUNT: \$250.00

FUNDING SOURCE:

GENERAL: X

FEDERAL:

OTHER:

COMMENTS:

AUTHORIZATION: *Eric Hundert* 10/5/2020

I declare and affirm under the penalties of perjury that this claim is in all things, true and correct. I further agree to comply with the provisions of the Civil Rights Act of 1964 and regulations issued thereunder relating to nondiscrimination in federal assisted programs.



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

OCT 06 2020

Canyon Springs Sanitary District
c/o Mike Jubie
9191 Emerald Ridge Rd
Rapid City SD 57702

Dear Mr. Jubie:

Enclosed is Water Permit No. 2812-2 authorizing construction of the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

An application/license filing fee of \$950.00 was submitted with the application. The fee should have been \$700.00. \$250.00 will be refunded to Canyon Springs Sanitary District. The refund check should be received within the next couple of weeks.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

Eric Gronlund, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

c: Dana Foreman, KJL

Schlaak, Karen

From: Clearwater Consulting <consultclearwater@gmail.com>
Sent: Monday, January 23, 2023 11:46 AM
To: Schlaak, Karen
Subject: Re: [EXT] 2022 Gallons (Canyon Springs Sanitary District #9121)

Karen,

You can send all future correspondence to the following address:

Canyon Springs Preserve Sanitary District
Joshua Valder
9285 N. Emerald Ridge Rd.
Rapid City, SD 57702

Thanks,

Dylan



E: Consultclearwater@gmail.com

P: 605-786-4366

W: www.bhclearwater.com

On Mon, Jan 23, 2023 at 10:41 AM Schlaak, Karen <Karen.Schlaak@state.sd.us> wrote:

Good Morning,

The letter I sent out January 5th to Canyon Springs Sanitary District, 2127 Diamond Oak Place, Rapid City SD was just returned by the PO. What is a current mailing address for Canyon Springs Sanitary District?

Thanks,

Kare

From: Clearwater Consulting <consultclearwater@gmail.com>
Sent: Tuesday, January 10, 2023 2:58 PM
To: Schlaak, Karen <Karen.Schlaak@state.sd.us>; Mike Jubie <mjubie@me.com>
Subject: [EXT] 2022 Gallons (Canyon Springs Sanitary District #9121)

Karen,

2812-2

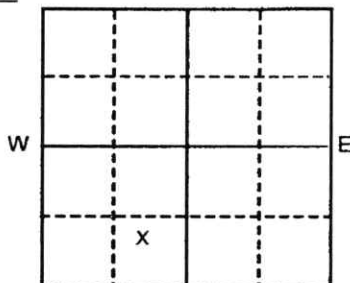
SD EForm - 1621LD V1

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE 1/4 SW 1/4 Sec 23 Twp 2N Rg 6ECounty Pennington ☒

North

Please mark well
location with an "X"

Well Completion Date

4/29/2021

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?
110 ft. from septic system (identify source)

PROPOSED USE:

☐ Domestic/Stock ☒ Municipal ☐ Business ☐ Test holes
☐ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

METHOD OF DRILLING:

rotary - air

CASING DATA:

If other describe

☒ Steel ☐ Plastic ☐ Other

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
54.5 LB/FT	13 3/8 IN	0 FT	30 FT	17 1/2 IN
28 LB/FT	8 5/8 IN	0 FT	255 FT	12 1/4 IN
23 LB/FT	7 IN	+2 FT	445 FT	7 7/8 IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
cement	40	15 Lb/gal	0 Ft	30 Ft
cement	150	15 Lb/gal	0 Ft	225 Ft

Describe grouting procedure

Pressure grouted through casing cement 80sk @ 15lb/gal
from 0 ft - 445 ft

SCREEN:

☐ Perforated pipe ☐ Manufactured

Diameter _____ Inches Length _____ Feet

Material _____

Slot Size _____ Set From _____ Feet to _____ Feet

Other information _____

WAS A PACKER OR SEAL USED?

☐ Yes ☒ No

If so, what material?

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? chlorine solution☐ No, Why Not?Lab to which water
quality sample sent for analysisWell Owner: Canyon Springs Sanitary & Water Dist.Business Name: CPS Water and Sewer Dist.Address: 2721 Diamond Oak PlaceCity, State, Zip: Rapid City ☒ SD ☒ 57702

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
large boulders / sand	0	15
Minnelusa	15	195
Madison -weathered dolomite w/shale	195	255
broken up dolomite/limestone	255	280
yellow cream clay	280	282
weathered dolomite / limestone	282	440
dolomite / limestone	440	625
Englewood	625	627

STATIC WATER LEVEL 155 FEET

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____ GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe: Air developed
☐ Bailed 450 ft 2 hr. @ 135 GPM
☒ Other 350 ft 1 hr. @ 100 GPM

Pumping Level Below Land Surface

290 Ft. After 1 Hrs. pumped 75 GPM230 Ft. After 1 Hrs. pumped 45 GPM

If pump installed, pump rate: _____ GPM

REMARKS

Well No.2

Water Permit No.2812-2

This well was drilled under license # 331 and this
report is true and accurate.Drilling firm: Taylor Drilling Co.

Signature of License Representative:

K. Taylor

Signature of Well Owner or Equitable Property Holder:

RECEIVED

JUN 17 2021

WATER RIGHTS
PROGRAM

Date: _____