

WATER PERMIT NO. 8420-3

Name of Applicant: Vogel Farms Ptr

Address: PO Box 174, Akaska SD 57420

Phone: 605 281-0324

Amount of Water Claimed: 0.12 cfs (88.7 AF)

Total Acres: NA

Source of Water Supply: groundwater (one well)

Water to be used for: geothermal use

County: Faulk

Type of Waste Disposal System:

Location: 3 miles northeast of Onaka

PRIORITY

Date Received: 1-28-20

Application/License Fee: \$ 700

Corrected Application Received:

Period of Annual Use: January 1 – December 31

Remarks:

Diversion Point: NE 1/4 SW 1/4 Sec 6-T120N-R71W

Land to be Irrigated: NA

Depth of Well: 2135 feet deep

Well Driller: Pullman Well Drilling

Remarks:

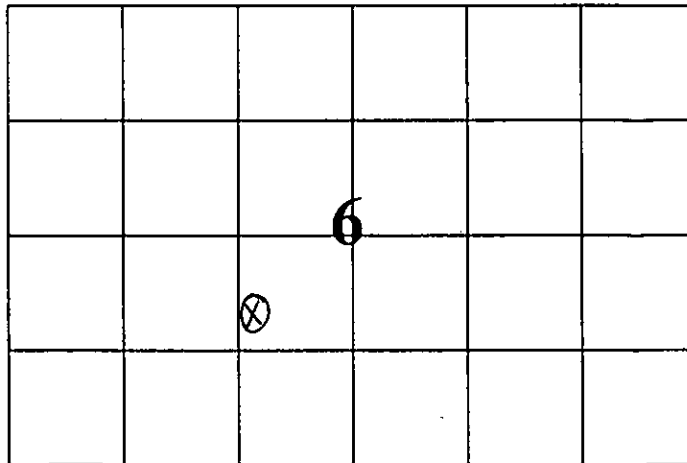
Type of Map: aerial

Prepared by:

Reviewed and the Number Assigned on: 1-28-20

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8420-3</u> (office use only) Hydrologic Unit <u>10160007</u>
	Basin <u>James River</u>
	Newspaper <u>Faulk County Record</u>
	<u>Aberdeen American News</u>

PAID
JAN 28 2020
Ck# 5339

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.)

- Name to Appear on Water Permit Vogel Farms PTR
Mailing Address PO Box 174 Akaska SD 57420
(Address) (City) (State) (Zip Code)
Phone — Mobile (605) 281-0324 Email onekafax@sbtco.net
- Amount of water claimed 0.12 *CFS or 55 **GPM and 88.7 ***AF or _____ 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)
- Source of water supply INMAN KARA AQUIFER
- Location of point of diversion NE 1/4 SW 1/4 Sec 6 T120N R71W County Faulk
(example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W)
If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☐ Yes ☒ No
If "Yes," where will water be used? _____
(example - NW 1/4 section 12-T104N-R53W)
- County or counties where water will be used Faulk
- Annual period during which water is to be used January 1 to December 31

- 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)

Water is being used to supply a geothermal heating and cooling system for Vogel Farms PTR 10 x 200 Farm Shop and living quarters and office. There are other flowing wells from this aquifer in the area that are several miles away that I would not have information on.

- Henry Vogel partner Vogel Farms PTR, 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.

2015-10

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)

RECEIVED

JAN 28 2020

WATER RIGHTS
PROGRAM

**SOUTH DAKOTA
WATER PERMIT NO. 8420-3**

Date of first receipt of application January 28, 2020.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8420-3 to Vogel Farms PTR, Kenny Vogel, PO Box 174, Akaska SD 57420 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. 8420-3 appropriates 88.7 acre-feet of water annually at a maximum pump rate of 0.123 cubic feet of water per second from one well completed into the Inyan Kara Aquifer (2,135 feet deep) located in the N 1/2 SW 1/4 Section 6-T120N-R71W for geothermal use. This site is located approximately 3 miles northeast of Onaka SD.
2. The water appropriated shall be used for the purpose of geothermal use 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. 8420-3 is May 4, 2020.
5. The date from which applicant may claim right is January 28, 2020.
6. Water is to be put to beneficial use on or before May 4, 2029.
7. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. Any future replacement well may not be constructed using the alternative well construction standard set forth in ARSD 74:02:04:36 commonly called a "slim hole" well.
3. The well approved under Permit No. 8420-3 shall be valved and the flow reduced to the amount needed or to a minimum when not being used. If the well is abandoned or the permit cancelled, the well must be plugged in accordance with Water Management Board Rules, Chapter 74:02:04.
4. Any discharge to the waters of the state shall comply with any surface water discharge permitting requirements administered by the Surface Water Quality Program, Department of Environment and Natural Resources.

(continued)

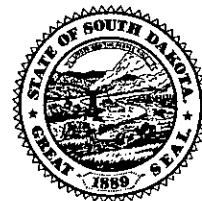
5. The permit holder shall report to the Chief Engineer annually the amount of water withdrawn from the Inyan Kara aquifer.
6. Water Permit No. 8420-3 authorizes a total annual diversion of 88.7 acre feet of water.

WATER MANAGEMENT BOARD

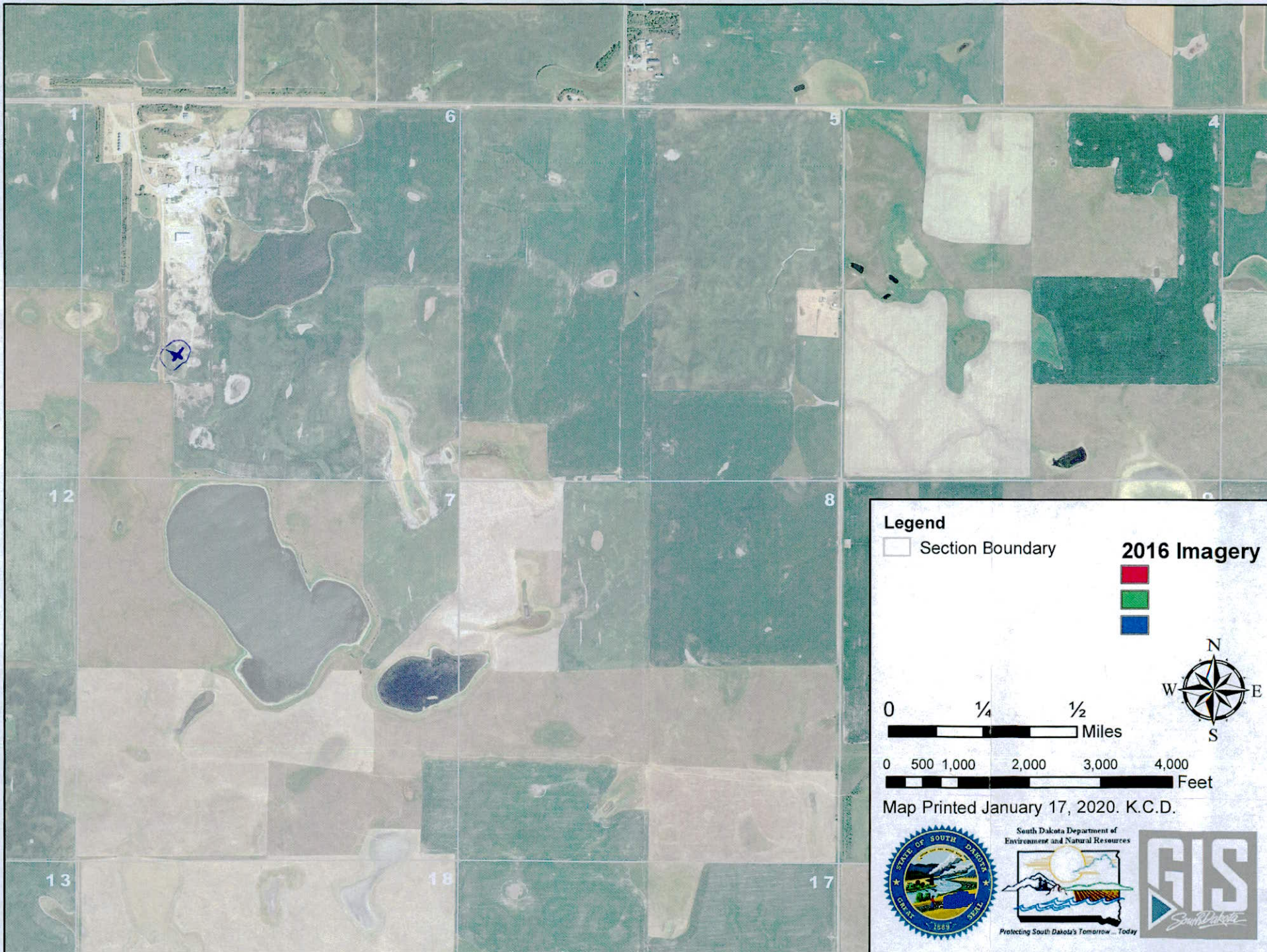
By: Eric Gronlund
Eric Gronlund, Chief Engineer

MAY 12 2020

date



Water Rights Program
Department of Environment and Natural Resources



Legend

Section Boundary

2016 Imagery



0 1/4 1/2 Miles

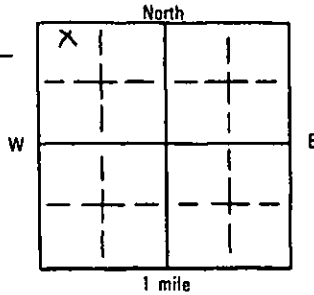
0 500 1,000 2,000 3,000 4,000 Feet

Map Printed January 17, 2020. K.C.D.



SOUTH DAKOTA WATER WELL COMPLETION REPORT

10-85

Location NW 1/4 NW 1/4 Sec 16 Twp 120 N Rg 71 WCounty Faulk

Please mark well location with an "X"

Well Completion Date 1-31-91

PROPOSED USE:

☒ Domestic ☐ Municipal ☐ Test Holes
☐ Irrigation ☐ Industrial ☒ Stock

Method of Drilling:

Forward Rotary

CASING DATA:

☐ Steel ☒ Plastic ☒ OtherIf other describe 3.0 x 5" steel

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT <u>5</u>	IN <u>5</u>	FT <u>0</u>	FT <u>300</u>	IN <u>7 3/8</u>
LB/FT <u>2</u>	IN <u>2</u>	FT <u>0</u>	FT <u>2135</u>	IN <u>4 1/2</u>
LB/FT _____	IN _____	FT _____	FT _____	IN _____
LB/FT _____	IN _____	FT _____	FT _____	IN _____

GROUT:

Was the well grouted? ☒ YES ☐ NOTo what depth? 300 FEETWhat is grouting material? CementIf cement, number of sacks? 45

Describe grouting procedure

Pumped thru pipe

What was grout weight? _____ LB/GAL

SCREEN: ☒ Perforated pipe ☐ ManufacturedDiameter 2 IN Length 160 FEETMaterial CopperSlot Size _____ Set From 1975 Feet To 2135 Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Other information _____

Was a packer or seal used? ☒ YES ☐ NOIf so, what material? rubber

Describe packer(s) and location?

Shale Cap @ 1975 ft.Was well disinfected upon completion? ☐ YES ☒ NO

Explain _____

Bacteriological analysis ☐ YES ☒ NO

Laboratory sent to _____

Well Owner:

Name Vogel FarmsAddress Onaka, SD 57466

Well Log: _____ Depth _____

Formation	From	To
Yellow Clay	0	60
Blue Clay	60	170
Good Sand	170	180
Blue Clay w/ Sand Streaks	180	220
Shale	220	1490
Sand w/ hard spots	1490	1520
Fair Sand	1520	1553
Shale	1553	1620
Sand	1620	1650
Shale	1650	1694
Fair Sand	1694	1800
Morrison	1800	1900
Shale w/ Sand streaks	1900	2040
Good Sand	2040	2075
Shale w/ Sand streaks	2075	2135 TO

STATIC WATER LEVEL _____ Feet

If flowing: closed in pressure 70 PSIGPM flow 65 through 2 inch pipeControlled by ☒ Valve ☐ Reducers ☐ Other

If other, specify _____

Can well be completely shut in? yes

WELL TEST DATA:

☐ Pumped☐ Bailed☐ Other

Describe: _____

Pumping Level Below Land Surface

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

REMARKS:

This well was drilled under license # 440

And this report is true and accurate.

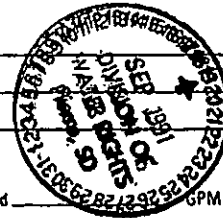
Drilling firm Pullman Well Drilling

Signature of License Representative:

B. E. Kroll

Signature of Well Owner:

Date

9-17-91

Well Overflow Agreement

This agreement is entered into on 03/02 2020 between Roy Heintzman and Vogel Farms Partnership, represented by Kevin and Kenny Vogel. It stipulates that Roy Heintzman agrees to allow overflow water from a flowing well owned by Vogel Farms Partnership, located on Section 6-120-71 in Faulk County to flow into the Waldman WPA which extends into Roy Heintzmans property on section 7 in Faulk County.

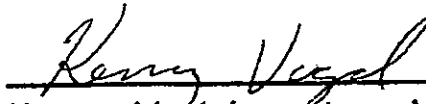
Signed and agreed to by



Roy Heintzman



Kevin Vogel, partner Vogel Farms PTR



Kenny Vogel, partner Vogel Farms PTR

RECEIPT

WATER RIGHTS PROGRAM South Dakota Department of Environment and Natural Resources

Date January 28, 2020

RECEIVED OF Vogel Farm Partnership PO Box 174 Akaska SD 57420

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

Fee for Application for Permit No. <u>8420-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$500.00
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>8420-3</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	\$700.00

By Jeanne Goodman
Chief Engineer DM

STATE OF SOUTH DAKOTA

Doing Business As (DBA)

Fictitious Business Name Registration

Vogel Farms PTR
ID: UB145114

The address where the main office of the above listed business is to be maintained:

Physical Address:
33613 148TH ST
ONAKA, SD 57466

Mailing Address:
PO BOX 174
AKASKA, SD 57420

The owners of the above listed business are:

Name	Address
Kenny Richard Vogel	Physical: 304 N Keer Ave, Akaska, SD 57420, USA Mailing: PO Box 174, Akaska, SD 57420, USA
Kevin Randall Vogel	Physical: 33404 149th St, Onaka, SD 57466, USA Mailing: 33404 149th St, Onaka, SD 57466, USA

The DBA/Fictitious Business Name registered above has a filing date of March 9, 2018, and is effective for a term of 5 years and will expire on March 9, 2023.

Shantel Krebs
SD Secretary of State





**DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov



November 7, 2014

Gary Wedel
US Department of Agriculture
1820 North Kimball, Suite C
Mitchell, SD 57301-1114

Dear Mr. Wedel:

The South Dakota Department of Environment and Natural Resources (DENR) reviewed the project proposed by Vogel Farm concerning the installation of a geothermal heating/cooling system and have the following comments:

1. There are two deep wells on record being completed for Vogel Farms in the NW ¼ Section 6, T120N, R71W. Well driller reports indicate two wells were constructed in 1977 and 1991 that are capable of flowing at 60 to 65 gallons per minute. Rural Development's letter seeking comments does not define the quantity of water to be used in the geothermal system. A water right permit may need to be obtained depending on the diversion rate for the use of the well in the geothermal heating/cooling system.

Water Rights law provides for the domestic use of water including geothermal use without requiring a water right permit provided the use does not exceed 18 gallons per minute (gpm) on an average daily basis. A maximum diversion rate is allowed up to 25 gpm provided the daily volume does not exceed 18 gpm flowing continuously (25,920 gal/day). If the total use from the well including the geothermal and other uses exceeds this amount, a water right permit is required under South Dakota water rights law. If the water use does not exceed this amount, a water right permit is not required. However, the well still needs to be controlled to the amount needed and water is not allowed to flow to waste. When not in use a maximum flow of 5 gpm is allowed to prevent freezing.

If Rural Development or Vogel Farms has questions regarding if a water right permit is necessary for this intended use, please contact Eric Gronlund at (605) 773-3352 or eric.gronlund@state.sd.us.

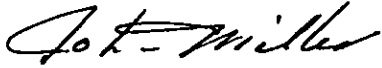
2. Based on the information provided, the Air Quality Program does not anticipate any adverse impacts.
3. Based on the information provided, the Drinking Water Program does not anticipate any adverse impacts.

DENR ID	Site Name	City	County	Street	Material	Status	R1	Latitude	Longitude
2002.25 2	ATP - Vogel Farms	Onaka	Faulk	33615 148th Street	petroleum	NFA	KM	45.243623	-99.447105

DENR ID = DENR Case Number
Status: C = Closed, NFA = No Further Action, O/M = Open/Monitoring, I=Inactive
R1 = DENR reviewer's initials

If you have any questions concerning these comments, please contact me at (605) 773-3351.

Sincerely,

A handwritten signature in black ink, appearing to read "John Miller". The signature is fluid and cursive, with the first name "John" and last name "Miller" clearly distinguishable.

John Miller
Environmental Scientist
Surface Water Quality Program

cc: Eric Gronlund, Water Rights Program
Brad Schultz, Air Quality Program
Erin Dreis, Drinking Water Program
Vonni Kallemeyn, Waste Management Program
Ryan Fitzpatrick, Ground Water Quality Program



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

February 6, 2020

Kenny Vogel
P.O. Box 174
Akaska, SD 57420

Dear Mr. Vogel,

Thank you for meeting with us on January 21, 2020 for our inspection of the complaint regarding your flowing well. As you explained, you use the well to heat your shop in Section 6-T120N-R71W. The complaint we received is that the owner of the land where the discharge from your well flows does not want the water on his property in Sections 4, 5, 6, 7, and 8.

During the inspection, we measured the flow from your geothermal system to be approximately 50 gallons per minute. The water is discharged to an on-site pond, which overflows through a culvert and into a slough on Mr. Heintzman's property. Mr. Heintzman asserts the water from the well and geothermal system is preventing him from using the land as he intends.

As we explained, any use of water above 18 gallons per minute on an average daily basis must have a water right permit from the Water Rights Program in the Department of Environment and Natural Resources (DENR). Thank you for applying for your geothermal use water permit. I am doing the technical review of that application and may be calling you regarding additional information on the well. At the time of the inspection, your well appeared to be leaking above ground surface. Your well also needs to be equipped with the ability to valve the well to the amount of flow you need. South Dakota Well Construction Standards require you to keep your well in good repair. All repairs must be done by a South Dakota licensed well driller. You can search for licensed well drillers at <https://apps.sd.gov/nr68welllogs/driller>.

Please work with your geothermal system installer to ensure that your well only discharges the amount you need to run the system. When the system is not in use, South Dakota law requires you to turn your well off when there is no risk of freezing or to allow no more than 5 gallons per minute to flow if there is a risk of the well freezing.

Even if a water permit is issued, it does not entitle the user to transfer the result of that use onto someone else's property. During the inspection, you remarked that the amount of runoff from the watershed must be considered compared to the discharge from your system. Based on a map of average annual runoff, I estimate the watershed naturally drains 12 to 18 acre-feet of water per year on average onto Mr. Heintzman's land in Section 6. At the measured discharge rate, your system discharges 76 acre-feet per year.

Both you and Mr. Heintzman informed us an outlet was placed in your pond several years ago to lower the elevation at which the pond would naturally discharge. South Dakota courts have determined that transferring water through artificial changes to the land surface cannot impact downstream landowners. You will need to reconfigure your system so that the discharge of your

well does not flow to and collect on Mr. Heintzman's property. If there is an agreement between you and Mr. Heintzman, you may need to exercise that agreement through legal proceedings. Please note that drainage issues are generally under the jurisdiction of the county and make sure you follow any Faulk County drainage regulations.

If you have any questions or comments, please call us at (605) 773-3352 or email me at Kim.Drennon@state.sd.us.

Regards,

A handwritten signature in cursive script, appearing to read "Kimberly Drennon".

Kimberly Drennon
Natural Resources Engineer
SD DENR Water Rights Program

CC: Roy Heintzman



In Reply Refer to:
FWS/IR05/IR07

United States Department of the Interior

FISH AND WILDLIFE SERVICE
39650 Sand Lake Drive
Columbia, South Dakota 57433



Feb. 24, 2020

Kevin Vogel
PO Box 174
Akaska, SD 57420

Dear Mr. Vogel:

I am writing to you in regards to your proposed project of outletting an artesian well onto your land, which will in-turn run over ground and eventually spill into the north end of the large wetland on the east side of the Waldman Waterfowl Production Area (WPA) in Faulk County, SD. You stated that this artesian well has been flowing into other wetlands for over 20 years, but a neighboring landowner recently asked you to stop "flooding" his land and look for an alternative route for this water.

As we discussed on the phone, the US Fish & Wildlife Service does not object to this proposal as long as no dirt work or other construction is completed within the boundaries of the WPA. In fact, should you need to enter the WPA for any reason regarding this project, you should first contact this office to discuss if permit consideration is necessary.

Sincerely,

Don Soderlund
Federal Wildlife Officer

**INTERIOR REGION 5
MISSOURI BASIN**

KANSAS, MONTANA*, NEBRASKA, NORTH DAKOTA,
SOUTH DAKOTA

*PARTIAL

**INTERIOR REGION 7
UPPER COLORADO RIVER BASIN**

COLORADO, NEW MEXICO, UTAH, WYOMING



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8420-3

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. 8420-3, Vogel Farms PTR, PO Box 174, Akaska SD 57420.

The Chief Engineer is recommending APPROVAL of Application No. 8420-3 because 1) 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. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. Any future replacement well may not be constructed using the alternative well construction standard set forth in ARSD 74:02:04:36 commonly called a "slim hole" well.
3. The well approved under Permit No. 8420-3 shall be valved and the flow reduced to the amount needed or to a minimum when not being used. If the well is abandoned or the permit cancelled, the well must be plugged in accordance with Water Management Board Rules, Chapter 74:02:04.
4. Any discharge to the waters of the state shall comply with any surface water discharge permitting requirements administered by the Surface Water Quality Program, Department of Environment and Natural Resources.
5. The permit holder shall report to the Chief Engineer annually the amount of water withdrawn from the Inyan Kara aquifer.
6. Water Permit No. 8420-3 authorizes a total annual diversion of 88.7 acre feet of water.

See report on application for additional information.

A handwritten signature in black ink, reading "Eric S. Gronlund".

Eric Gronlund, Chief Engineer
April 14, 2020

**Report to the Chief Engineer on
Water Permit Application No. 8420-3**

Vogel Farms PTR c/o Kenny Vogel
7 February 2020

Water Permit Application No. 8420-3 proposes to appropriate 88.7 acre-feet of water annually (ac-ft/yr) at a maximum diversion rate of 0.123 cubic feet of water per second (cfs) from one well completed into the Inyan Kara aquifer (2,135 feet deep) located in N ½ SW ¼ Section 6-T120N-R71W for geothermal use. The site is located approximately 3 miles northeast of Onaka, South Dakota.

Aquifer: Inyan Kara (INKR)

Hydrogeologic characteristics

The Inyan Kara aquifer is an early Cretaceous period bedrock aquifer composed of the permeable portions of the Inyan Kara Group. The two formations within the Inyan Kara Group in the area of this application are the Fall River and Lakota Formations [1]. The Fall River Formation is a "Variegated brown, red, and gray to purple, calcareous, well-sorted, fine-grained sandstone, siltstone, and shale containing mica", and the Lakota Formation is a "Yellow, brown, red-brown, and gray to black claystone, silty pebble conglomerate, and massive to thin-bedded, cross-bedded sandstone" [2]. The Inyan Kara Group outcrops around the Black Hills but is otherwise buried in South Dakota [2]. The Inyan Kara aquifer is the saturated and sufficiently permeable portion of the Inyan Kara Group that yields water to wells. The Inyan Kara aquifer is sometimes locally called the Sundance aquifer. However, it should not be confused with the Sundance aquifer as defined by the Water Rights Program, which is from a Jurassic period sandstone that does not extend into Faulk County [1].

In South Dakota, the Inyan Kara Group is under water table conditions where it outcrops around the Black Hills but is otherwise under confined conditions [3]. Most of the Inyan Kara Group is overlain by the Skull Creek Shale, which serves as a relatively impermeable barrier between the Inyan Kara aquifer and the Dakota aquifer [4]. Where the Skull Creek Shale is not present, the Inyan Kara aquifer discharges into the Dakota aquifer [4]. Below most of the Inyan Kara Group, the Morrison Shale acts as an impermeable barrier between the Inyan Kara aquifer and the aquifers below it [1] [2]. However, in the area of this application, such a confining unit below the Inyan Kara Group is not present [1] [2]. The Madison aquifer may underly the Inyan Kara aquifer in the area of this application [5].

The well for this application was completed on January 31, 1991, and it replaced a well that was completed May 18, 1977. The land surface elevation at the site of the 1991 well is approximately 1,850 to 1,860 feet above mean sea level [6]. The driller reported "Morrison" from 1,800 to 1,900 feet below grade, shale with sand streaks from 1,900 to 2,040 feet below grade, "good" sand from 2,040 to 2,075 feet below grade, and shale with sand streaks from 2,075 to 2,135 feet below grade. The driller placed the screen from 1,975 to 2,135 feet below grade. The closed-in pressure at the time of completion of the 1991 well was 70 pounds per square inch. The driller reported installing 5-inch casing from ground surface to 300 feet below grade and 2-inch casing from ground surface to 2,135 feet below grade. The casing was perforated from 1,975 to 2,135 feet below grade. In drilling the well drilled for Vogel Farms, Inc. in the same section in 1977,

the driller reported finding the top of the Lakota Formation 1,944 feet below grade. While the driller of the 1991 well reported finding the Morrison Formation from 1,800 to 1900 feet below grade, it is more likely to be the Skull Creek Shale [1]. Based on the depth of the well, elevations of formations encountered, and the fact that the well currently flows at land surface, the well for this application is completed into the Inyan Kara aquifer.

Applicable South Dakota Codified Law (SDCL)

Pursuant to SDCL 46-2A-9, a permit to appropriate water may be issued 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 assess the availability of water and possibility of developing this application without unlawful impairment of existing water rights only.

Pursuant to SDCL 46-6-3.1, 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 the water to the groundwater source. An exception allows water distribution systems to withdraw from groundwater sources older or stratigraphically lower than the Greenhorn Formation even if the estimated annual recharge is less than estimated withdrawals. The Inyan Kara aquifer is older and stratigraphically lower than the Greenhorn Formation, but the applicant is not a water distribution system as defined in SDCL 46-1-6(17). Therefore, it is necessary to find that average annual recharge exceeds average annual withdrawals to approve this application.

Availability of water

Hydrologic budget

Recharge

In South Dakota, recharge to the Inyan Kara aquifer is by infiltration from precipitation where the aquifer outcrops around the Black Hills and by upward leakage from underlying formations. There is no estimate of average annual recharge to the Inyan Kara aquifer available, but Driscoll and Carter [7] estimated the precipitation component of the recharge from the South Dakota portion of the Black Hills outcrop area to be 11,600 ac-ft/yr. That estimate does not account for upward leakage from underlying formations and is therefore less than the actual recharge rate to the Inyan Kara aquifer. Bredehoeft, Neuzil, and Milly [8] attempted to model flows between the Madison Group, Inyan Kara aquifer, Dakota/Newcastle sandstone, and confining shale units, but the model is based on dated information when newer information is available that could change the results. Some underlying assumptions that may have been reasonable at the time based on information and computing power available (i.e. no flow across state boundaries) may change the results of the model. Therefore, the Bredehoeft, Neuzil, and Milly [8] estimate of steady-state recharge before development of the aquifer is only likely to be accurate as an estimate of orders of magnitudes of flows between those aquifers and geologic units. The Bredehoeft, Neuzil, and Milly [8] estimate of recharge to the outcrop of the Inyan Kara formation is a similar order of magnitude to the Driscoll and Carter [7] estimate, so the Driscoll and Carter [7] estimate is assumed to be the most accurate estimate of recharge to the Inyan Kara aquifer from the outcrop

of the Inyan Kara group. Bredehoeft, Neuzil, and Milly [8] estimated flow to the Inyan Kara aquifer from the Madison and Minnelusa aquifers is approximately 16,000 ac-ft/yr, although all the same caveats about the accuracy of the Bredehoeft, Neuzil, and Milly [8] model in general apply to the estimate of recharge via the Madison Group. The Madison and Minnelusa aquifers as described in the Bredehoeft, Neuzil, and Milly [8] report are aquifers from which the Water Management Board issues water rights/permits [9], so recharge from those aquifers may be available for appropriation.

Discharge

Discharge from the Inyan Kara aquifer is by well withdrawals by domestic and appropriative wells and by groundwater interflow into the Dakota aquifer [10] [11]. Some discharge is also from uncontrolled flowing wells and possibly between aquifers if wells completed into the Inyan Kara aquifer have experienced casing failure. Discharge by uncontrolled flowing wells and leakage into other aquifers has not historically been considered a withdrawal but is available for capture by appropriative and domestic users. Nearly all of the recharge into the Dakota aquifer except approximately 800 ac-ft/yr is by groundwater interflow from other aquifers such as the Inyan Kara aquifer [8, p. 25]. Total withdrawals from the Dakota aquifer were estimated in October of 2019 to be approximately 24,000 ac-ft/yr [12]. Therefore, approximately 23,200 ac-ft/yr of withdrawals from the Dakota aquifer rely on recharge from other formations. While there is an unknown quantity of water from the Dakota and Inyan Kara aquifers that flows to waste, at least some of the natural discharge from the Inyan Kara aquifer is being captured by appropriative and domestic users in the Dakota aquifer and should not be considered a discharge that would otherwise go unused.

There are 198 water rights/permits authorizing the withdrawal of water from the Inyan Kara aquifer and one future use permit reserving 142 ac-ft/yr from the Inyan Kara aquifer [9]. Water rights/permits can be limited by an annual volume less than their maximum instantaneous diversion rate (from this point on, “volume-limited”) or they can be limited only by their maximum instantaneous diversion rate. Some water rights/permits in the Inyan Kara aquifer are required to report their annual withdrawals.

There are many well completion reports on file with the DENR Water Rights Program for domestic wells completed into the Inyan Kara aquifer. However, the exact number of Inyan Kara aquifer domestic wells is not known and some might not be in use anymore [13]. Because of the low diversion rate allowed for reasonable domestic use, withdrawals by domestic wells are considered to be a negligible part of the hydrologic budget for this aquifer.

Eleven municipal or suburban housing development water rights are known by the DENR to be on standby for emergency use, so their withdrawal rate is assumed to be negligible [14] [15]. Eleven irrigation water rights/permits withdrawing from the Inyan Kara aquifer are required to report their withdrawals each year, although two of them are too recent to have reported in the latest year irrigation summary available [9]. Irrigation reported over the period of record is shown in Table 1 [16].

Table 1: Irrigation reported in the Inyan Kara aquifer. [16]

Year	No. Permits Reporting	Reported Irrigation (ac-ft/yr)	Appropriation for Reporting Irrigation Permits (ac-ft/yr)
1982	5	3	1844.9
1983	7	33	2056.4
1984	8	5	2084.3
1985	8	225	2084.3
1986	7	4	1904.6
1987	6	38	1876.4
1988	6	54	1876.4
1989	8	19	1957.4
1990	8	34	1957.4
1991	9	25	1957.4
1992	9	26	1957.4
1993	9	36	1957.4
1994	9	31	2045.7
1995	10	37	2235.7
1996	8	20	894.4
1997	8	6	894.4
1998	8	21	1164.8
1999	6	14	799.2
2000	6	25	799.2
2001	6	52	552.3
2002	7	88	822.7
2003	6	112	781.3
2004	7	143	781.3
2005	7	133	781.3
2006	8	136	910.3
2007	8	142	910.3
2008	9	131	1188.3
2009	9	99	1188.3
2010	9	113	1188.3
2011	9	130	1188.3
2012	9	189	1188.3
2013	9	146	1182.3
2014	9	112	1182.3
2015	7	106	882.1
2016	7	178	882.1
2017	8	184	750.1
2018	9	100	777.1
Avg. 1982-2018	8	80	1337.4
Avg. 2009-2018	9	136	1040.9

The average irrigation reported over the period of record (1982 – 2018) is 80 ac-ft/yr [16]. However, it is likely farming practices have changed over time, and Table 1 shows a general increase in irrigation reported. Therefore, the average irrigation use reported over the last 10 years of record (2009 – 2018) is more likely to reflect current irrigation use in the aquifer than the average over the period of record. The average irrigation reported over the last 10 years of record is 136 ac-ft/yr [16]. The six irrigation water rights/permits that are not required to report because of their irrigation method and the two irrigation water rights/permits that did not report

Report on Water Permit Application No. 8420-3

in 2018 because they were too new to report are conservatively assumed to apply 10 inches of water over the 583 acres permitted/licensed, which is a withdrawal rate of 486 ac-ft/yr.

There are 27 non-irrigation water rights/permits in the Inyan Kara aquifer that are required to report their annual withdrawals (Table 2). Of those, 14 withdraw a similar amount one year to the next [17]. The rest appear to be increasing their withdrawals from year to year as they develop their water right/permit [17]. Water rights/permits that are required to report their annual withdrawal but are not withdrawing at an increasing rate from one year to the next are estimated to withdraw the full volume listed on their permit, if they are volume-limited, and are otherwise assumed to divert at their maximum licensed/permitted diversion rate 60% of the time. The total withdrawal estimated by non-irrigation water rights/permits required to report their withdrawals is 3,257 ac-ft/yr.

Table 2: Non-irrigation water rights/permits required to report their withdrawals [9] [17]

Permit No	Status	Name/Business	Use Type	Priority Date	Pump Rate (cfs)	Est. Use (ac-ft/yr)	Estimation method
8299-3	PERMIT	Aberdeen Energy LLC	IND	09/28/2018	1.330	968.0	Volume
8197-3	PERMIT	Aberdeen Farm LLC	COM	01/29/2016	0.160	72.1	Volume
1903-1	LICENSE	Castle Rock Group	DOM	05/19/2009	0.110	15.5	Average
1906-1	LICENSE	City of Sturgis	MUN	08/21/2009	0.222	2.1	Average
1958-1	LICENSE			04/11/2016	0.088		
2596-2	LICENSE	City of Wall	MUN	07/24/2006	0.600	142.4	Average
1983-1	PERMIT	Continental Resources	IND	07/10/2018	0.500	360.0	Volume
1846-1	LICENSE	Dennis or Anna Mae Beckham	SHD, DOM	05/26/2005	0.100	2.9	Average
1920-1	LICENSE	Elk Valley Ranchettes Homeowners Assn	SHD	01/24/2011	0.100	8.9	Average
2635-2	LICENSE	Fall River Water Users District	SHD, DOM	07/17/2008	0.100	43.5	60% pump rate
1826-1	LICENSE	Golden Valley Water Company LLC	SHD	09/01/2004	0.267	16.9	Average
2601-2	LICENSE	Grandview Land LLC	SHD	09/01/2006	0.330	206.0	Volume
1837-1	LICENSE	Guy Mann	SHD	02/28/2005	0.220	95.6	60% pump rate
1645-2	LICENSE	Hermosa Water Users Assn	RWS	08/17/1978	0.600	158.0	Average
2538-2	PERMIT	JKRK Properties LLC	SHD	08/30/2004	0.244	106.1	60% pump rate
1989-1	PERMIT	Luff Exploration Company	IND	04/09/2019	0.100	58.8	Volume
2622-2	LICENSE	Owanka Rural Water Association Inc	RWS	10/09/2007	0.390	169.5	60% pump rate
2543-2	LICENSE	Southern Black Hills Water System	SHD	09/30/2004	0.190	82.6	60% pump rate
2752-2	PERMIT		RWS	04/25/2016	0.330	170.0	Volume
2550-2	LICENSE	Town of Hermosa	MUN	01/25/2005	0.220	48.0	Average
1968-1	PERMIT	Venekamps LLC	SHD	04/27/2017	0.110	29.0	Volume
1874-1	LICENSE	Viewfield Rural Water Assoc Inc	RWS	01/03/2007	0.212	36.6	Average
1898-1	LICENSE			11/14/2007	0.394		Average
2464-2	LICENSE	West River Lyman Jones	RWS	07/26/2001	0.760	433.8	Average
2465-2	LICENSE			07/26/2001	1.000		Average
2797-2	PERMIT			04/01/2019	1.000		Average
2778-2	PERMIT	Western Construction Inc	COM, IND	11/13/2017	0.170	31.0	Volume
Total						3,257.2	
COM – Commercial, DOM – Domestic, IND – Industrial, MUN – Municipal, RWS – Rural Water System, SHD – Suburban Housing Development							

Of the non-irrigation water rights/permits that are only limited by their maximum diversion rate, 15 also have general water pollution control permits for concentrated animal feeding operations (from here on called “CAFO permits”) [18]. Their livestock watering needs including wash water were estimated by multiplying the number of permitted animals by the average daily use

Report on Water Permit Application No. 8420-3

for each type of animal permitted [19]. Some water right/permit holders with CAFO permits require more water than their water right/permit allows and are assumed to withdraw their annual limit, which is the amount they would withdraw if their wells were pumping or flowing 100% of the time at the maximum licensed/permitted diversion rate. Water Right/Permit Nos. 6011-3, 6091-3, 6128-3, and 6257-3 are licensed/permitted to withdraw from the Dakota and Inyan Kara aquifers but are assumed to withdraw their full amount from the Inyan Kara aquifer for this hydrologic budget. Table 3 shows the estimated livestock water needs for each water right/permit holder limited only by maximum diversion rate that has CAFO permit. Where the estimated livestock water needs are higher than the maximum instantaneous diversion rate permitted, the maximum diversion rate is used to estimate use. Withdrawing additional water without a water right/permit is illegal, although it would be physically possible for those permit holders to have their flowing wells valved open higher than the licensed rate after their licensing inspection was done. The estimated withdrawal rate by those 15 water right/permits that are also associated with CAFO permits is 1,157 ac-ft/yr.

Table 3: Estimated water use by water right/permit holders that also have CAFO permits [9] [18] [19]

Water Permit No:	Status:	Name/Business:	County:	Priority Date:	Pump Rate (cfs):	Other water available	Ann. Limit (ac-ft/yr)	Est. Livestock Needs (ac-ft/yr)	Est. Use (ac-ft/yr)
6091-3	Permit	Brentwood Colony	FA	07/13/1998	0.100	none listed	72	34	34
4965-3	License	Dakota Feeding Company LLC	SU	06/21/1983	0.330	none listed	239	168	168
6128-3	License	Deerfield Httn Brethren	ED	03/03/1999	0.270	none listed	196	45	45
5890-3	License	Evergreen Colony	FA	11/14/1995	0.140	Yes	101	28	28
2178-2	License	Fall River Feed Yard LLC	FR	05/14/1991	0.620	Yes	449	280	280
2552-2	License	Kjerstad Livestock Partnership	PE	02/22/2005	0.160	none listed	116	67	67
6376-3	License	LDL Cattle Company	ED	12/26/2002	0.220	Yes	159	112	112
6377-3	License				0.027	Yes	196		
7098-3	License	Mike & Jessie Fuller	SU	02/19/2009	0.040	none listed	29	54	29
6619-3	Permit	P J Werdell & Sons	HD	03/14/2005	0.330	none listed	239	112	112
7209-3	License	Paul Oberlitner	PT	10/19/2010	0.040	Yes	29	62	29
6011-3	License	Plainview Colony Httn	ED	07/07/1997	0.220	none listed	159	30	30
6257-3	Permit	Thunderbird Colony	FA	04/05/2001	0.200	none listed	145	77	77
6851-3	License	Todd Cowan	HY	04/25/2007	0.150	Yes	109	99	99
7034-3	License	Vogel & Sautner Farms	PT	05/19/2008	0.123	Yes	89	45	45
Total							2,328	1,214	1,157
BU – Butte, ED – Edmunds, FR – Fall River, FA – Faulk, HD – Hand, HY – Hyde, PE – Pennington, PT – Potter, SU – Sully									

The 4 volume-limited non-irrigation water rights/permits that are not required to report their use are assumed to withdraw their entire annual volume, a total of 192 ac-ft/yr [9]. The 124 water rights/permits without a CAFO permit that are not required to report and are limited by maximum diversion rate are assumed to divert at their full diversion rate 60% of the time, for an estimated withdrawal of 8,964 ac-ft/yr for those water rights/permits [9].

Balance of hydrologic budget

The estimated average annual recharge to the Inyan Kara aquifer from its outcrop in the Black Hills is 11,600 ac-ft/yr [7]. Recharge from older bedrock aquifers below the Inyan Kara aquifer is estimated to be approximately 16,000 ac-ft/yr [8]. The estimated average annual withdrawal

by water rights/permits currently withdrawing from the Inyan Kara aquifer is 14,192 ac-ft/yr (Table 4: Summary of water rights/permits currently withdrawing, withdrawals reserved for future use permits, and the withdrawal proposed from the Inyan Kara aquifer by this application) plus 142 ac-ft/yr reserved for future use. Withdrawal estimates that assume the water right/permit holders divert at their maximum instantaneous diversion rate 60% of the time are uncertain but assumed to be a conservative estimate based on experience with similar water rights/permits that do report their withdrawals. There is a reasonable probability that unappropriated water is available for this application, but further study of the flows between the Dakota, Inyan Kara, and other bedrock aquifers and in-depth analysis of actual use by non-reporting water rights/permits would remove some ambiguity in the hydrologic budget.

Table 4: Summary of water rights/permits currently withdrawing, withdrawals reserved for future use permits, and the withdrawal proposed from the Inyan Kara aquifer by this application

Type	No. Permits	Est. Withdrawal (ac-ft/yr)
Standby	11	0
Irrigation, reporting (as of 2018 irrigation report summaries)	9	136
Irrigation, not reporting (as of 2018 irrigation report summaries)	8	486
Non-irrigation, reporting	27	3,257
Non-Irrigation, not reporting, volume limit less than max diversion rate	4	192
CAFO, non-reporting, limited by max. diversion rate	15	1,157
All others, limited by max. diversion rate	124	8,964
Total average permitted/licensed withdrawals estimated	198	14,192
Future use reserved	1	142.0
Proposed by this application	1	88.7
Total of estimated withdrawals, future use, and this application	200	14,422.7

Observation wells

Administrative Rule of South Dakota 74:02:05:07 requires the Water Management Board to rely upon the record of observation well measurements in addition to other information to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated average annual recharge of the aquifer. The DENR maintains nine observation wells completed into the Inyan Kara aquifer [3]. The nearest one to this application is Observation Well ED-85B, located approximately 14 miles north and 34 miles east of the applicant's well [3]. The other eight observation wells are around the outcrop of the Inyan Kara formation near the Black Hills [3]. The United States Geological Survey (USGS) has well measurements available from Well Site No. 445633099300601, completed into the Inyan Kara aquifer and located approximately 20 miles south and 3 miles west of the well for this application from October 1982 to June 1989.

Figure 1 shows the water levels measured in Observation Well ED-85B and USGS Well Site No. 445633099300601 over their periods of record [3] [20]. Given the distance between both observation wells and the well for this application, the measurements at those wells may not be reflective of the local conditions near the well for this application but they do reflect behavior of the aquifer in general in central South Dakota. Figure 2 shows annual precipitation in the Black Hills, which is the main area of recharge for the Inyan Kara outcrop and underlying formations which recharge it [4] [21]. The average annual precipitation in the Black Hills over the period of record (1895-2019) is 20.10 inches [21]. In general, there is a declining trend in hydraulic head in the Inyan Kara aquifer in the area of this application. It is unclear what caused the declines in

water level in ED-85B between 2009 and 2013 but afterwards the water levels continued the same trend as before. The trend of water levels in the aquifer at the observation wells mentioned above tends to level off when precipitation is above average and declines otherwise.

A decline in water levels in a confined aquifer does not indicate a significant decrease in water stored in the aquifer, as water level above the top of the aquifer formation is an expression of the hydraulic head, or water pressure, inside the aquifer and water is incompressible for all practical purposes. As the Dakota aquifer became developed, its decline in hydraulic head in that aquifer created a pressure differential between the Dakota aquifer and the Inyan Kara aquifer, which causes water to flow from the Inyan Kara aquifer into the Dakota aquifer [11]. As long as there is a sufficient difference in hydraulic head between the Dakota and Inyan Kara aquifers, such a flow will continue. It is possible that in the future, flows out of the Dakota and Inyan Kara aquifers will reach a static equilibrium. Since the Dakota and Inyan Kara aquifer both have numerous uncontrolled flowing wells and wells that may have failed below ground surface, as well as numerous permitted and domestic withdrawals, hydraulic head in those aquifers is likely to decline until the head in both aquifers is equal to the hydraulic head of the lowest aquifer those aquifers are leaking into from uncontrolled flowing wells. The Water Management Board has determined in the past that it is better to place the water from the Dakota aquifer to beneficial use than it is to allow it to flow to waste or to save it for some unknown purpose [22]. That conclusion is likely to apply to the Inyan Kara aquifer as well. Therefore, based on observation well data and previous Water Management Board decisions, there is reasonable probability unappropriated water is available for this application.

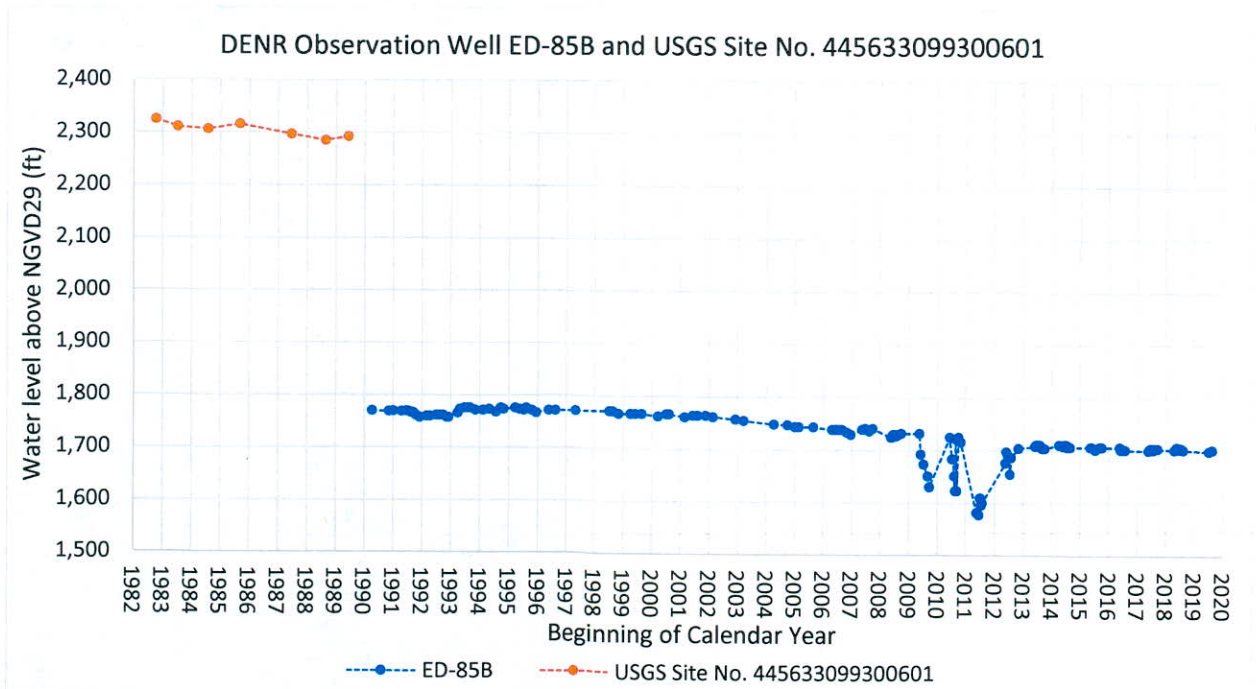


Figure 1: Water level data from SD DENR Observation Well ED-85B and USGS Site No. 445633099300601 [3] [20]

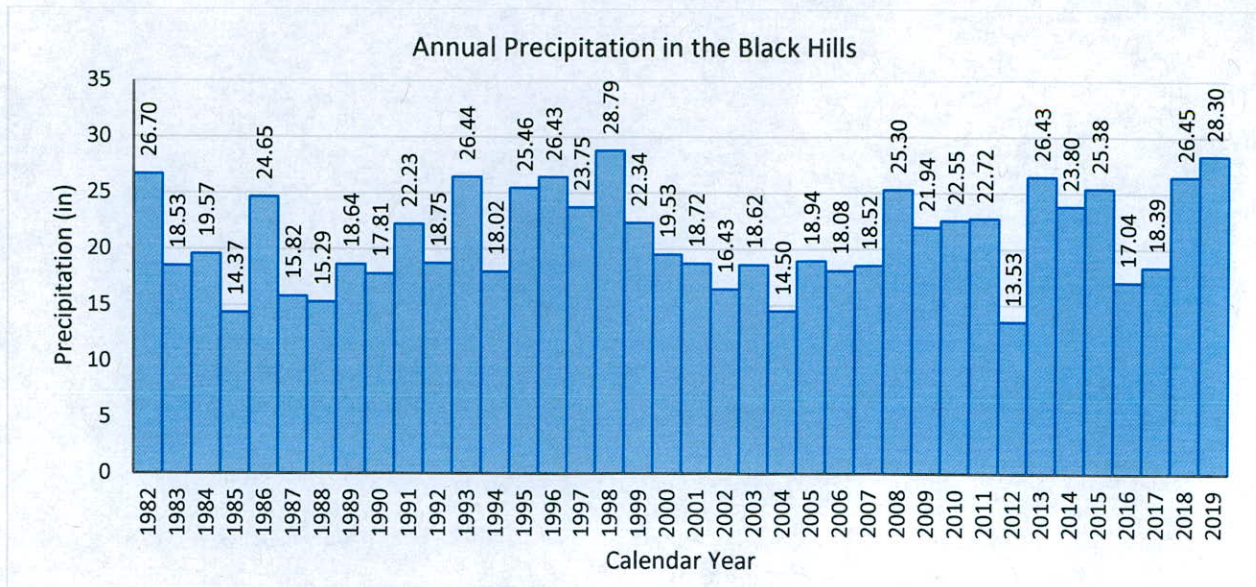


Figure 2: Annual precipitation in the Black Hills, the main region of recharge to the Inyan Kara aquifer and formations which recharge it [4] [21].

Potential for unlawful impairment of existing water rights

The nearest well completion report on file with the Water Rights Program that is likely to be completed into the same aquifer as the applicant is for a well located 2.2 miles to the northwest of the well for this application, but there is a plugging report in the same section for a well of the same depth, so it is possible that well has been plugged [13]. The next nearest wells on file with the Water Rights Program that are likely to be completed into the same aquifer are one located approximately 3.5 miles east of the well for this application that was completed in 1977 and one located approximately 3.5 miles southeast of the well for this application that was completed in 2008 [13]. The nearest Inyan Kara aquifer water right/permit is Water Right No. 6628-3, shown in Figure 3 and located approximately 20 miles southeast of the well for this application. A reduction in the hydraulic head near the applicant's well has likely occurred since the applicant's well was completed. To place the waters of the state to maximum beneficial use, SDCL 46-6-6.1 does not protect hydraulic head in aquifers as a means of water delivery. To protect domestic well owners, the Water Management Board has defined an adversely impacted domestic well in ARSD 74:02:04:20 as:

"...a well in which the pump intake was set at least 20 feet below the top of the aquifer at the time of construction or, if the aquifer is less than 20 feet thick, is as near to the bottom of the aquifer as is practical and the water level of the aquifer has declined to a level that the pump will no longer deliver sufficient water for the well owner's needs;"

In the event that hydraulic head in the aquifer declines to the point that the nearby domestic wells and the applicant's well stop flowing, the domestic well owners and the applicant may need to place a pump in their wells or lower their pumps. This is not an adverse impact to the domestic or appropriative well-owners' wells [23]. There are no complaints on file with the DENR regarding well interference in Faulk County [24]. Given the lack of complaints and the fact that the applicant's well has been flowing since it was drilled in 1991 and the well it replaced was

flowing from 1977 until an unknown time before it was plugged, there is reasonable probability this application can be developed without unlawful impairment of existing water rights/permits and domestic well owners.

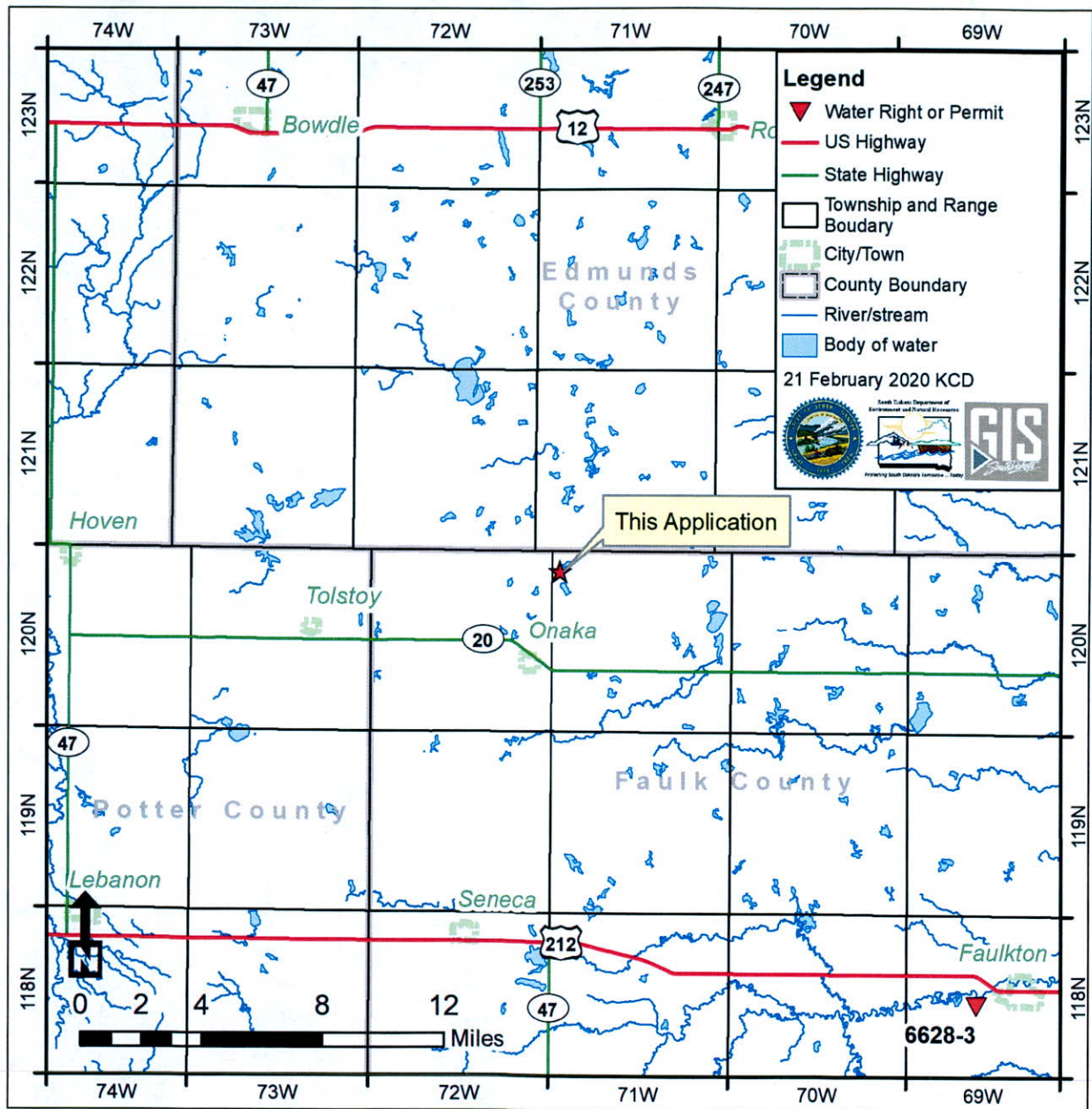


Figure 3: Well for this application and nearest Inyan Kara aquifer water right/permit [9]

Special considerations

Well construction

The well drilled for this application has a 2-inch casing where the well penetrates the aquifer, following the alternative well construction standards listed in ARSD 74:02:04:36 which does not meet the ARSD 74:02:04:20(6) definition of an adequate well. As ARSD 74:02:04:36 notes,

wells that follow the alternative construction standards for the Inyan Kara aquifer are “more likely to fail than a well constructed and grouted pursuant to [ARSD] 74:02:04:28.” If Application No. 8420-3 is approved, any replacement wells should be drilled to meet South Dakota Well Construction Standards for an adequate well and the old well must be plugged pursuant to South Dakota Well Construction Standards.

Geothermal system discharge

The geothermal system that is heated and cooled by this well currently discharges the water into a pond on the applicant’s property in Section 6. There are two flooding complaints on file with the Water Rights Program from a neighbor, whose land receives the discharge from that pond. The first was dated May 22, 1995 and the second was received by DENR on January 15, 2020 [24]. The main issue for the neighbor is that the ground was too wet for his renter to access approximately 50 acres of land, causing the neighbor to lose income [24]. Water Rights Program staff inspected the well for this application and their geothermal system on January 21, 2020 and found the system was discharging at a rate of 0.105 cfs at that time. Assuming that discharge rate is a continuous rate of flow, the geothermal system discharges 76 ac-ft/yr.

An IFSAR 5-meter Digital Elevation Model was used to find stream centerlines and watershed boundaries for the area of interest. Watershed areas were calculated at the points the stream centerlines crossed into the neighbor’s land in Sections 6 and in Section 4. The simplest method to estimate average annual runoff yield is to use a map of average annual yield given in inches and multiply the value over the area of the watershed [25]. Gerbert et al. [26] mapped (1:7,500,000 scale) the average annual runoff, normalized over the watershed area, from 1951 to 1980. In the western portion of Faulk County, where this application is located, the average annual runoff rate is between 0.2 inches to 0.3 inches [26]. The watershed area above the point where the applicant’s pond drains into the neighbor’s land in Section 6 is approximately 734.5 acres. By multiplying the runoff rate by the watershed area, the estimated average runoff under natural conditions would be 12 to 18 ac-ft/yr. At the point where water from the applicant’s land drains onto the neighbor’s land in Section 4, the watershed area is approximately 8,514 acres and the estimated average runoff under natural conditions is between 142 and 213 ac-ft/yr.

If this application is approved, the water use permit will not entitle the applicant to transfer the result of that use onto someone else’s property. The applicant should have agreements in place with any neighbors that may be affected by their use of water or the applicant should control their discharge of water so that it does not harm their neighbors’ property.

Since the applicant’s geothermal system cools the applicant’s shop in the summer, the system causes the water discharged to be warmer than it is before it enters the shop. Temperature is a water pollutant that the State of South Dakota regulates [27]. If the applicant discharges water onto their neighbors’ properties, they may be required to have a surface water discharge permit from the DENR [27].

Conclusions

1. Water permit application No. 8420-3 proposes to withdraw 0.123 cfs from the Inyan Kara aquifer from one well located in N ½ SW ¼ Section 6-T120N-R71W for geothermal use.
2. Based on a hydrologic budget, observation well data, and previous Water Management Board decisions, there is reasonable probability unappropriated water is available for this application.

3. It is likely this application can be developed without unlawful impairment of existing water rights/permits and domestic well users.
4. The well for this application does not meet the ARSD 74:02:04:20(7) definition of an adequate well. If this application is approved, any replacement well must be an adequate well and the old well plugged according to South Dakota Well Construction Standards.
5. A permit to use water does not entitle the user to transfer the result of that use onto someone else's property. The applicant should acquire agreements in writing with any landowner that may be impacted by excess water that the applicant releases, or the applicant shall control the water they use in such a way that it does not impact any other landowner.
6. If the applicant allows the water they use to flow into surface waters of the state, the applicant may be required to acquire a surface water discharge permit.



Kimberly C. Drennon, E.I.
DENR – Water Rights Program
Natural Resources Engineer

Reviewed by:



Adam Mathiowetz, P.E.
DENR – Water Rights Program
Natural Resources Engineer

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Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, April 15, 2020 12:01 PM
To: 'onakafox@sbtc.net'
Subject: Application No. 8420-3
Attachments: Application No. 8420-3.pdf

Attached is the report, recommendation and information regarding the public notice for your Water Permit Application No. 8420-3. As stated in the letter it is important that you contact the two papers to authorize publication and arrange for payment ASAP. This same information is being mailed to you today.

Karen Schlaak

SD DENR, Water Rights Program
(605) 773-3352



RECEIVED

MAY 08 2020

WATER RIGHTS
PROGRAM

Affidavit of Publication

State of South Dakota

§

County of Faulk

Wednesday, April 22, 2020

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8420-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, 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 Duvall 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 May 4, 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 ob-

Faulk County Record 11

tained.

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 one time at the total approximate cost of \$26.42.

a printed copy of which, taken from the paper in which same was published, is attached to this sheet, and is made a part of this Affidavit, was published in said newspaper at least once in each week for

One (1)

week(s), on the day of each week on which said newspaper was regularly published, to-wit:

Wednesday, April 22, 2020

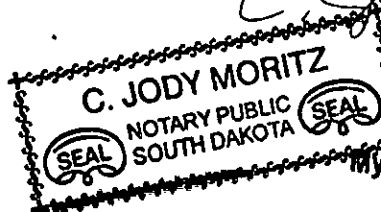
that the full amount of the fees for the publication of the annexed notice is \$26.42

Val Ramsdell

Subscribed and sworn to before me this

1st day of May, 2020

C. Jody Moritz



Notary Public
Faulk County, South Dakota

My Commission Expires
Nov. 12, 2021

No. 108, April 22, 2020

NOTICE OF APPLICATION

No. 8420-3 to
Appropriate Water

Notice is given that Vogel Farms PTR, c/o Kenny Vogel, PO Box 174, Akaska SD 57420 has filed an application for a water permit to appropriate 88.7 acre-feet of water annually at a maximum pump rate of 0.123 cubic feet of water per second from one well completed into the Inyan Kara Aquifer (2,135 feet deep) located in the N 1/2 SW 1/4 Section 6-T120N-R71W for geothermal use. This site is located approximately 3 miles northeast of Onaka SD.

RECEIVED

APR 24 2020

(No. 631124)
(April 22, 2020 - 1T)

**NOTICE OF APPLICATION NO.
8420-3 to Appropriate Water**

Notice is given that Vogel Farms PTR, c/o Kenny Vogel, PO Box 174, Akaska SD 57420 has filed an application for a water permit to appropriate 88.7 acre-feet of water annually at a maximum pump rate of 0.123 cubic feet of water per second from one well completed into the Inyan Kara Aquifer (2,135 feet deep) located in the N 1/2 SW 1/4 Section 6-T120N-R71W for geothermal use. This site is located approximately 3 miles northeast of Onaka SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of

Application No. 8420-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://derr.sd.gov/public> or contact Ron Duvall 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 May 4, 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 total approximate cost of \$48.23.

AFFIDAVIT OF PUBLICATION WATER RIGHTS PROGRAM

STATE OF SOUTH DAKOTA}

§

COUNTY OF BROWN}

Carla Bonning being duly sworn, on his/her oath says: That the AMERICAN NEWS is a daily newspaper of general circulation, printed and published in Aberdeen, Brown County, South Dakota, by the Aberdeen News Company, a corporation, and has been such a newspaper during the times hereinafter mentioned; That affiant is an employee and principal clerk of said publisher and has personal knowledge of all facts stated in this affidavit; That the advertisement headed

Legal # 831124
Notice of Application No 8420-3

a printed copy of which is hereunto attached, was printed and published in the regular and entire issue of said newspaper, and not in a supplement thereof, once each

day for 1 successive day
The first publication being made on the 22nd day of April, 2020.
The second publication being made on the _____ day of _____, 2020.
The third publication being made on the _____ day of _____, 2020.
The fourth publication being made on the _____ day of _____, 2020.
The fifth publication being made on the _____ day of _____, 2020.
The sixth publication being made on the _____ day of _____, 2020;

That said newspaper is a legal newspaper published five days or more each week; with a bona fide circulation of more than two hundred copies daily; published in the English language within the said county of Brown for more than one year prior to the first publication of said notice; and printed in whole in an office maintained at the place of publication of said newspaper; That the whole amount of the fee paid for the publication of the annexed notice is \$ 48.23, which insures solely to the benefit of said publisher; That no agreement or understanding for a division thereof had been made with any other person; and That no part thereof has been agreed to be paid to any person whomsoever.

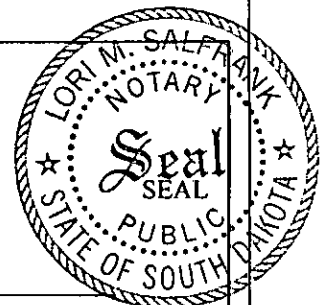
Carla Bonning
Subscribed and sworn to before me this 22nd day of April, 2020.

Daily Circulation 10,000

Michael

Notary Public, Brown County, SD.

My commission expires March 20, 2025



Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, April 15, 2020 11:30 AM
To: 'info@faulkcountyrecord.com'
Subject: 8420-3, Vogel Farms PTR
Attachments: 8420-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on April 22, 2020.

Vogel Farms PTR, c/o Kenny Vogel, PO Box 174, Akaska SD 57420 (605 281-0324) 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

SD DENR, Water Rights Program
(605) 773-3352



Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, April 15, 2020 11:31 AM
To: Aberdeen News Legals (aan-legals@aberndeennews.com)
Subject: 8420-3, Vogel Farms PTR
Attachments: 8420-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on April 22, 2020.

Vogel Farms PTR, c/o Kenny Vogel, PO Box 174, Akaska SD 57420 (605 281-0324) 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

SD DENR, Water Rights Program
(605) 773-3352



NOTICE OF APPLICATION NO. 8420-3 to Appropriate Water

Notice is given that Vogel Farms PTR, c/o Kenny Vogel, PO Box 174, Akaska SD 57420 has filed an application for a water permit to appropriate 88.7 acre-feet of water annually at a maximum pump rate of 0.123 cubic feet of water per second from one well completed into the Inyan Kara Aquifer (2,135 feet deep) located in the N 1/2 SW 1/4 Section 6-T120N-R71W for geothermal use. This site is located approximately 3 miles northeast of Onaka SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8420-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, 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 Duvall 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 May 4, 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 total approximate cost of_____.



**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 NEWSPAPERS RIGHT AWAY.**

April 15, 2020

Vogel Farms PTR
c/o Kenny Vogel
PO Box 174
Akaska SD 57420

Dear Mr. Vogel

Water Permit Application No. 8420-3 for geothermal use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Faulkton Record printed at Faulkton SD (Ph # 605 598-6525) and the American News printed at Aberdeen SD (Ph # 605 225-4100). 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
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.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

MAY 12 2020

Vogel Farms PTR
Kenny Vogel
PO Box 174
Akaska SD 57420

Dear Mr. Vogel:

Enclosed is Water Permit No. 8420-3 authorizing the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

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

8420-3
RECEIVED

MAY 20 2020

WATER RIGHTS
PROGRAMNOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USEDate May 15, 2020TO: Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181FROM: Vogel Farms PTR by Kenny Vogel
(name)
PO Box 174
(address)
Akaska SD 57420 (605) 281-0324
(city, state, zip) (phone)

I have completed the construction of the water use system and I have put the water to beneficial use to the maximum extent it is going to be used.

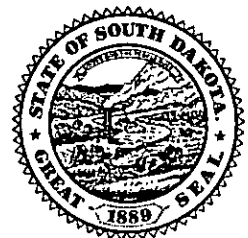
Water Permit No. 8420-3 states that the water use system is to be constructed by May 12, 2025, and water is to be put to beneficial use by May 4, 2029.
(date) (date)

The water use system was completed on May 5, 2020.
(date)

Applying the water to beneficial use was completed on May 12, 2020.
(date)

You may schedule an investigation so that the water license may be issued.

Kenny Vogel
(signature)





DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

May 20, 2020

8420-3

Kenny Vogel
Vogel Farms PTR
PO Box 174
Akaska SD 57420-0174

Dear Mr. Vogel:

I am writing to acknowledge receipt of the "Notice of Completion of Works" form that you sent in to let us know that you are completed with your water use system.

The system is now ready for inspection. Inspections are done on a county-by-county basis as staff time permits. You have done everything you need to do and the intervening time between the completion of your project and the staff inspection has no bearing on your water permit.

Someone from our office will contact you prior to the inspection to set up a time that is convenient for you. If you have any questions, please contact me.

Sincerely,

Genny McMath
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us