

WATER PERMIT NO. 8891-3

Name of Applicant: **Kirk Sorensen**

Address: **46113 Timber Road, Vermillion SD 57069**

Phone: **605-677-7979**

Amount of Water Claimed: **No Add'l**

Total Acres: **67**

Source of Water Supply: **Groundwater**

Water to be used for: **Irrigation**

County: **Clay**

Type of Waste Disposal System:

Location: **Approx. 1 mile west of Vermillion SD**

PRIORITY

Date Received: **08-12-24**

Application/License Fee: **\$750.00**

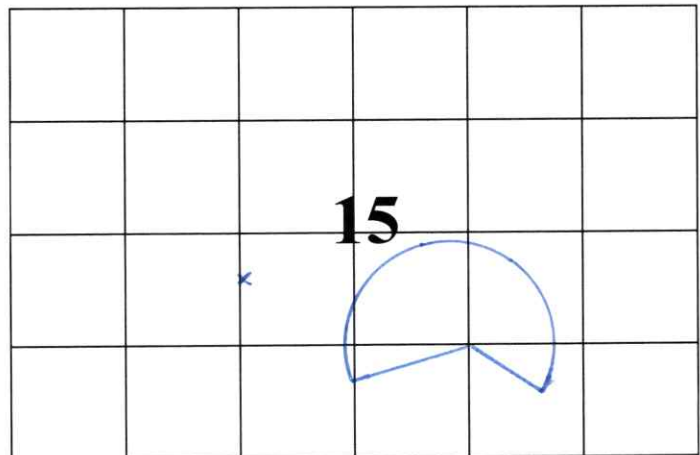
Corrected Application Received: **N/A**

Period of Annual Use: **May 1 – September 30**

Remarks: **Based on an inspection by Keith DeJong, irrigating 67 additional acres more than authorized by 8595-3.**

Diversion Point: **NE 1/4 SW 1/4 Sec 15-T92N-R52W**

Land to be Irrigated: **SE 1/4 SW 1/4, SE 1/4 Sec 15-T92N-R52W**



Depth of Well: **92**

Well Driller: **Christensen Well & Irrigation**

Remarks:

Type of Map: **aerial**

Reviewed and the Number Assigned on: **08-13-24**

By: **Rachel Rodriguez**

Notice of Hearing - date to intervene: _____

**SOUTH DAKOTA
WATER PERMIT NO. 8891-3**

Date of first receipt of application August 12, 2024.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8891-3 to Kirk Sorensen, 46113 Timber Road, Vermillion SD 57069, 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. 8891-3 authorizes irrigation of an additional 67 acres. Water Permit No. 8595-3 appropriates 1.33 cubic feet of water per second (cfs) from one well completed into the Missouri: Elk Point Aquifer (92 feet deep) located in the NE 1/4 SW 1/4 Section 15 for irrigation of 80 acres located in the SW 1/4 Section 15; all in T92N-R52W. This permit authorizes irrigation of an additional 67 acres located in the SE 1/4 SW 1/4, SE 1/4 Section 15-T92N-R52W from the existing well, with no increase in diversion rate. This permit, and Water Permit No. 8595-3 will authorize a combined appropriation of 1.33 cfs for irrigation of a total of 145 acres. This site is located approximately one mile west of Vermillion SD.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – September 30.
3. The date from which applicant may claim right is August 12, 2024.
4. The date of approval of Permit No. 8891-3 is October 28, 2024.
5. 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 Water Permit No. 8891-3 is located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals must be controlled so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

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

NOV 14 2024

date



FORM 2: Application for irrigation in South Dakota
(type or print)

Mail to: SD DANR, Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8891-3</u> Hydrologic Unit <u>10170102</u> Basin <u>Vermillion R</u> Newspaper <u>Plain Talk</u> <u>Daily Press & Dakotan</u> (office use only)
---	---

PAID
AUG 12 2024
Ck# 7787
Rec't# _____

Application for Permit to Appropriate Water for Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____
(Use predates Mar 2, 1955)

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

1. Name to Appear on Irrigation Permit Kirk Sorensen

Note: The "Name to Appear on Irrigation Permit" must be the name in which the property to be irrigated is held in.

Mailing Address 46113 Timber Rd Vermillion SD 57069
(Address) (City) (State) (Zip Code)
Phone NONE Mobile 605-677-7979 Email threepairranch@yahoo.com

2. Amount of water claimed N/A *CFS or N/A **GPM N/A ***AF Total Acreage 67
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply groundwater (M:EP) well auth. by WP No. 8595-3

4. Location of point of diversion NE 1/4 SW 1/4 Sec 15-T92N-R52W
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

County Clay

5. County or counties where water will be used Clay

6. Annual period during which water is to be used May 1 - September 30

7. List below each forty-acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
ALL IN SEC 15-T92N-R52W		NE 1/4 SE 1/4	14
		NW 1/4 SE 1/4	26
		SW 1/4 SE 1/4	13
SE 1/4 SW 1/4	1	SE 1/4 SE 1/4	13

8. Give a description of the project. (Attach sheet if more space is needed)

permit holder developed 67 acres in SE 1/4 SW 1/4 & SW 1/4 Section 15, T92N, R52W, to be added to what is already authorized by WP No. 8595-3, with no increase to the rate of diversion

I, Kirk Sorensen Owner, 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.

2021-08

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

AUG 12 2024

OFFICE OF
WATER

NOTE to office staff: inspection and map on file (8595-3) ready to license pending approval

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 _____ 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 _____

For either existing or proposed wells: (see wcr on file for 8595-3)

c) Well Depth (required) 92' Depth to Top of Water Bearing Material _____ Depth to Water from Surface 26'

d) Distance to nearest domestic well on applicant's property _____ Property owned by others _____

2. Wastewater Disposal System Information

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

b) System Capacity (gallons) _____ Year Constructed _____

c) Connected to the City of _____ Sanitary System

3. Dugout Information

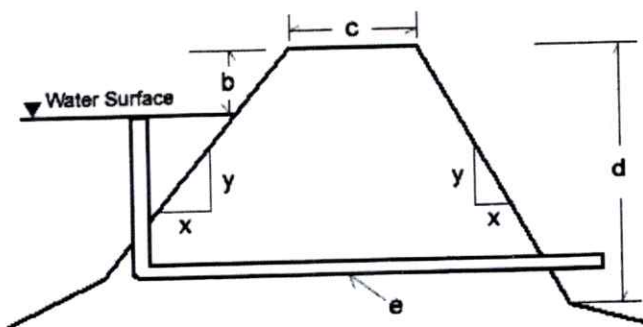
a) Surface Dimensions _____ Depth _____

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

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 _____

c) Crest Width _____

Crest Length _____

d) Height _____

e) Primary Outlet Capacity _____

If pipe, diameter _____

f) Secondary Spillway Capacity _____

Spillway Width _____

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

Upstream _____

Downstream _____

h) Area of Impoundment _____

i) Storage _____ Acre Feet

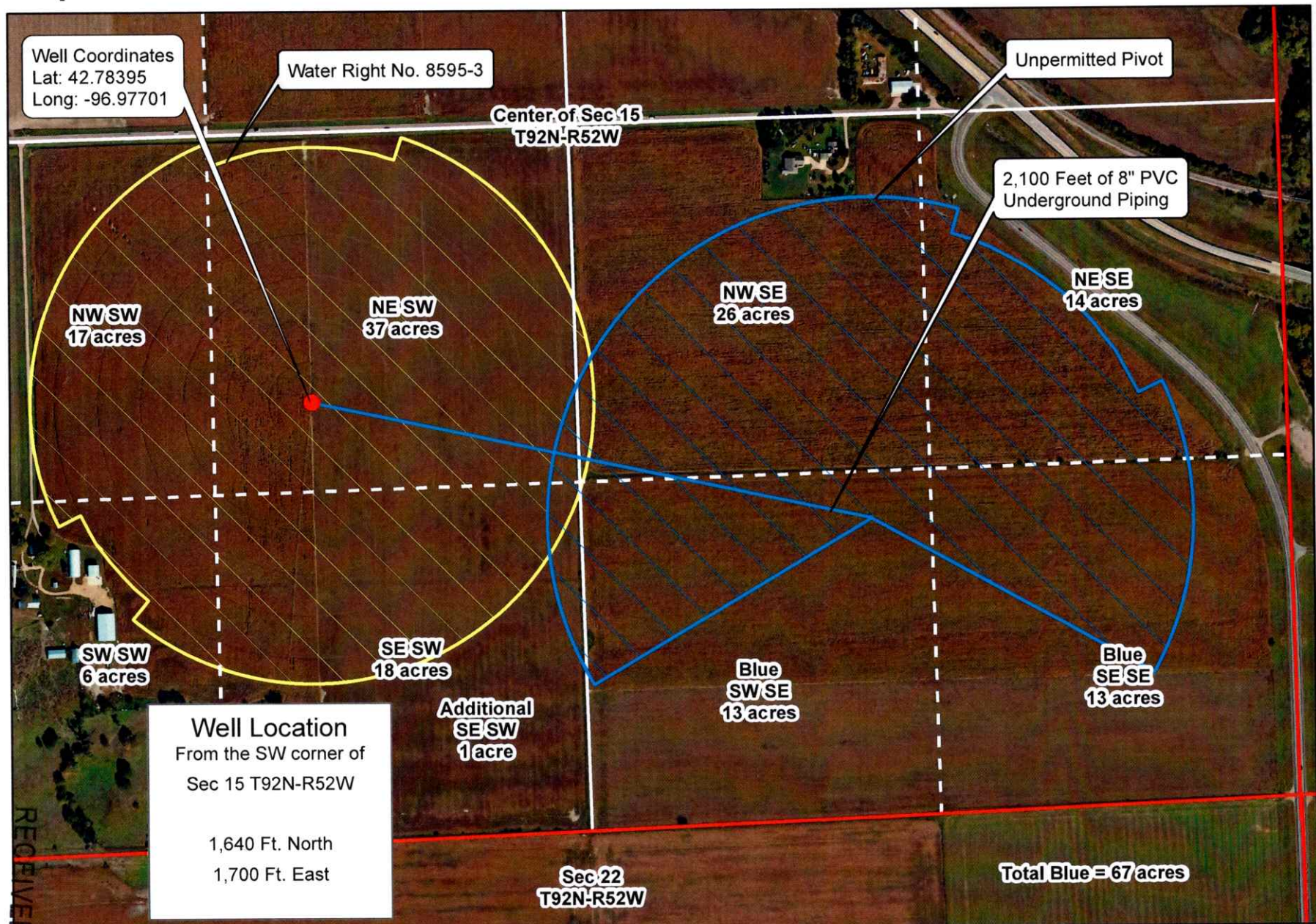
j) Drainage Area Above Dam _____ Acres

RECEIVED

AUG 12 2024

OFFICE OF
WATER

Unpermitted Near Water Permit No. 8595-3



Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. ????-3

I have this day, July 22, 2024, made a thorough examination of the water use systems owned by Kirk Sorensen, 46113 Timber Road, Vermillion, SD 57069, holder of Permit No. ????-3, bearing the priority date of ????????????????. This permit authorizes the diversion of ???? cu. ft. per second of the waters of groundwater (Missouri: Elk Point Aquifer) authorizing the irrigation of ?? acres located in Clay County.

Inspection contacts: Josh Anglin

A. Works used to divert the water:

Well Information

- 1) Well Drilling Firm: Christensen Well & Irrigation
- 2) No. of Wells: 1
- 3) Depth(s): 92 feet
- 4) Well log is available: Yes

Casing:

- 1) Diameter: 16 inches
- 2) Length: 52 feet
- 3) Type: Plastic

Screen:

- 1) Diameter: 16 inches
- 2) Length: 40 feet
- 3) Type: PVC
- 4) Static water level: 26 feet

Pump:

- 1) Make: Goulds
- 2) Model: 7THC
- 3) Capacity: 600 gpm

Motor:

- 1) Make: Franklin
- 2) Model No.: Unknown
- 3) Horsepower rating: 40 hp

B. Works used to transport water to place of use:

- 1) Type: PVC Size: 8 inches Length: 2,100 feet

C. Works used to apply water to beneficial use:

Center Pivot

- 1) Make: T & L
- 2) Overall length: 1,103 feet
- 3) Number of towers: 6
- 4) End gun: Yes Range: 90 feet
- 5) Capacity: 500 gpm

Chemigation Equipment:

- 1) Does chemigate: No

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by: Yes
2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period: New pivot in 2024.
3) Exceptions to compliance are: None

E. Condition and Location:

- 1) The system is in good condition with the point(s) of diversion located as follows:
The well is 1,640 feet north and 1,700 feet east of the southwest corner of Section 15-T92N-R52W (Latitude 42.78395, Longitude -97.97701- NE1/4 of the SW1/4).
2) The works are capable of diverting and conveying to the places of use 1.33 cu. ft. per second of water from the well which is to be used for irrigation purposes. Water has been put to beneficial use to the maximum extent as follows:

~~(Red) Section 15-T92N-R52W~~

NW1/4SE1/4	26 acres
NE1/4SE1/4	14 acres
SW1/4SE1/4	35 acres
SE1/4SE1/4	24 acres

Or

(Blue) Section 15-T92N-R52W

NW1/4SE1/4	26 acres
NE1/4SE1/4	14 acres
SW1/4SE1/4	13 acres
SE1/4SE1/4	13 acres
SE1/4SW1/4	1 acre

red shows potential development on lands owned by a neighbor who is not currently agreeable to irrigation

(AD)

WR No. 8595-3 Section 15-T92N-R52W

NW1/4SW1/4	17 acres
NE1/4SW1/4	37 acres
SW1/4SW1/4	6 acres
SE1/4SW1/4	18 acres

comprising a total of 100 Red or 67 Blue plus 78 from WR No. 8595-3 acres of land and the license should be issued for 1.33 cfs.

- 3) All structures, wells and lands on map: Yes

F. Comments or other permit(s) associated with the project: The pump and motor information was obtained from Christensen Well & Irrigation. The pivot for this permit gets water from the well associated with Water Right No. 8595-3.

Keith DeJong

Keith DeJong, PE Ret.
Water Rights Inspector
DANR, Water Rights Program

Date report completed: **July 29, 2024**



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

July 31, 2024

8595-3

Kirk Sorenson
46113 Timber Rd
Vermillion SD 57069

Dear Mr. Sorenson:

I am writing you today in regard to Water Permit No. 8595-3 which authorizes the diversion of 1.33 cubic feet of water per second (cfs) from groundwater, one well (NE ¼ SW ¼) completed into the Missouri: Elk Point Aquifer (92' deep), for the irrigation of 80 acres located in the SW ¼; all in Section 15, T92N-R52W, Clay County.

In July 2024, a Water Rights Program staff engineer conducted an inspection of the irrigation system for the purpose of licensing. The inspection found that a second irrigation system had been developed in the SE ¼ Section 15, T92N-R52W. (see enclosed map)

For your convenience I have enclosed a permit application for you to review, complete, and return to our office with the associated fees.

The licensing and inspection fees have already been paid under Permit No. 8595-3. Therefore, the required fees would be \$750.00. Checks can be made payable to "SD Water Rights Program". You may also submit the necessary fees over the phone by calling our Fiscal Office (605)773-5559.

Obtaining a water permit is in the interest of the permit holder, as it provides protections against loss of water availability due to junior water users.

If you have any questions concerning the application process or need help completing the application, please don't hesitate to call. My direct line is (605) 910-5187.

Sincerely,

Amanda Dewell
Water Rights Program, Permitting Administrator
605 773-3352
Amanda.Dewell@state.sd.us

NOTE: It is my understanding that a portion of the S ½ SE ¼ Section 15, T92N-R52W is owned by a neighbor. To apply for a permit for irrigation of acres not owned by yourself, our office would require that a signed statement be submit by your neighbor, authorizing irrigation of his property. The enclosed application does not include development of neighboring property.

enclosures

**SOUTH DAKOTA
WATER PERMIT NO. 8595-3**

Date of first receipt of application December 30, 2021.

Date of return to applicant for corrections, amendments or changes January 3, 2022.

Date of receipt of corrected application February 3, 2022.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8595-3 to Kirk Sorensen, 46113 Timber Rd, Vermillion SD 57069 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. 8595-3 appropriates 1.33 cubic feet of water per second (cfs) from one well to be completed into the Missouri:Elk Point Aquifer (approximately 92 feet deep) located in the NE 1/4 SW 1/4 Section 15 for irrigation of 80 acres located in the SW 1/4 Section 15; all in T92N-R52W. This site is located approximately 1 mile west of Vermillion SD.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – September 30.
3. The date from which applicant may claim right is December 30, 2021.
4. The date of approval of Permit No. 8595-3 is April 18, 2022.
5. One-fifth of the construction is to be completed on or before October 18, 2024.
6. All construction is to be completed on or before April 18, 2027.
7. Water is to be put to beneficial use on or before April 18, 2031.
8. 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 Permit No. 8595-3 is located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals shall be controlled so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8595-3 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.
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Permit No. 8595-3 authorizes a maximum diversion rate of 1.33 cfs for the irrigation of 80 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

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

APR 28 2022

date



Department of Agriculture and Natural Resources
Joe Foss Building
523 E Capitol Ave
Pierre SD 57501-31182

Attn: Amanda Dewell
Water Rights Program
Permitting Administrator

Dear Ms Dewell,

LANDLORD'S CONSENT FOR IRRIGATION

Please accept this notice as authorization for Kirk Sorensen to extend his irrigation pivot onto the land that he is renting from me which is a portion of ~~S 1/2~~ SE 1/4 Section 15, T92N-R52W.

N 1/2 - correction

(AD)

Allan Charrlin 8-8-24

Allan Charrlin

called Josh(OP) to ask if
this was the permission
letter from South neighbor?
No - Mr. Charrlin owns N 1/2
SE 1/4 Sec 15. Double
checked against Regrid.
South neighbor = Joe Dawson
and he does not want
irrigation on his property
preventing pivot from
making full swing. (AD)

RECEIVED

AUG 12 2024

OFFICE OF
WATER

RECEIPT

WATER RIGHTS PROGRAM South Dakota Department of Agriculture and Natural Resources

Date August 13th, 2024

RECEIVED OF Kirk C Sorensen

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

Fee for Application for Permit No. <u>8891-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$ <u>750.00</u>
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. _____	\$ _____
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
	\$ <u>750.00</u>

By Eric Jonland
Chief Engineer

SK



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8891-3, Kirk Sorensen**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Agriculture and Natural Resources concerning Water Permit Application No. 8891-3, Kirk Sorensen, 46113 Timber Road, Vermillion SD 57069.

The Chief Engineer is recommending APPROVAL of Application No. 8891-3 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 domestic water uses and water rights, 3) the proposed use is a beneficial use and 4) it is in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board with the following qualifications:

1. The well approved under Water Permit No. 8891-3 is located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals must be controlled so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Eric Gronlund, Chief Engineer
September 30, 2024

Report to the Chief Engineer
On Water Permit Application No. 8891-3

Kirk Sorenson

October 4, 2024

Water Permit Application No. 8891-3 proposes to irrigate an additional 67 acres from the well authorized by Water Permit No. 8595-3. Water Permit No. 8595-3 authorizes a maximum instantaneous diversion rate of 1.33 cubic feet of water per second (cfs) from one well completed into the Missouri: Elk Point aquifer (92 feet deep) located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 15 for the irrigation of 80 acres located in the SW $\frac{1}{4}$ of Section 15; all in T92N-R52W. A licensing inspection found only 78 acres developed for irrigation of the originally 80 acres authorized under Water Permit No. 8595-3. This application proposes to irrigate an additional 67 acres located in the SE $\frac{1}{4}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ of Section 15-T92N-R52W from the existing well authorized by Water Permit No. 8595-3 with no increase in the authorized diversion rate. If approved, Water Permit Application No. 8891-3 and Water Permit No. 8595-3 will collectively authorize an appropriation of 1.33 cfs for the irrigation of 145 acres. The site of interest is located in Clay County approximately one mile west of Vermillion, SD.

AQUIFER: Missouri: Elk Point (M: EP)

HYDROGEOLOGY:

The Missouri: Elk Point aquifer is a glacial outwash deposit consisting of fine sand to very coarse gravel (Niehus, 1997). The Missouri: Elk Point aquifer underlies approximately 219,100 acres in Clay, Union, and Yankton Counties in South Dakota, and the aquifer contains approximately 3,287,100 acre-feet of recoverable water in storage (Hedges et al., 1982). The Missouri: Elk Point aquifer is hydrologically connected to the Lower Vermillion Missouri and Lower James Missouri aquifers, and the Big Sioux, James, Missouri, and Vermillion Rivers (Niehus, 1994; Stephens, 1967).

The Missouri: Elk Point aquifer is generally under confined conditions in the northwestern part of the aquifer and unconfined conditions in the southern part of the aquifer, and the direction of groundwater movement in the aquifer is generally from the northwest to the southeast (Niehus, 1994 and 1997).

There is a water well completion report on file for the existing well authorized by Water Permit No. 8595-3 and proposed to be used by Water Permit Application No. 8891-3 (Water Rights, 2024c and 2024d). The report lists, "black top soil" from 0 to 3 feet below the ground surface, "brown clay" from 3 to 35 feet, "fine sand" from 35 to 48 feet, "coarse gravel" from 48 to 68 feet, and "coarse sand" from 68 to 92 feet below the ground surface (Water Rights, 2024d). The well was screened from 52 to 92 feet and had a static water level of approximately 26 feet at the time of well completion (December 3, 2021) (Water Rights, 2024d). Other well completion reports and lithologic logs in the area indicated the clay layer encountered to a depth of 35 feet is unlikely to be extensive particularly in the direction of the Missouri River and it is likely to be

sandy and silty (SDGS, 2024; Water Rights, 2024d). Based on the well completion report on file, the Missouri: Elk Point aquifer is confined at the existing well location for the well proposed to be used by this application (Water Rights, 2024c and 2024d). However, it is likely the well will behave more like it is completed into an unconfined aquifer due to the proximity of unconfined aquifer conditions and the fact the confining layer is likely sandy and silty and therefore, somewhat transmissive of water.

Figure 1 displays a map of the approximate Missouri: Elk Point aquifer boundary (modified from Hedges et al., 1982) and the location of the existing well proposed to be used by Water Permit Application No. 8891-3 (Water Rights, 2024c and 2024d).

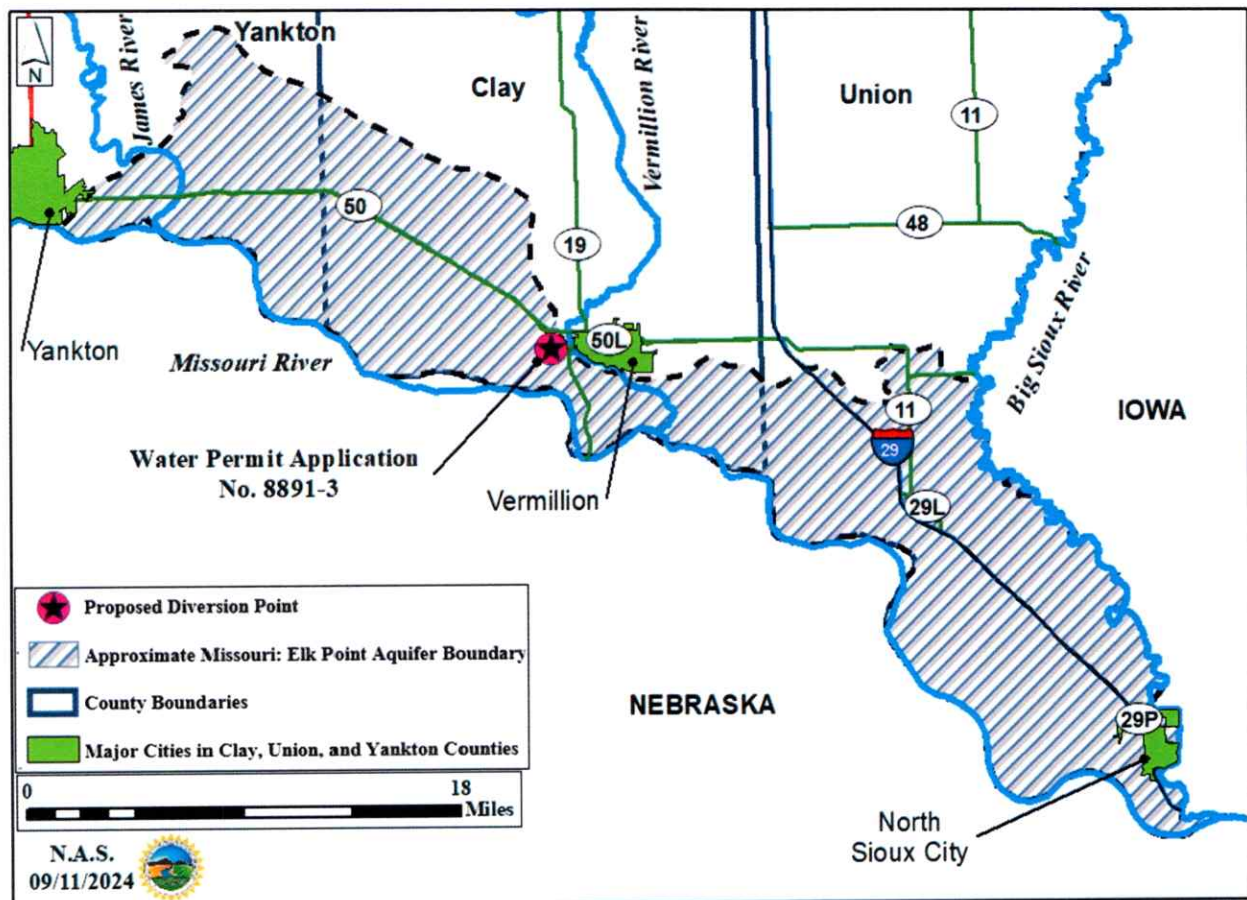


Figure 1. Map of the approximate Missouri: Elk Point aquifer boundary modified from Hedges and others (1982) with the location of the existing well proposed to be used by Water Permit Application No. 8891-3 (Water Rights, 2024c and 2024d)

South Dakota Codified Law (SDCL) 46-2A-9

Pursuant to SDCL 46-2A-9, “A permit to appropriate water may be issued only if there is a reasonable probability that there is unappropriated water available for the applicant’s proposed use, that the diversion point can be developed without unlawful impairment of existing domestic water uses and water rights, and that the proposed use is a beneficial use and in the public interest as it pertains to matters of public interest within the regulatory authority of the Water

Management Board as defined by SDCL 46-2-9 and 46-2-11.” This report will address the availability of unappropriated water and the potential for unlawful impairment of existing domestic water uses and water rights within the Missouri: Elk Point aquifer.

WATER AVAILABILITY:

Water Permit Application No. 8891-3 proposes to appropriate water from the Missouri: Elk Point aquifer. The probability of unappropriated water being available from the aquifer can be evaluated by considering SDCL 46-6-3.1, which requires “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 Missouri: Elk Point aquifer is not older than or stratigraphically lower than the Greenhorn Formation (Fahrenbach et al., 2010), and the applicant’s proposed use is not for use in a water distribution system as defined by SDCL 46-1-6(17). Therefore, the average annual recharge and average annual withdrawal rates to and from the Missouri: Elk Point aquifer must be considered.

HYDROLOGIC BUDGET:

Recharge

Recharge to the Missouri: Elk Point aquifer is primarily through the infiltration of precipitation where the aquifer is at or near the ground surface, seepage from the Big Sioux, James, Missouri, and Vermillion Rivers, inflow from the Lower Vermillion-Missouri and Lower James-Missouri aquifers at the northern boundary of the Missouri: Elk Point aquifer and inflow from the Big Sioux aquifer at the extreme northeastern boundary of the Missouri: Elk Point aquifer, and from the underlying Dakota aquifer in Union County (Condley and Lamkey, 2022; Niehus, 1994 and 1997).

Several studies have been completed to estimate average annual recharge to the Missouri: Elk Point aquifer (Condley and Lamkey, 2022; Hedges et al., 1985; Mathiowetz, 2022; Stephens, 1967; Stonesifer, 2013). A discussion of these studies is available in the hydrologic budget section within the report for Water Permit No. 8614-3 - Lewis & Clark Regional Water System completed by Mathiowetz (2022). Collectively, the estimated average annual recharge rate to the Missouri: Elk Point aquifer is approximately 130,770.3 acre-feet per year assuming full development of the existing future use and water rights/permits currently held by Lewis & Clark Regional Water System (Mathiowetz, 2022 and 2023).

Discharge

Discharge from the Missouri: Elk Point aquifer is primarily through well withdrawals, evapotranspiration where the aquifer is at or near the ground surface, outflow to the Big Sioux and Missouri Rivers during periods of low flow and stage, and leakage to the underlying Dakota aquifer (Niehus, 1994 and 1997; Water Rights, 2024d).

Currently, there are 654 water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer, plus six future use permits reserving water (Water Rights, 2024c). Additionally, two pending applications exist – Water Permit Application Nos. 8892-3 and 8897-3 requesting to collectively irrigate 202 acres.

The six future use permits (Nos. 5832-3, 6237-3, 6869-3, 6869A-3, 7208-3, and 8754-3) are reserving 21,021 acre-feet of water annually from the Missouri: Elk Point aquifer (Water Rights, 2024c). For the purpose of estimating average annual withdrawals, the future use permits are assumed to be fully developable for a total of 21,021 acre-feet per year.

Table 1 summarizes the 44 non-irrigation water rights/permits (including two irrigation water permits, see paragraph below) authorized to appropriate water from the Missouri: Elk Point aquifer with the estimated annual use for each water right/permit as determined by their limiting diversion rate or annual volume. Historically, average water use by non-irrigation appropriations limited by an instantaneous diversion rate have been assumed to be pumping 60% of full time at their respective permitted diversion rate. Water rights/permits limited by an annual volume are assumed to withdraw their entire respective annual volume limitation. This is a standard method used by the DANR-Water Rights Program for estimating annual withdrawals by non-irrigation appropriations from an aquifer (Water Rights, 2024c). This method is likely an overestimation of withdrawals. Three municipal water rights were identified as being connected to a rural water system and likely maintain their wells for standby purposes (Drinking Water Program, 2024; Water Rights, 2024c); as such, the average annual water use for these water rights has been estimated to be zero acre-feet per year on Table 1.

Water Right No. 5437-3 was licensed for a reduced diversion rate which prevents pumping the allotted volume of water specified on the permit (Water Rights, 2024c). The estimated average annual withdrawal rate for Water Right No. 5437-3 was approximated assuming pumping 60% of full time at the respective licensed diversion rate method as mentioned above on Table 1.

Water Permit No. 5998-3 is permitted for the irrigation of turf and Water Permit No. 5998A-3 extends the amount of time allowed for water to be put to beneficial use as authorized by Water Permit No. 5998-3 (Water Rights, 2024c). The estimated use for these two irrigation permits is included with the non-irrigation water rights/permits listed on Table 1, as the permit holder is not required to submit an annual irrigation questionnaire, while permit holder does report the irrigation use under these permits with their respective non-irrigation permit, shown on Table 2.

Water Permit No. 7059-3 is permitted for recreational use for maintaining the water level of a small lake with a surface area of 17.6 acres (Water Rights, 2024c). It is assumed that the only consumptive use of this water is due to evaporation; however, it is likely there is some seepage through the bottom of the pond (Water Rights, 2024c). Annual evaporation of water from shallow lakes is estimated to be approximately 42 inches per year at the location of the authorized diversion point for Water Permit No. 7059-3 (NOAA, 1982; Water Rights, 2024c), and normal annual total precipitation at the Sioux City, Iowa airport was determined to be approximately 29.27 inches over a 30-year period of record (1991 to 2020) (Arguez et al., 2020), which results in the lake to fluctuate approximately 12.73 inches per year. To maintain the water

level of the small lake, the estimated use of Water Permit No. 7059-3 is approximately 18.7 acre-feet per year. Overall, the average annual withdrawal rate for the 44 non-irrigation water rights/permits (including the two irrigation permits not required to submit an annual irrigation questionnaire) authorized to appropriate water from the Missouri: Elk Point aquifer is approximately 69,385 acre-feet per year (Table 1) (Water Rights, 2024c and 2024f).

Table 1. Estimated average annual use for the non-irrigation water rights/permits (plus two irrigation water permits for Clay RWS) authorized to divert water from the Missouri: Elk Point aquifer (Drinking Water Program, 2024; Water Rights, 2024c and 2024f)

Permit No.	Name	Status	Priority Date	Use	Authorized Diversion Rate (cfs)	Authorized Annual Volume (acre-feet/year)	Total Estimated Use (acre-feet/year)
4501-3	Eddie Wohl	LC	03/27/1980	COM	0.05		21.7
5616-3	Cimpls Inc	LC	01/31/1992	COM	0.44		191.2
5827-3	Don Lantis	LC	06/08/1994	COM	0.022		9.6
5953-3	H & K Oil Co	LC	08/19/1996	COM	0.037		16.1
6151-3	Vernon & Norma Vakoc	LC	10/04/1999	COM	0.67		291
6580-3	West Shores Acres LLC	LC	01/28/2005	COM	0.10		43.5
8031-3	Dakota Protein Conversion Inc	PE	06/18/2014	COM	0.22		95.6
8147-3	Doug Lafleur	PE	04/06/2015	COM, LCO	1.0	160	159
8381-3	RP Constructors	PE	11/19/2018	COM	0.04	1	1
8403-3	Stockmen's Livestock Inc	LC	06/27/2019	COM	1.06	40	40
8415-3	3 Sons Properties	PE	11/14/2019	COM	0.10	25	25
8435-3	Sioux City Insulation	PE	07/30/2012	COM	0.33	1	1
8844-3	GrowMark Inc	PE	03/22/2024	COM, IND	0.67	3.68	3.68
7388-3	Clay RWS Inc	PE	07/30/2012	DOM, IRR	2.0		349
5998-3	Clay RWS Inc	PE	04/21/1997	IRR, DOM	2.2		
5998A-3	Clay RWS Inc	PE	04/21/1997	IRR, DOM	0.0		
5490-3	USGS CERC Field Research Station	LC	11/15/1990	FWP	0.09		39.1
5907-3	US Fish and Wildlife Service	LC	01/26/1996	FWP	3.78		1,643
6733-3	US Fish and Wildlife Service	LC	06/07/2006	FWP	1.11		482.5
7094-3	US Fish and Wildlife Service	LC	12/01/2008	FWP	2.67		1,160
5021-3	Vishay-Dale Electronics Inc	LC	05/04/1984	IND	0.10		43.5
5388-3	LG Everist Inc	LC	01/30/1990	IND	0.45		195.6
5453-3	AaLadin Industries Inc	LC	05/24/1990	IND	0.05		21.7
5593-3	Vishay-Dale Electronics Inc	LC	10/31/1991	IND	0.056		24.3
6170-3	Knife River	LC	01/03/2000	IND	0.222		96.5
1255-3	City of Elk Point	LC	01/01/1914	MUN	1.13		491.1
143-3	City of Vermillion	LC	01/21/1956	MUN	1.78		773.7
147-3	City of Vermillion	LC	01/01/1935	MUN	2.66		1,245
6236-3	City of Vermillion	LC	11/06/2000	MUN	2.6	1,161	
6354-3	City of Vermillion	LC	08/12/2002	MUN	0.022		10
1965-3	Town of Gayville	LC	01/01/1914	MUN	0.37		0*
4207-3	Town of Jefferson	LC	01/01/1916	MUN	0.90		391
5118-3	Town of Gayville	LC	01/28/1987	MUN	0.33		0*
5437-3	Dakota Dunes Community Improvement District	LC	04/12/1990	MUN	3.33		1,447
5782-3	City of North Sioux City	LC	08/12/1993	MUN	1.14		495.5
8212-3	City of Yankton	LC	03/25/2016	MUN	20.12	6,050	6,050
7059-3	WE Investments LLC	PE	08/28/2008	REC	3.11		18.7
8744-3	Dakota Bay	PE	03/29/2023	REC	1.55	28.6	28.6
6736-3	Lewis and Clark RWS	PE	07/08/1994	RWS	27.85	20,165	53,442
7207-3	Lewis and Clark RWS	PE	07/08/1994	RWS	20	12,000	
8613-3	Lewis and Clark RWS	PE	07/16/2007	WDS	29.8	13,000	
8614-3	Lewis and Clark RWS	PE	03/04/2022	RWS	0.0	8,277	
5581-3	Larson's Landing	LC	07/30/1991	SHD	0.089		38.7
5592-3	East Winds Court Inc	LC	10/09/1991	SHD	0.11		0*
						TOTAL:	69,385
*Identified as being connected to a RWS; therefore, water use from aquifer is presumed to be zero acre-feet/year							
COM: Commerical; DOM: Domestic; FWP: Fish and Wildlife Propagation; IND: Industrial; IRR: Irrigation; LCO: Livestock Confinement Operation;							
MUN: Municipal; REC: Recreation; RWS: Rural Water System; SHD: Suburban Housing Development							

Of the 44 non-irrigation water rights/permits (including the two irrigation permits not required to submit an annual irrigation questionnaire), there are 16 non-irrigation water rights/permits that are required to report their annual usage from the Missouri: Elk Point aquifer (Water Rights, 2024c and 2024f).

Three of the non-irrigation water rights/permits that are required to report (Nos. 8031-3, 8415-3, and 8435-3) are currently under development (or were approved in 2023) and have not reported any withdrawals from the Missouri: Elk Point aquifer to the DANR-Water Rights Program (Water Rights, 2024c). The remaining thirteen non-irrigation water rights/permits that are required to report their annual usage from the Missouri: Elk Point aquifer are shown on Table 2 (Water Rights, 2024c and 2024f). The reported usage (as shown on Table 2) for Permit Nos. 8381-3 and 8403-3 (approved in 2018 and 2019) is not necessarily reflective of the future usage of these permits based on information within their respective water permit files (Water Rights, 2024c), and only four years of reported withdrawals (Water Rights, 2024f). Therefore, the estimated use for Permit Nos. 8031-3, 8415-3, 8435-3, 8381-3, 8403-3, and 8614-3 will be based on the method used above: water rights/permits limited by an instantaneous diversion rate have been assumed to be pumping 60% of full time at the respective permitted diversion rate; water rights/permits limited by an annual volume are assumed to withdraw their entire respective annual volume limitation. The estimated average annual withdrawal rate for these permits is listed on Table 1.

The reported use for the City of Yankton (8212-3) and Lewis and Clark Regional Water System (6736-3, 7207-3, 8613-3, and 8614-3) (as shown on Table 2) is steadily increasing (Water Rights, 2024f), as these water users have been continually undergoing development (Water Rights, 2024c). It is likely these water users will use their entire respective annual volume limitation in the future; therefore, the average annual withdrawal rate for these water rights/permits is assumed to be their entire respective annual volume listed on Table 1 (Water Rights, 2024c).

The annual withdrawal rate for Clay Rural Water System Inc (Permit Nos. 5998-3, 5998A-3, and 7388-3) averaged over the last ten years (approximately 349 acre-feet per year) is more reflective of current usage than the entire period of record of reported withdrawals because the first few years the permit holder reported values were during a construction period (Water Rights, 2024c and 2024f). The average annual withdrawal rate based off the reported annual withdrawal rates averaged from 2013 to 2022 on Table 2 for these water permits will be used in this analysis.

The annual withdrawal rates for Doug Lafleur (8147-3) and City of Vermillion (147-3, 6236-3) on Table 2 are relatively steady over their respective periods of record (Water Rights, 2024c and 2024f); therefore, the average annual withdrawal rate based on the reported values from each of these water users (as shown on Table 2) is reasonably reflective of the future withdrawals likely to be made by these appropriate users. The average annual withdrawal rate based off the reported annual withdrawal rates averaged over the period of record on Table 2 for these water rights/permits will be used in this analysis.

Table 2. Non-irrigation water rights/permits required to report their respective annual use from the Missouri: Elk Point aquifer (Water Rights, 2024c and 2024f)

	RP Constructors	Stockmen's Livestock Inc	Clay RWS Inc	Doug Lafleur	City of Vermillion	City of Yankton	Lewis and Clark RWS
	8381-3	8403-3	5998-3, 5998A-3, 7388-3	8147-3	147-3, 6236-3	8212-3	6736-3, 7207-3, 8613-3, 8614-3
2003			238		1,363		
2004			483		1,226		
2005			21		1,247		
2006			170		1,252		
2007			217		1,344		0
2008			213		1,199		0
2009			215		1,140		0
2010			183		1,071		0
2011			137		1,127		92
2012			525		1,317		3,836
2013			301		1,183		9,368
2014			307		1,121		11,532
2015			278	202	1,161		15,591
2016			231	202	1,175	66	17,091
2017			276	202	1,215	531	18,051
2018			305	98	1,168	504	18,143
2019	0.0171	1	292	135	1,440	1,370	20,397
2020	0.0224	4.2	461	121	1,373	2,923	21,039
2021	0.2332	5.5	486	170	1,378	3,065	23,537
2022	0.0252	5.7	550	142	1,394	3,405	24,693
2023	0.0313	6.4	495	161	1,368	3,157	26,801
Max (acre-feet)	0.2	6.4	550	202	1,440	3,405	26,801
Min (acre-feet)	0.0171	1	21	98	1,071	66	0
Avg (acre-feet)	0.066	4.56	304	159	1,251	1,878	16,167*
RWS: Rural Water System *Excluded reported zero values							

Currently, there are 612 irrigation water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer (Water Rights, 2024c). Irrigation water rights/permits have been typically required to report their annual usage on an irrigation questionnaire since 1979. The estimated average annual withdrawal rate for the Missouri: Elk Point aquifer irrigation water rights/permits that have reported over the period of record (1979 to 2022) is approximately 19,589 acre-feet per year (Table 3) (Water Rights, 2024a). To reflect the current development of irrigation water rights/permits more accurately, the average annual withdrawal rate for irrigation appropriations from 2014 to 2023 is approximately 25,765 acre-feet per year (Table 3) (Water Rights, 2024a).

The usage for two irrigation water permits (Nos. 5998-3 and 5998A-3) was accounted for on Table 1 with the non-irrigation water rights/permits, as the permit holder is not required to report their respective annual irrigation usage (Water Rights, 2024c), resulting in only 610 of the Missouri: Elk Point aquifer irrigation water rights/permits being currently required to submit an annual irrigation questionnaire (Water Rights, 2024c).

Additionally, Water Right No. 6110-3 is authorized to divert water from a well completed into the Dakota aquifer and pump the water into two ponds that receive incidental surface runoff and possible groundwater inflow from the Missouri: Elk Point aquifer (Water Rights, 2024c). Water Right No. 6110-3 is included in the 612 irrigation water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer; however, the estimated use for this permit is assumed to be negligible to the overall hydrologic budget due to the minimal amount of water from the Missouri: Elk Point aquifer the permit holder is expected to withdraw. When omitting Water Right No. 6110-3 and Water Permit Nos. 5998-3 and 5998A-3 from this analysis of Missouri: Elk Point aquifer irrigation water rights/permits, 609 water rights/permits remain.

Table 3 lists only 599 water rights/permits as reporting in 2023 (Water Rights, 2024a and 2024c). Ten water permits/rights did not submit an irrigation questionnaire form in 2023 that are currently active, accounting for the difference between the 599 currently active water rights/permits listed as reporting in 2023 and the 609 irrigation water rights/permits currently required to submit an annual irrigation questionnaire and annual use being estimated in this analysis (Water Rights, 2024a and 2024c). Of these ten permits, eight were issued in 2023 or 2024 and have not yet been required to submit an irrigation questionnaire. The remaining permits, Water Right No. 5935-3, is not required to submit an irrigation questionnaire, and Water Right No. 1006-3 did not submit an irrigation questionnaire for an unknown reason. Overall, these ten water permits/rights are authorized to irrigate approximately 929.2 acres (Water Rights, 2024c).

Table 3. Reported historic irrigation use from Missouri: Elk Point aquifer (Water Rights, 2024a)

Year	No. of Permits Reporting	Reported Pumpage (acre-feet)
1979	259	10,258
1980	263	14,937
1981	297	13,931
1982	269	19,143.1
1983	273	11,081
1984	281	9,605.5
1985	282	14,020.7
1986	286	6,324.8
1987	281	13,369
1988	282	28,558.1
1989	292	25,904.3
1990	297	19,508
1991	300	18,877.7
1992	295	1,895
1993	298	1,475.2
1994	295	10,314.9
1995	292	18,761.3
1996	296	9,473.6
1997	305	17,236
1998	313	11,079.5
1999	308	14,877
2000	309	26,551
2001	313	19,115.2
2002	315	23,326.9
2003	314	27,007
2004	322	24,309
2005	335	24,206.1
2006	353	27,943.3
2007	366	30,652
2008	396	16,439
2009	410	6,346
2010	419	2,906.9
2011	431	12,330
2012	445	56,994.7
2013	543	35,090.5
2014	557	12,423.5
2015	563	17,884.1
2016	564	27,869.3
2017	567	37,209.9
2018	570	9,160.7
2019	575	8,736.3
2020	570	26,601
2021	572	40,503.4
2022	579	44,925
2023	599	32,338
Min	259	1,475.2
Max	599	56,994.7
Avg (1979 to 2023)	379	19,589
Avg (2014 to 2023)	572	25,765

Farmer (2018a, 2018b, and 2021) analyzed the amount of water pumped per permitted acre for the period from 1979 through 2005. This period was chosen due to the relatively stable number of permitted acres across the entire period. There was a continual annual increase in the number of permitted acres from 2006 through 2013/2014. From 2013/2014 through 2021, the total number of permitted acres had been relatively stable (Mathiowetz, 2022; Water Rights, 2024c). Farmer (2021) determined that it would be best to separate the review of pumpage per permitted acres between crops, such as corn and soybeans, and turf, such as golf courses and lawn irrigation, to describe the pumpage more accurately per permitted acres. Turf irrigation typically requires more water per acre annually than crop irrigation. Mathiowetz (2022) determined over the entire period of record (1979 through 2021), the crop application rate per permitted acre is 0.331 feet per year (3.97 inches per year), and 0.908 feet per year for turf (10.9 inches per year) (Water Rights, 2024a and 2024c).

Currently, there are 83,156.5 acres authorized to be irrigated from the Missouri: Elk Point aquifer, with 819.6 of those acres authorized for turf irrigation, plus two pending applications requesting to collectively crop irrigate 202 acres (Water Rights, 2024c). Table 4 contains the turf irrigation permits with their respective authorized permitted acres and an estimated average annual use based on Mathiowetz's (2022) application rate per permitted acre (Water Rights, 2024c). By multiplying the application rate of 0.908 feet per acre per year (Mathiowetz, 2022), by the 819.6 acres permitted for turf irrigation (Water Rights, 2024c), the annual use for turf irrigation yields approximately 744.2 acre-feet per year (Table 4). By multiplying the application rate of 0.331 feet per acre per year (Mathiowetz, 2022), by the 82,336.9 acres (total acres minus turf irrigated acres) acres being crop irrigated, plus 202 acres for the pending applications (Water Rights, 2024c), the average annual use for crop irrigation yields approximately 27,320.4 acre-feet per year. Collectively, the average annual use from the Missouri: Elk Point aquifer for both crop and turf irrigation water rights/permits utilizing Mathiowetz's (2022) application rates is approximately 28,064.6 acre-feet per year.

Table 4. Water rights/permits authorized for irrigation of turf (Water Rights, 2024c)

Permit No.	Name	Status	County	Acres	Total Estimated Use (acre-feet/year)
1294-3	Recreation Development Assn. Inc.	LC	Union	102	92.6
2011-3	TR Golf LLC	LC	Union	95	86.3
5786-3	Dakota Dunes Golf Course	LC	Union	173	157.1
5998-3	Clay Rural Water System Inc	PE	Union	300	272.4
5998A-3	Clay Rural Water System Inc	PE	Union	0	0
5935-3	Ted Waitt	LC	Union	1	0.908
5936-3	Applied Engineering	LC	Yankton	1.8	1.6
8010-3	Ryan Rusher	LC	Yankton	2.5	2.3
8029-3	Dakota Dunes Comm Improvement District	PE	Union	17.8	16.2
8040-3	Heine Electric & Irrigation Inc	LC	Clay	1	0.908
8354-3	TR Golf LLC	PE	Union	30	27.24
8407-3	Gayville-Volin School District 63-1	LC	Yankton	4.5	4.1
8530-3	National Field Archery Association Foundation	LC	Yankton	16	14.5
8560-3	TR Golf LLC	PE	Union	65	59
8727-3	TR Golf LLC	PE	Union	10	9.1
			TOTAL:	819.6	744.2

There are domestic wells completed into the Missouri: Elk Point aquifer that do not require a water right/permit, so the withdrawal amount from those wells is unknown (Water Rights, 2024d). Due to their relatively low diversion rates, withdrawals from domestic wells are not considered to be a significant portion of the hydrologic budget. Additionally, with the development of rural water systems in areas where the Missouri: Elk Point aquifer is the uppermost aquifer available; it is likely some domestic users may have transitioned to rural water. Therefore, the quantity of water withdrawn by domestic wells is estimated to be negligible to the hydrologic budget for the Missouri: Elk Point aquifer.

Hydrologic Budget Summary

The average annual recharge rate to the Missouri: Elk Point aquifer is approximately 130,770.3 acre-feet per year.

The estimated average annual withdrawal rate for the water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer is approximately 118,493 acre-feet per year (including the estimated use for Water Permit Application Nos. 8891-3, 8892-3, and 8897-3, if approved) (listed on Table 5). Based on the hydrologic budget, there is a reasonable probability unappropriated water is available from the Missouri: Elk Point aquifer for the proposed appropriation.

Table 5. Estimated use from Missouri: Elk Point aquifer (Water Rights, 2024a, 2024c, and 2024f)

Type of Water Right/Permit	Estimated Use (acre-feet/year)
Future Use Reservations	21,021
Non-Irrigation	69,385
Irrigation (Mathiowetz's (2022) turf and crop application rates) (including use for pending applications)	28,065
Application No. 8891-3 (if approved, assuming Mathiowetz's (2022) crop application rate of 0.331 per acre)	22
TOTAL:	118,493

OBSERVATION WELL DATA:

Administrative Rule of South Dakota (ARSD) 74:02:05:07 requires that the Water Management Board shall rely upon 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 of the aquifer.

Observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. The DANR-Water Rights Program monitors 36 observation wells completed into the Missouri: Elk Point aquifer (Water Rights, 2024b). The three closest observation wells to the well the applicant proposes to use are CL-80C (approximately 3.5 miles southeast), CL-80D (approximately six miles southeast), CL-80B (approximately 6.4 miles northwest) (Water Rights, 2024b). The hydrographs for these observation wells are displayed in Figures 2 to 4 (Water

Rights, 2024b). The data points utilized to construct the hydrographs are measurements of the static water level in the observation wells from the top of the well casing.

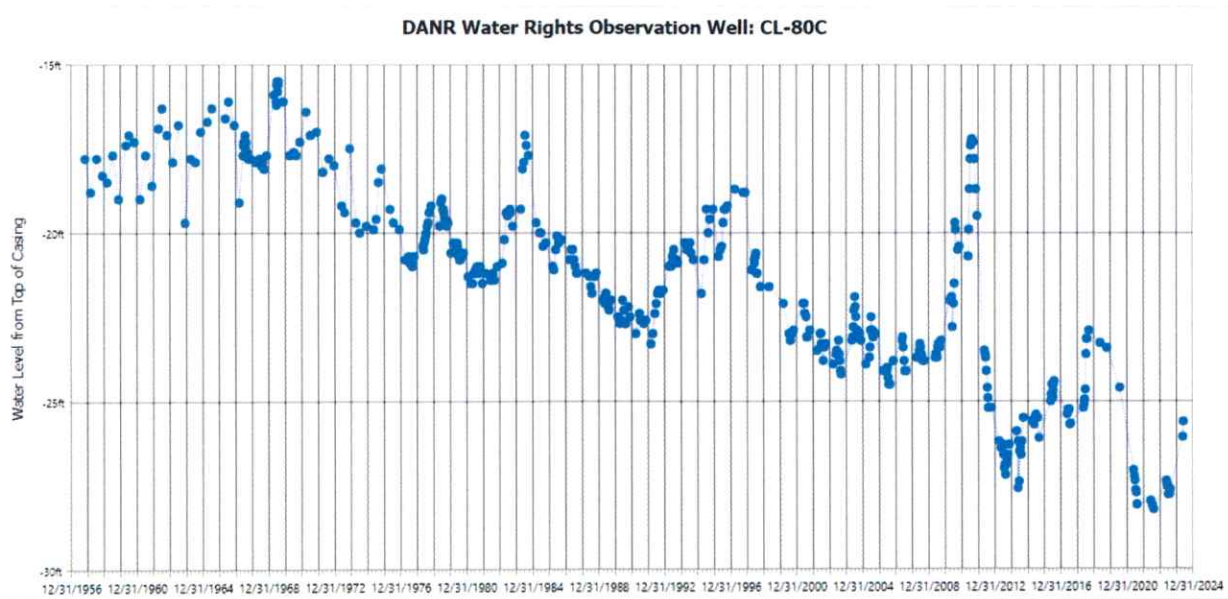


Figure 2. Hydrograph for observation well CL-80C (Water Rights, 2024b)

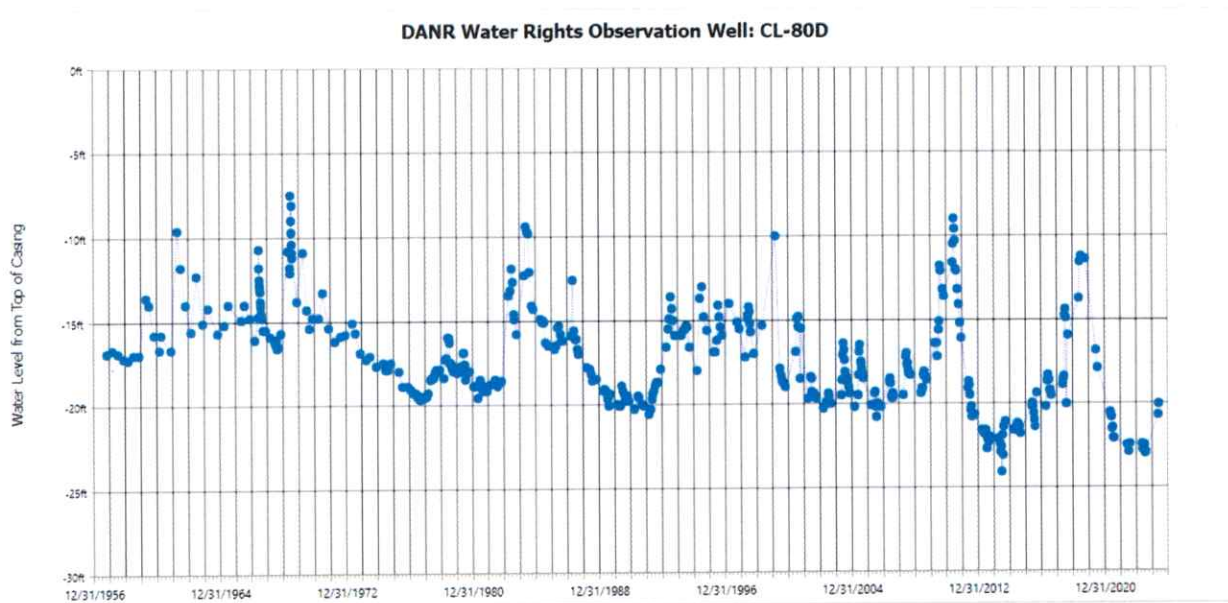


Figure 3. Hydrograph for observation well CL-80D (Water Rights, 2024b)

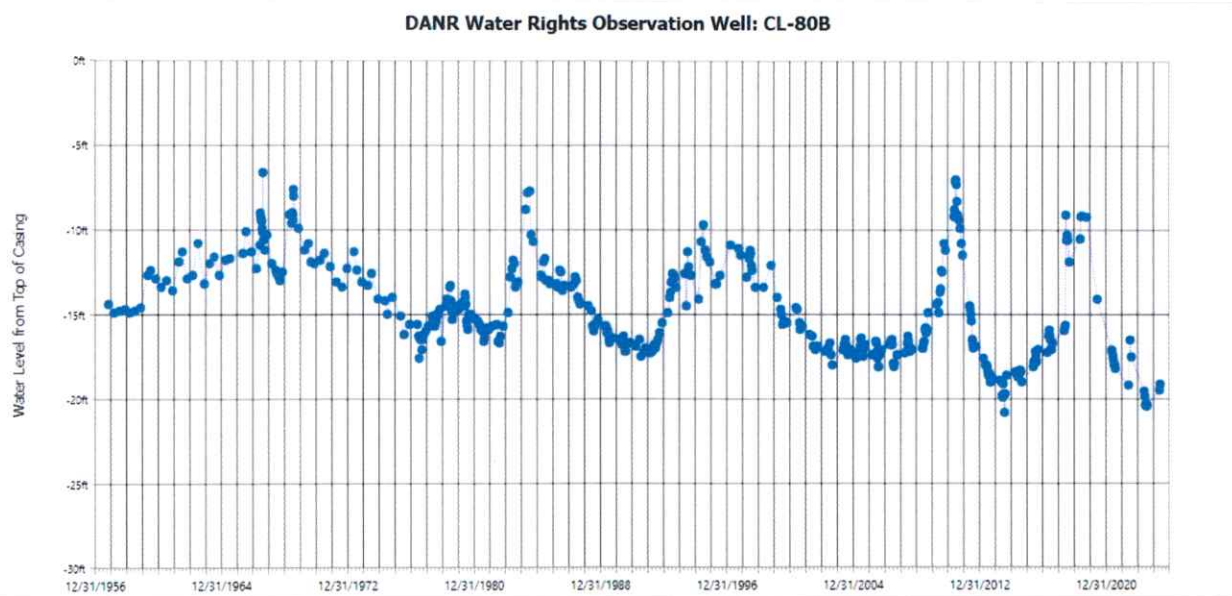


Figure 4. Hydrograph for observation well CL-80B (Water Rights, 2024b)

Most hydrographs for observation wells completed into the Missouri: Elk Point aquifer display a generally stable trend, except for several Missouri: Elk Point aquifer observation wells close to the Missouri River whose respective hydrographs show a gradual long-term downward trend, similar to the trend displayed in Figures 2 to 4 (Water Rights, 2024b). This downward trend is caused by entrenchment of the Missouri River riverbed and in some places a widening of the channel leading to lower water levels despite the river having the same rate of flow (Elliott and Jacobson, 2022). The lowering of the water level in the Missouri River downstream of the Gavins Point Dam and the subsequent lowering of the water level of Missouri: Elk Point aquifer observation wells in proximity to the river show the strong hydrologic connection between the Missouri River and the Missouri: Elk Point aquifer. This is demonstrated by the very similar water levels between the aquifer and river as shown in the hydrographs in Figures 2 to 5. The lowering of the water levels in the aquifer, especially in proximity to the Missouri River, is not a sign of over appropriation of the Missouri: Elk Point aquifer.

To demonstrate the connection between the aquifer and the Missouri River, consider the United States Geological Survey (USGS) Stream Gage #06467500, located on the Missouri River at Yankton, SD below Gavins Point Dam, and the hydrograph for this gage is shown in Figure 5 (USGS, 2024). By comparing the hydrograph for Stream Gage #06467500 to the observation well hydrographs of the Missouri: Elk Point aquifer (Figures 2 to 4), both show the river and aquifer react to climatic conditions by rising and falling over similar trends and similar magnitudes for the observation wells closest to the river (USGS, 2024; Water Rights, 2024b). Additionally, during flood events (such as, the years 2011 and 2019), the water level in the Missouri: Elk Point aquifer, especially where in closer proximity to the Missouri River, rises very quickly beyond what is typically seen for glacial outwash aquifers that are only responding to the infiltration of precipitation (Water Rights, 2024b). This indicates there is a hydrologic connection between the Missouri: Elk Point aquifer and the Missouri River. Therefore, when the elevation of the water in the Missouri River is higher than the elevation of water in the aquifer,

the river will recharge the aquifer. In contrast, when the elevation of water is higher in the Missouri: Elk Point aquifer, the aquifer naturally discharges to the Missouri River. The observation well water levels simply show the connection between the river and the aquifer and how the aquifer reacts to climatic conditions without showing any long-term effects from pumping. Therefore, there is a reasonable probability unappropriated water is available for this proposed appropriation.

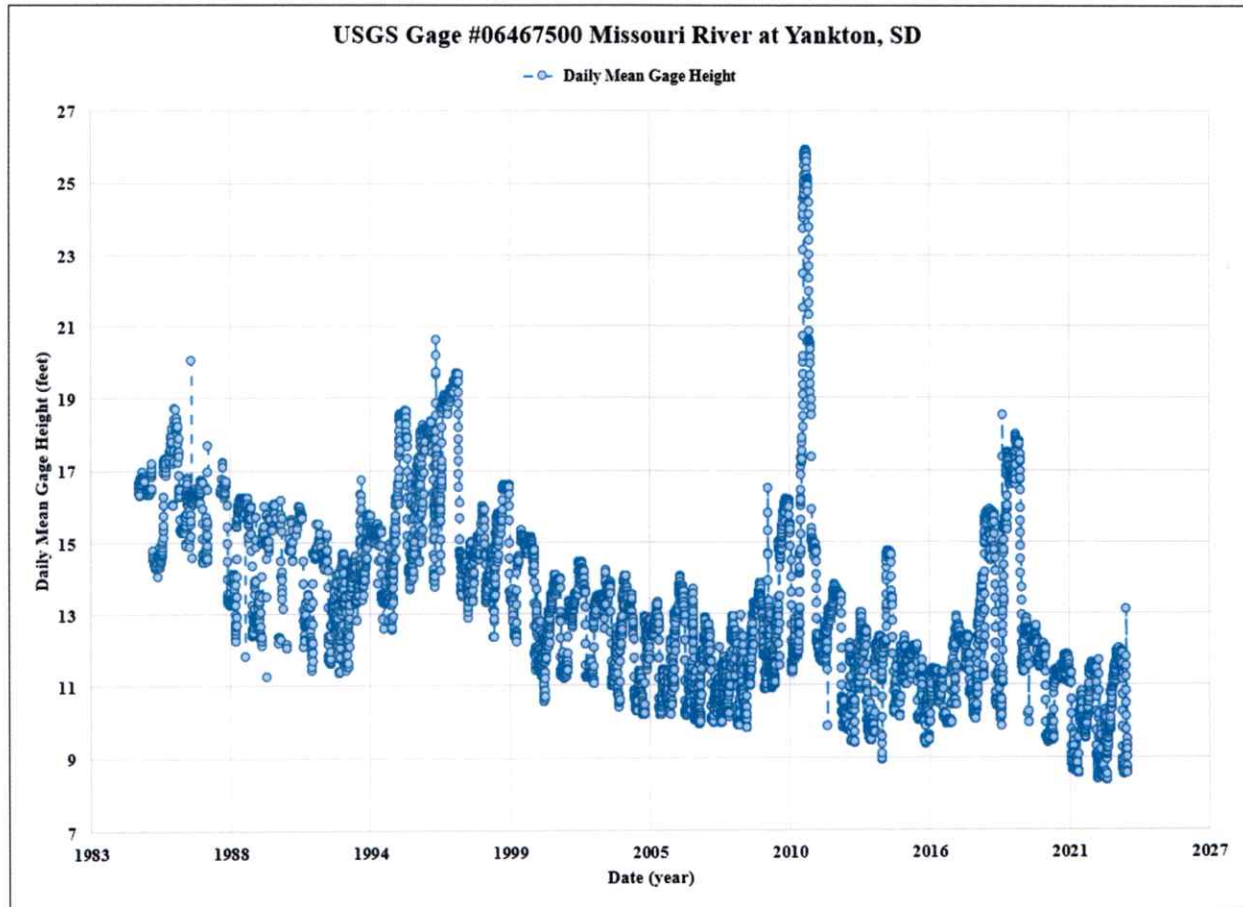


Figure 5. Hydrograph for USGS Stream Gage #06467500 Missouri River at Yankton, SD from 1985 to 2024 (USGS, 2024)

POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS:

Currently, there are 654 water rights/permits authorized to appropriate water from the Missouri: Elk Point aquifer, plus two pending applications, plus six future use permits reserving water (Water Rights, 2024c). The closest water right/permit to the proposed diversion point is Water Permit No. 7297-3, which is held by Francis Heine. The diversion point for Water Permit No. 7297-3 is located approximately 0.3 miles northwest of the existing well site for this application (Figure 6) (Table 6) (Water Rights, 2024c).

There are domestic wells on file with the DANR-Water Rights Program that are completed into the Missouri: Elk Point aquifer, with the closest domestic well on file (not held by the applicant) located approximately 1.5 miles northwest of the existing well site (Water Rights, 2024d). There could potentially be other domestic wells completed into the Missouri: Elk Point aquifer near the well the applicant proposes to use that are not on file with the DANR-Water Rights Program. The location of the domestic wells in the well completion report database maintained by the Water Rights Program is based on the location listed by the driller on the well completion report.

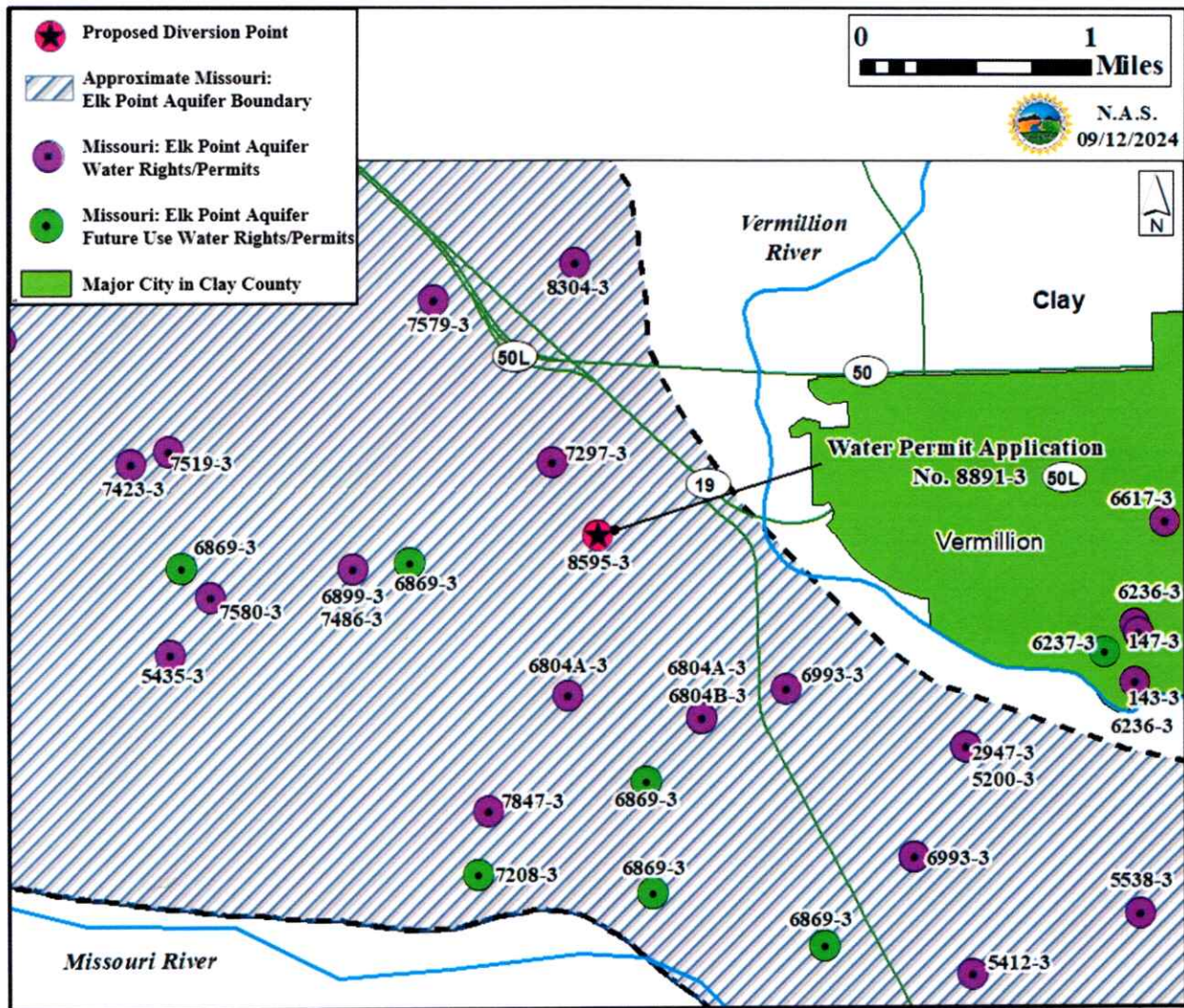


Figure 6. Map of the approximate Missouri: Elk Point aquifer boundary (modified from Hedges and others (1982)), with the location of the existing well for Water Permit Application No. 8891-3 (Water Rights, 2024d), and the Missouri: Elk Point aquifer water rights/permits and future use permits within approximately two miles (Water Rights, 2024c)

Table 6. Water rights/permits authorized to withdraw water from the Missouri: Elk Point aquifer within approximately two miles of the existing well site, as shown in Figure 6 (Water Rights, 2024c)

Permit No.	Name	Status	Use	Authorized Acres if IRR	Authorized Diversion Rate (cfs)	Authorized Annual Volume or Reserved Volume (acre-feet)
143-3	City of Vermillion	LC	MUN		1.78	
147-3	City of Vermillion	LC	MUN		2.66	
2947-3	Todd Heine	LC	IRR	136	1.9	
5200-3	Nels J Sorenson	LC	IRR	62	0.89	
5412-3	Nels J Sorenson	LC	IRR	49	0.7	
5435-3	Todd Heine	LC	IRR	140	2	
5471-3	Todd Heine	PE	IRR	38	0.54	
5538-3	Nels J Sorenson	LC	IRR	276	3.34	
6059-3	Todd Heine	PE	IRR	129	1.84	
6236-3	City of Vermillion	LC	MUN		2.6	1,161
6237-3	City of Vermillion	FU	MUN		0	1,900
6617-3	Kellen Cusick	LC	IRR	133	1.78	
6869-3	Lewis & Clark RWS	FU	RWS		0	0
6899-3	Bottolfson Brothers	LC	IRR	138	1.56	
6993-3	Todd Heine	PE	IRR	135	1.97	
7208-3	Lewis & Clark RWS	FU	RWS		0	0
7297-3	Todd Heine	PE	IRR	80	1.11	
7423-3	Michael Bottolfson	LC	IRR	111	1.56	
7486-3	Bottolfson Brothers	LC	IRR	173.5	1.56	
7519-3	Michael Bottolfson	LC	IRR	92	1.56	
7579-3	Todd Heine	PE	IRR	152	2	
7580-3	Todd Heine	PE	IRR	60	2	
7847-3	Daniel Heine	LC	IRR	79	1.22	
6804A-3	Daniel Heine	LC	IRR	532.2	4.71	
6804B-3	Adirondack Farmland Holdings GP	LC	IRR	138.4	1.98	
8304-3	Don Schell Family LLP	LC	IRR	221	1.56	
8595-3	Kirk Sorensen	PE	IRR	80	1.33	

LC: Licensed Water Right; PE: Water Permit; IRR: Irrigation; MUN: Municipal; RWS: Rural Water System

The Missouri: Elk Point aquifer ranges from confined to unconfined aquifer conditions, but is primarily under unconfined conditions (Niehus, 1994 and 1997). Based on the well completion report on file, the Missouri: Elk Point aquifer is confined at the existing well location (Water Rights, 2024c and 2024d). However, the well is likely to behave more like an unconfined aquifer well due to the sandy nature of the overlying clay and the proximity of unconfined aquifer conditions. Drawdown created by pumping a well generally does not extend far from the pumped well in an unconfined aquifer; however, in a confined aquifer, drawdown from pumping could extend a distance from the diversion point. The exact drawdown behavior of a well cannot be known without an aquifer performance test. Examination of the hydrographs for observation wells completed into the Missouri: Elk Point aquifer show no signs of being significantly impacted by drawdown caused by pumping, despite usually being located within a mile of

several high-yield wells (assumed to be a well with an authorized diversion rate greater than 0.2 cfs) (Water Rights, 2024b and 2024c).

At the existing well site, the Missouri: Elk Point aquifer has a saturated aquifer thickness of approximately 57 feet (Water Rights, 2024d). This would generally allow for enough thickness for a pump to be placed 20 feet below the top of the aquifer, which is required for the well to be considered adequate under ARSD 74:02:04:20(6). Any drawdown as a result of the proposed diversion for this application is not expected to unlawfully impair nearby adequate wells. In Clay, Union, and Yankton Counties, there are no substantiated complaints on file with the DANR-Water Rights Program regarding well interference for adequate wells completed into the Missouri: Elk Point aquifer (Water Rights, 2024e).

The Water Management Board recognizes that putting water to beneficial use requires a certain amount of drawdown to occur. The Board has developed rules to allow water to be placed to maximum beneficial use without the necessity of maintaining artesian head pressure for domestic use. The Water Management Board defined an “adversely impacted domestic well” in ARSD 74:02:04:20(7) 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.”

The Water Management Board considered the delivery of water by artesian head pressure versus maximum beneficial use during the issuance of Water Right No. 2313-2 for Coca-Cola Bottling Company of the Black Hills. The Board adopted the Findings of Facts and Conclusions of Law that noted the reservation of artesian head pressure for delivery of water would be inconsistent with SDCL 46-1-4 which states, “general welfare requires that the water resources of the state be put to beneficial use to the fullest extent of which they are capable...” (Water Rights, 1995). Furthermore, the Water Management Board found if increased cost or decreased production as a result of impacts on artesian head pressure by legitimate users is to be considered as an unlawful impairment, it would also conflict with SDCL 46-1-4 (Water Rights, 1995). With that in mind, some existing well owners may need to install or lower pumps depending on the specific characteristics of the Missouri: Elk Point aquifer at their location. However, when considering the statutes (SDCL 46-1-4 and 46-6-6.1), rules (ARSD 74:02:04:20(6) and (7)), the saturated thickness of the Missouri: Elk Point aquifer near the existing well site, and the lack of well interference complaints from the Missouri: Elk Point aquifer in the area, any drawdown created from the proposed diversion is not expected to cause an unlawful impairment on existing water right/permit holders or domestic users with adequate wells. Additionally, the well proposed to be used is an existing well that has been in place and is presumed to have been in use since roughly 2021 without any reported well interference complaints on file with the DANR-Water Rights Program (Water Rights, 2024d and 2024e). Therefore, there is a reasonable probability that any interference from the proposed appropriation will not impose unlawful impairments on existing users with adequate wells.

CONCLUSIONS:

1. Water Permit Application No. 8891-3 proposes to irrigate an additional 67 acres from the well authorized by Water Permit No. 8595-3. Water Permit No. 8595-3 authorizes a maximum instantaneous diversion rate of 1.33 cfs from one well completed into the Missouri: Elk Point aquifer (92 feet deep) for the irrigation of 80 acres. A licensing inspection found only 78 acres developed for irrigation of the originally 80 acres authorized under Water Permit No. 8595-3. This application proposes to irrigate an additional 67 acres from the existing well authorized by Water Permit No. 8595-3 with no increase in the authorized diversion rate.
2. If approved, Water Permit Application No. 8891-3 and Water Permit No. 8595-3 will collectively authorize an appropriation of 1.33 cfs for the irrigation of 145 acres. The site of interest is located in Clay County approximately one mile west of Vermillion, SD.
3. Based on observation well data and the hydrologic budget, there is a reasonable probability that unappropriated water is available from the Missouri: Elk Point aquifer to supply the proposed appropriation.
4. There is a reasonable probability that the proposed diversion by Water Permit Application No. 8891-3 will not unlawfully impair adequate wells for existing water rights/permits and domestic users.

Nakaila Steen

Nakaila Steen
Natural Resources Engineer II
SD DANR - Water Rights Program

Reviewed by:

Adam Mathiowetz

Adam Mathiowetz, PE
Natural Resources Engineer IV
SD DANR - Water Rights Program

References

- Arguez, A., I. Durre, S. Applequist, R. Vose, M. Squires, X. Yin, R. Heim, and T. Owen, 2020. NOAA's U.S. Climate Normals (1991-2020). Annual Precipitation Normals for Station USW00014943 Sioux City Airport, Iowa. NOAA National Center's for Environmental Information. Accessed August 29, 2022.
- Condley, J. and Lamkey, N. 2022. Investigation of Induced River Recharge in the Lewis and Clark Regional Water System Wellfield. Open-File Report 97-UR. SD DANR-Geological Survey. Vermillion, South Dakota.

- Drinking Water Program, 2024. Drinking Water System Information. SD DANR – Drinking Water Program Online Database. Accessed September 12, 2024.
<<http://danr.sd.gov/des/dw/sysinfomap.aspx>>
- Elliott, C.M., and Jacobson, R.B. 2022. Sixty years of channel adjustments to dams in the two segments of the Missouri National Recreational River, South Dakota and Nebraska. U.S. Geological Survey Scientific Investigations. Report 2022–5087. 75 p.
- Fahrenbach, M.D., Steece, F.V., Sawyer, J.F., McCormick, K.A., McGillivray, G.L., Schulz, L.D., and Redden, J.A. 2010. South Dakota Stratigraphic Correlation Chart. Oil and Gas Investigations 3. SD DANR-Geological Survey, Vermillion, SD.
- Farmer, J., 2018a. Report on Water Permit Application No. 8322-3: Shawn Guthmiller. SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Farmer, J., 2018b. Report on Water Permit Application No. 8364-3: Daniel and Scott Hanson. SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Farmer, J., 2021. Report on Water Permit Application No. 8503-3: Sorensen Family Farm, LLC. SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Hedges, L.S., Allen, J., Holly, D.E., 1985. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa, Task 7: Ground Water Recharge; United States Army Corps of Engineers Contract DACW 45-80-C-0185.
- Hedges, L.S., Burch, S.L., Iles, D.L., Barari, R.A., and Schoon, R.A., 1982. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa. Task 1: Bedrock Topography and Distribution, Task 2: Extent of Aquifers, Task 3: Ground-Water Storage, Task 4: Computerized Data Base, Final Report. U.S. Army Corps of Engineers Contract DACW 45-80-C-0185.
- Mathiowetz, A.W., 2022. Report on Future Use Permit Application No. 8614-3: Lewis & Clark Regional Water System. SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Mathiowetz, A.W., 2023. Report on Future Use Permit Application No. 8754-3: Lewis & Clark Regional Water System. SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.
- Niehus, C.A., 1994. Water Resources of Lincoln and Union Counties, South Dakota. U.S. Geological Survey Water-Resources Investigations Report 93-4195. U.S. Geological Survey. Vermillion, SD.
- Niehus, C.A., 1997. Major Aquifers in Lincoln and Union Counties, South Dakota. U.S. Geological Survey - Information Pamphlet 49. U.S. Geological Survey. Vermillion, SD.
- NOAA, 1982. Evaporation Atlas for the Contiguous 48 United State. NOAA Technical Report NWS 33.
- Stephens, J.C., 1967. Geology and Water Resources of Clay County, South Dakota, Part II. Water Resources. South Dakota DANR-Geological Survey Bulletin 19, Vermillion, SD.
- Stonesifer, J.R., 2013. Water Availability of the Missouri: Elk Point Aquifer. SD DANR-Water Rights Program, Joe Foss Building, Pierre, SD.

USGS, 2024. USGS Surface-Water Daily Statistics for the Nation, Stream Gage #06467500, Missouri River at Yankton, SD. Accessed July 8, 2024.

https://waterdata.usgs.gov/nwis/uv?site_no=06467500&legacy=1

Water Rights, 2024a. "1979-2023 Irrigation Summaries by Aquifer", SD DANR-Water Rights Program, Joe Foss Building, Pierre, SD.

Water Rights, 2024b. Observation Well Data, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2024c. Water Right/Permit Files, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2024d. Well Completion Reports, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2024e. County Files, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2024f. "2003-2023 Non-Irrigation Yearly Reports", SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

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

October 7, 2024

Kirk Sorensen
46113 Timber Road
Vermillion SD 57069

Dear Mr. Sorensen:

Water Permit Application No. 8891-3 for irrigation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Plain Talk printed in Vermillion SD (Ph # 605 624-2695) and the Daily Press & Dakotan printed in Yankton SD (Ph # 605 665-7811). 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 publishers have been instructed to publish your notice. The newspapers have 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,

Rachel Rodriguez

Rachel Rodriguez
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. 8891-3 to Appropriate Water

Notice is given that Kirk Sorensen, 46113 Timber Road, Vermillion SD 57069, has filed an application for a water permit to irrigate an additional 67 acres. Water Permit No. 8595-3 appropriates 1.33 cubic feet of water per second (cfs) from one well completed into the Missouri: Elk Point Aquifer (92 feet deep) located in the NE 1/4 SW 1/4 Section 15 for irrigation of 80 acres located in the SW 1/4 Section 15; all in T92N-R52W. An inspection found 78 acres developed for irrigation. This application proposes to irrigate an additional 67 acres located in the SE 1/4 SW 1/4, SE 1/4 Section 15-T92N-R52W from the existing well, with no increase in diversion rate. This application, if approved, and Water Permit No. 8595-3 will authorize a combined appropriation of 1.33 cfs for irrigation of a total of 145 acres. This site is located approximately one mile west of Vermillion SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8891-3 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.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 this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by October 28, 2024.

The petition shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by October 28, 2024.

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.

Rodriguez, Rachel

From: Rodriguez, Rachel
Sent: Monday, October 7, 2024 9:49 AM
To: Kelly Kronaizl
Subject: 8891-3 Kirk Sorensen - Public Notice
Attachments: 8891-3 public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on October 18, 2024, in the Plain Talk and Daily Press & Dakotan.

Kirk Sorensen, 46113 Timber Road, Vermillion SD 57069, 605-677-7979, 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 Ave, Pierre SD 57501.

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

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us



AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

KIRK SORENSON
46113 TIMBER ROAD
VERMILLION SD 57069

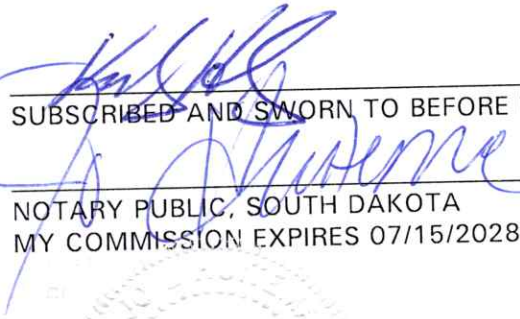
STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

KELLY HERTZ, BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT (S)HE IS THE MANAGING EDITOR OF YANKTON
MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE
YANKTON DAILY PRESS AND DAKOTAN, A LEGAL DAILY NEWSPAPER
PUBLISHED AND CIRCULATED IN THE CITY OF YANKTON, SAID COUNTY
AND STATE, AND ONE OF THE OFFICIAL NEWSPAPERS OF THE SAID
COUNTY OF FACTS STATED IN THIS AFFIDAVIT; THAT THE ANNEXED
NOTICE OF APPLICATION NO.

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 18th DAY OF October, 2024
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT \$43.20 ENSURES TO THE
BENEFITS OF THE PUBLISHER OF SAID NEWSPAPER AND THAT NO
AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS
BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF
HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 10/18/2024

FILED ON: 10/29/24


SUBSCRIBED AND SWORN TO BEFORE ME THIS 29th DAY OF October, 2024

NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 07/15/2028

RECEIVED

OCT 31 2024

OFFICE OF
WATER

NOTICE OF APPLICATION NO. 8891-3 to Appropriate Water

Notice is given that Kirk Sorensen, 46113 Timber Road, Vermillion SD 57069, has filed an application for a water permit to irrigate an additional 67 acres. Water Permit No. 8595-3 appropriates 1.33 cubic feet of water per second (cfs) from one well completed into the Missouri: Elk Point Aquifer (92 feet deep) located in the NE 1/4 SW 1/4 Section 15 for irrigation of 80 acres located in the SW 1/4 Section 15; all in T92N-R52W. An inspection found 78 acres developed for irrigation. This application proposes to irrigate an additional 67 acres located in the SE 1/4 SW 1/4, SE 1/4 Section 15-T92N-R52W from the existing well, with no increase in diversion rate. This application, if approved, and Water Permit No. 8595-3 will authorize a combined appropriation of 1.33 cfs for irrigation of a total of 145 acres. This site is located approximately one mile west of Vermillion SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8891-3 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.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 this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by October 28, 2024.

The petition shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by October 28, 2024.

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 \$43.20 and can be viewed free of charge at www.sdpublicnotices.com

Published October 18, 2024

RECEIVED

OCT 31 2024

OFFICE OF
WATER

AFFIDAVIT OF PUBLICATION

PLAIN TALK

KIRK SORENSON
46113 TIMBER ROAD
VERMILLION SD 57069

STATE OF SOUTH DAKOTA
COUNTY OF CLAY

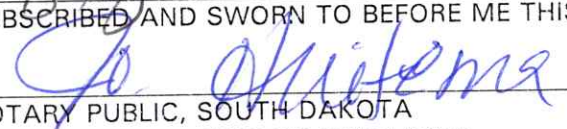
BETH RYE, BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT (S)HE IS THE ADVERTISING DIRECTOR OF YANKTON
MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE
PLAIN TALK, A LEGAL WEEKLY NEWSPAPER PUBLISHED AND CIRCULATED
IN THE CITY OF VERMILLION, SAID COUNTY AND STATE, AND ONE OF
THE OFFICIAL NEWSPAPERS OF THE SAID COUNTY OF FACTS STATED IN
THIS AFFIDAVIT; THAT THE ANNEXED
NOTICE OF APPLICATION NO.

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 18th DAY OF October, 2024
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT \$43.20 ENSURES TO THE
BENEFITS OF THE PUBLISHER OF SAID NEWSPAPER AND THAT NO
AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS
BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF
HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 10/18/2024

FILED ON: 10/18/24


SUBSCRIBED AND SWORN TO BEFORE ME THIS 18th DAY OF October, 2024


NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 07/15/2028



RECEIVED
OCT 23 2024
OFFICE OF
WATER

NOTICE OF APPLICATION NO. 8891-3 to Appropriate Water

Notice is given that Kirk Sorensen, 46113 Timber Road, Vermillion SD 57069, has filed an application for a water permit to irrigate an additional 67 acres. Water Permit No. 8595-3 appropriates 1.33 cubic feet of water per second (cfs) from one well completed into the Missouri: Elk Point Aquifer (92 feet deep) located in the NE 1/4 SW 1/4 Section 15 for irrigation of 80 acres located in the SW 1/4 Section 15; all in T92N-R52W. An inspection found 78 acres developed for irrigation. This application proposes to irrigate an additional 67 acres located in the SE 1/4 SW 1/4, SE 1/4 Section 15-T92N-R52W from the existing well, with no increase in diversion rate. This application, if approved, and Water Permit No. 8595-3 will authorize a combined appropriation of 1.33 cfs for irrigation of a total of 145 acres. This site is located approximately one mile west of Vermillion SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8891-3 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.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 this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by October 28, 2024.

The petition shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by October 28, 2024.

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 \$43.20 and can be viewed free of charge at www.sdpublicnotices.com

Published October 18, 2024

RECEIVED

OCT 23 2024

OFFICE OF
WATER

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 8891-3**

(1) Kirk Sorensen, 46113 Timber Rd, Vermillion SD 57059, made Application No. 8595-3, December 20, 2021, for a water permit to divert 1.33 cubic feet of water per second from groundwater, one well (Missouri: Elk Point Aquifer), Clay County, South Dakota for irrigation purposes. Permit No. 8595-3, with a priority date of December 30, 2021, was approved April 18, 2022, and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before April 18, 2027, and for the application to beneficial use of water on or before April 18, 2031.

The permit holder submitted a Notice of Completion of Works and Application of Water to Beneficial Use form on July 22, 2024. The Notice stated the diversion system was completed and the water was placed to beneficial use in November 2022.

The applicable portions of Water Permit No. 8595-3 have been incorporated into this license.

Kirk Sorensen made Application No. 8891-3, August 12, 2024, for a water permit to add an additional 67 irrigated acres to what was already authorized by Permit No. 8595-3, with no increase to the rate of diversion. Permit No. 8891-3, with a priority date of August 12, 2024, was approved October 28, 2024, and issued to the applicant for diversion of water and for the application to beneficial use.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 1.33 cubic feet of water per second for beneficial use. The location of the diversion point is:

- 1,640 ft N & 1,700 ft E of the SW corner Section 15, T92N, R52W (NE $\frac{1}{4}$ SW $\frac{1}{4}$)
(Latitude 42.78395 & Longitude -97.97701)

(3) The amount of appropriation may not exceed 2 acre-feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – September 30.

(4) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate to following land:

Section 15, T92N, R52W			
NE $\frac{1}{4}$ SW $\frac{1}{4}$	37 acres	NE $\frac{1}{4}$ SE $\frac{1}{4}$	14 acres
NW $\frac{1}{4}$ SW $\frac{1}{4}$	17 acres	NW $\frac{1}{4}$ SE $\frac{1}{4}$	26 acres
SW $\frac{1}{4}$ SW $\frac{1}{4}$	6 acres	SW $\frac{1}{4}$ SE $\frac{1}{4}$	13 acres
SE $\frac{1}{4}$ SW $\frac{1}{4}$	19 acres	SE $\frac{1}{4}$ SE $\frac{1}{4}$	13 acres
TOTAL: 145 acres			

(5) Pursuant to South Dakota Water Law 46-5-30.1 Kirk Sorensen, the holder and/or owner of Water Right No. 8891-3 is issued a license to appropriate water, the right to use 1.33 cubic feet of water per second from groundwater, one well (Missouri: Elk Point Aquifer), with priority dates of December 30, 2021 (1.33 cfs & 80 acres) and August 12, 2024 (65 acres), from the location specified in (2) of this license for irrigation purposes.

continued

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 8891-3 and subject to the following qualifications:

1. The well approved under Water Permit Nos. 8595-3 & 8891-3 is located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals must be controlled so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

Eric Gronlund

Eric Gronlund, Chief Engineer
Water Rights Program
Department of Agriculture and Natural Resources

NOV 14 2024

date



**Report of Examination of Works and/or Application of Water to Beneficial Use
For Permit Nos. 8595-3 & 8891-3**

I have this day, July 22, 2024, made a thorough examination of the water use systems owned by Kirk Sorensen, 46113 Timber Road, Vermillion, SD 57069, holder of Permit No. 8595-3 & 8891-3, bearing the respective priority dates of December 30, 2021 & August 12, 2024. These permit authorizes the diversion of 1.33 cu. ft. per second of the waters of groundwater (Missouri: Elk Point Aquifer) authorizing combined the irrigation of 145 acres located in Clay County.

Inspection contacts: Josh Anglin

A. Works used to divert the water:

Well Information

- 1) Well Drilling Firm: Christensen Well & Irrigation
- 2) No. of Wells: 1
- 3) Depth(s): 92 feet
- 4) Well log is available: Yes

Casing:

- 1) Diameter: 16 inches
- 2) Length: 52 feet
- 3) Type: Plastic

Screen:

- 1) Diameter: 16 inches
- 2) Length: 40 feet
- 3) Type: PVC
- 4) Static water level: 26 feet

Pump:

- 1) Make: Goulds
- 2) Model: 7THC
- 3) Capacity: 600 gpm

Motor:

- 1) Make: Franklin
- 2) Model No.: Unknown
- 3) Horsepower rating: 40 hp

B. Works used to transport water to place of use:

- 1) Type: Steel Size: 6 inches Length: 20 feet

C. Works used to apply water to beneficial use:

Center Pivot

- 1) Make: T & L
- 2) Overall length: 950 feet
- 3) Number of towers: 6
- 4) End gun: Yes Range: 90 feet
- 5) Capacity: 500 gpm

Chemigation Equipment:

- 1) Does chemigate: No

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by: Yes
2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period: Yes – New pivot in 2024
3) Exceptions to compliance are: None

E. Condition and Location:

- 1) The system is in good condition with the point(s) of diversion located as follows:
The well is 1,640 feet north and 1,700 feet east of the southwest corner of Section 15-T92N-R52W (Latitude 42.78395, Longitude -97.97701– NE1/4 of the SW1/4).
2) The works are capable of diverting and conveying to the places of use 1.33 cu. ft. per second of water from the well which is to be used for irrigation purposes. Water has been put to beneficial use to the maximum extent as follows:

Section 15-T92N-R52W

<u>NW1/4SW1/4</u>	<u>17 acres</u>	<u>NW ¼ SE ¼</u>	<u>26 acres</u>
<u>NE1/4SW1/4</u>	<u>37 acres</u>	<u>NE ¼ SE ¼</u>	<u>14 acres</u>
<u>SW1/4SW1/4</u>	<u>6 acres</u>	<u>SW ¼ SE ¼</u>	<u>13 acres</u>
<u>SE1/4SW1/4</u>	<u>19 acres</u>	<u>SE ¼ SE ¼</u>	<u>13 acres</u>

comprising a total of 145 acres of land and the license should be issued for 1.33 cfs.

- 3) All structures, wells and lands on map: Yes

F. Comments or other permit(s) associated with the project: The pump and motor information was obtained from Christensen Well & Irrigation.

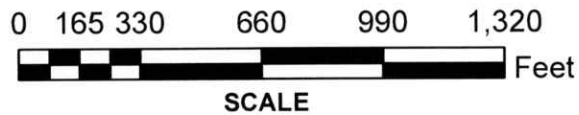
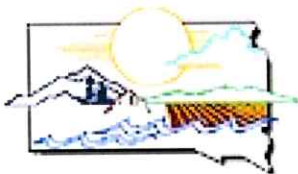
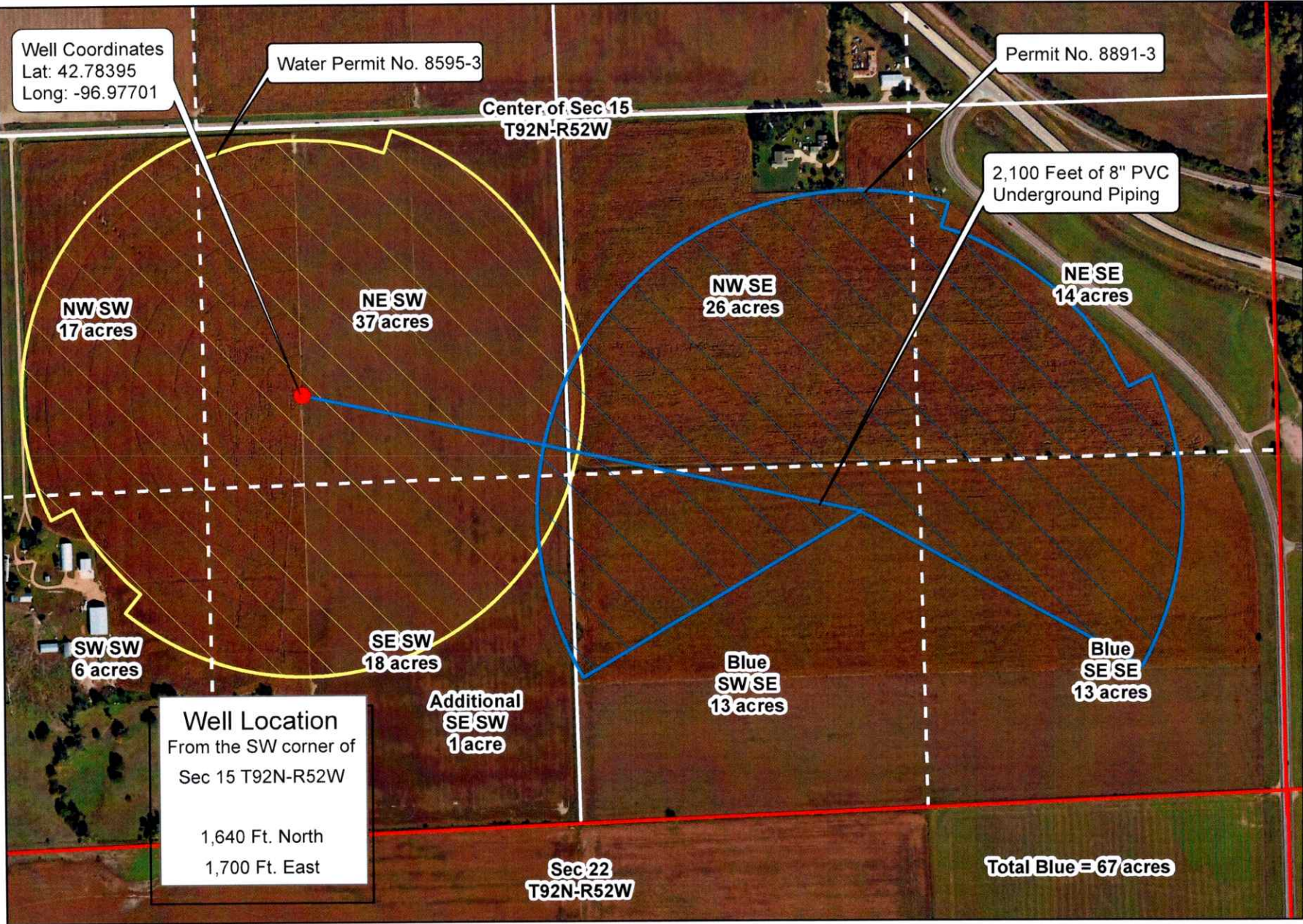
Keith DeJong

Keith DeJong, PE Ret.
Water Rights Inspector
DANR, Water Rights Program

Date report completed: July 29, 2024

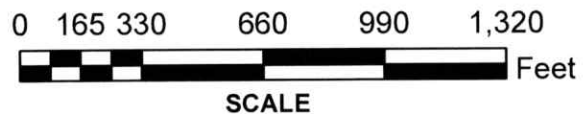
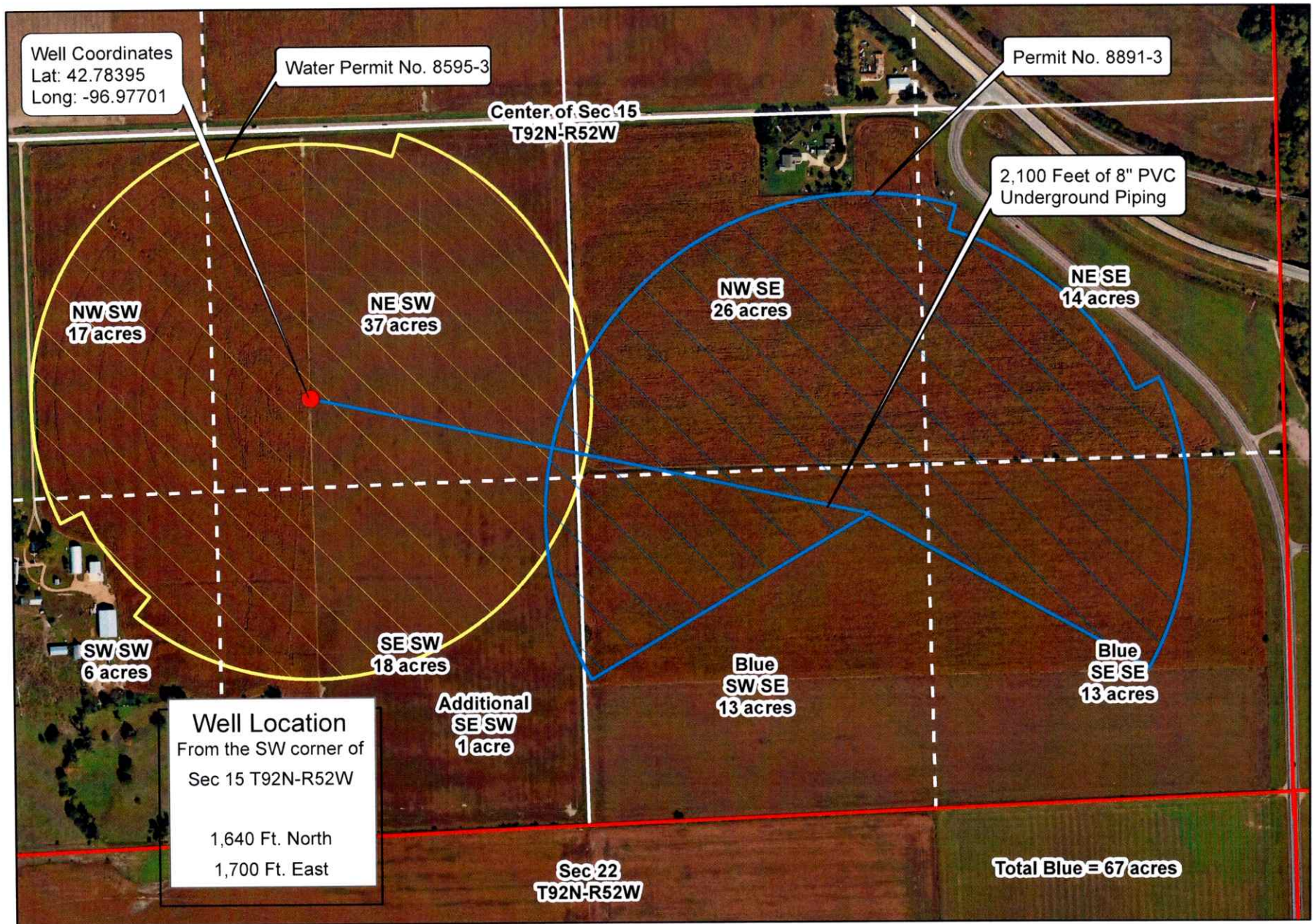
** Permit No. 8891-3 was obtained by Mr. Sorenson after Keith's July 2024 inspection found the additional system and acres had been developed. The two permits are now being incorporated into one license. AMD

Water Permit Nos. 8595-3 & 8891-3



Keith DeJong, PE Ret.
Staff Engineer
July 22, 2024

Water Permit Nos. 8595-3 & 8891-3



Keith DeJong, PE Ret.
Staff Engineer
July 22, 2024

Rodriguez, Rachel

From: Rodriguez, Rachel
Sent: Monday, October 7, 2024 10:24 AM
To: threepairranch@yahoo.com
Subject: 8891-3 Kirk Sorensen - Public Notice
Attachments: 8891-3 Rec.pdf; 8891-3 Ltr.pdf; 8891-3 PubNotice.pdf

Good morning,

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

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

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us





**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

NOV 14 2024

8595-3
8891-3

Kirk Sorensen
46113 Timber Rd
Vermillion SD 57069

Dear Mr. Sorensen:

Enclosed is Water License No. 8891-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if in the future, the owner of an existing well, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

So long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

Sincerely,

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

NOTE: The applicable portions of Water Permit No. 8595-3 have been incorporated into Water Right No. 8891-3.

enclosures



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

**Affidavit of Public Notice
Posting on DANR Website**

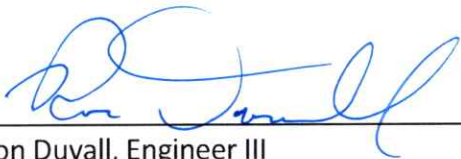
Pursuant to SDCL § 46-2A-4, public notice of the following application was posted on the DANR web site at <https://danr.sd.gov/public>. The posted public notice is the same notice as published in the pertinent newspaper(s) and a copy of the public notice is maintained in the application file. If the application is contested, the posting is moved to the DANR contested case website at <https://danr.sd.gov/public/ContestedCase.aspx> until final action is taken on the application pursuant to SDCL § 46-2A-4.

Application No.: 8891-3

Name of Applicant: Kirk Sorensen

Date of Posting: 10/15/2024

Date of Removal: 11/14/2024



Ron Duvall, Engineer III

11/14/2024

Date

Subscribed and sworn to before me, a notary public, this 14th day of Nov, 2024.



Notary Public - South Dakota
My commission expires **May 16, 2029**



(SEAL)