

WATER PERMIT NO. 8463-3

Name of Applicant: Brook Bye

Address: 31472 458th Ave, Vermillion SD 57069

Phone: 605 670-9132

Amount of Water Claimed: 1.78 cfs

Total Acres: 120

Source of Water Supply: groundwater (one well)

Water to be used for: irrigation

County: Clay

Type of Waste Disposal System:

Location: 1 mile south of Meckling

PRIORITY

Date Received: 12-16-20

Application/License Fee: \$ 750

Corrected Application Received:

Period of Annual Use: April 1 – September 30

Remarks: Requesting diversion rate greater than statutory limit

Diversion Point: center SE 1/4 Sec 35-T93N-R53W

Land to be Irrigated: SE 1/4 Sec 35-T93N-R53W

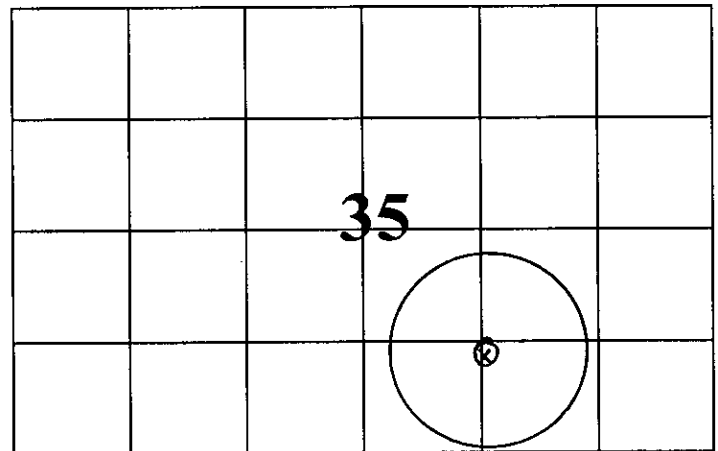
Depth of Well: 110 feet deep

Well Driller:

Remarks:

Type of Map: aerial

Prepared by:



Reviewed and the Number Assigned on: 12-16-20

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

**SOUTH DAKOTA
WATER PERMIT NO. 8463-3**

Date of first receipt of application December 16, 2020.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8463-3 to Brook Bye, 31472 458th Ave, 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. 8463-3 appropriates 1.78 cubic feet of water per second (cfs) from one well to be completed into the Missouri:Elk Point Aquifer (110 feet deep) located near the center of the SE 1/4 Section 35 for irrigation of 120 acres located in the SE 1/4 Section 35; all in T93N-R53W. This site is located approximately one mile south of Meckling 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: April 1 – September 30.
3. The date from which applicant may claim right is December 16, 2020.
4. The date of approval of Permit No. 8463-3 is March 22, 2021.
5. One-fifth of the construction is to be completed on or before September 22, 2023.
6. All construction is to be completed on or before March 22, 2026.
7. Water is to be put to beneficial use on or before March 22, 2030.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

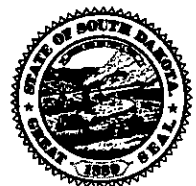
QUALIFICATIONS

1. The well approved under Water Permit No. 8463-3 will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner, under these Permits shall control withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8463-3 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. 8463-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 120 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 Environment and Natural Resources

APR 06 2021
date



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

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8463-3</u> (office use only) Hydrologic Unit <u>10170102</u>
	Basin <u>Vermillion River</u>
	Newspaper <u>Plain Talk</u> <u>Press & Dakotans</u>

PAID
DEC 16 2020
Ck# 1077
RECEIVED
DEC 16 2020
WATER RIGHTS
PROGRAM

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 Brook Bye

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

Mailing Address 31472 458th Ave Vermillion ☒ SD ☒ 57069
(Address) (City) (State) (Zip Code)

Phone _____ Mobile 605-670-9132 Email _____

2. Amount of water claimed 1.78 *CFS or 800 **GPM _____ ***AF Total Acreage 120
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply Missouri: Elk Point Aquifer

4. Location of point of diversion 1 well at Center, SE 1/4 Section 35, T93N R53W
(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 April 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
nw1/4 of se1/4, sec35T93nR53w	28		
ne1/4 of se1/4, sec35T93nR53w	29		
sw1/4 of se1/4, sec35T93nR53w	31		
se1/4 of se1/4, sec35T93nR53w	32		

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

Center pivot irrigation of crops on the above listed property.

Requesting diversion rate greater than statutory limit.

I, Brook Bye applicant, 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.

Supplemental Information

(type or print)

1. Well Information (check one or both as applicable) ☒ Drilling new well(s) ☐ Using existing well(s)a) If new wells, how many 1 Have test holes been drilled ☐ Yes ☒ No Drilled by _____
(if yes, please provide copies of logs)

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

For either Existing or Proposed Wells:

c) Well Depth (required) 110 Depth to Top of Water Bearing Material 60 Depth to Water from Surface 20d) Distance to nearest domestic well on applicant's property NA Property owned by others > 3000'**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)

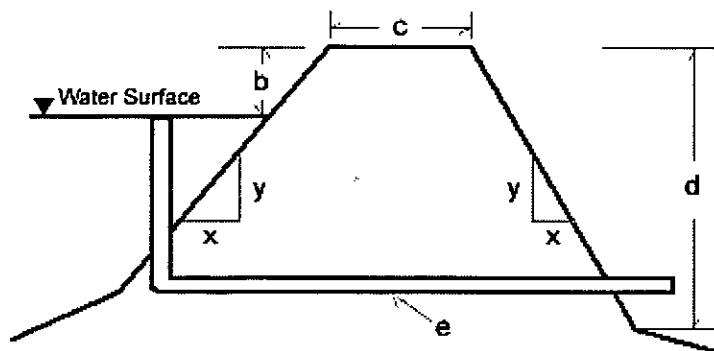
Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

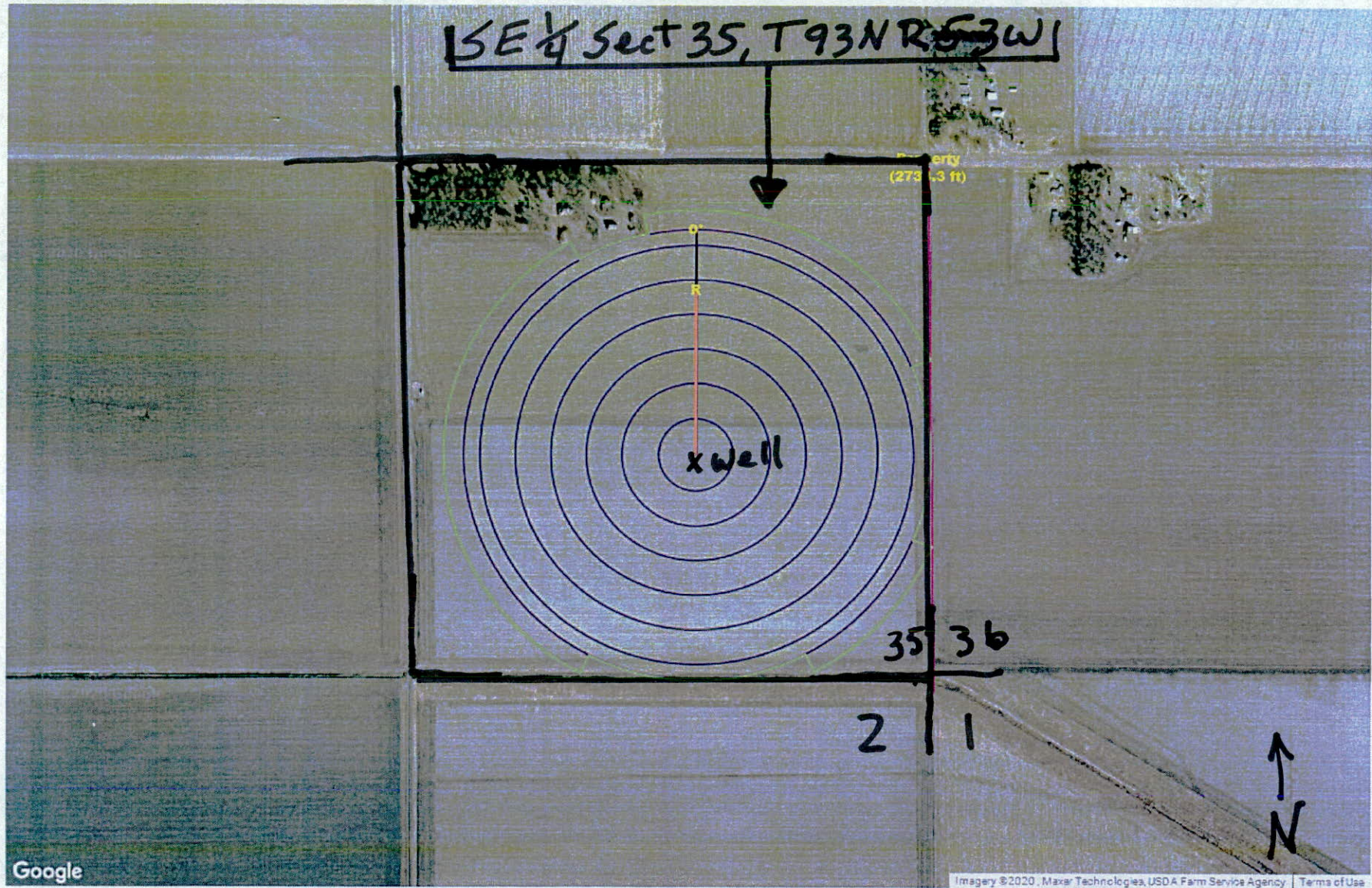
i) Storage _____ Acre Feet

j) Drainage Area Above Dam _____ Acres





Project Name - Brooke Bye - 2020 south meckling
Version Name - Brooke Bye - 2020 south meckling_Version
Map Summary Report - Brooke Bye Circle



Heine Electric & Irrigation - 307 S Robinson Ave, Hartington, NE, 68739, UNITED STATES

se of Section 35,T93R53

Write a description for your map.

Legend

 Brook Bye Well

 Brook Bye Well

SE Corner of
Sect 35 T93N R53W

Meckling Rd

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date December 16, 2020

RECEIVED OF Brook/Shelly Bye 31472 458th Ave Vermillion SD 57069

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

Fee for Application for Permit No. <u>8463-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$750.00
Fee for Application for Permit No. _____ to Appropriate Water for Future use	\$
Fee to retain Future Use Permit No. _____ after period of seven years.	\$
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____	\$200.00
Fee for Filing Transfer Form _____	\$
Fee for _____	\$
Fee for Issuing New Well Driller's License No. _____	\$
Fee for Renewal of Well Driller's License No. _____	\$
Fee for Issuing Well Pump Installer's License No. _____	\$
Fee for Renewal of Well Pump Installer's License No. _____	\$
(Any Other Work Provided by Law) TOTAL	\$950.00

By Eric Gronlund
Chief Engineer

Um



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8463-3, Brook Bye**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 8463-3, Brook Bye, 31472 458th Avenue, Vermillion SD 57069.

The Chief Engineer is recommending APPROVAL of Application No. 8463-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and, 4) it is in the public interest with the following qualifications:

1. The well approved under Water Permit No. 8463-3 will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner, under these Permits shall control withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8463-3 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. 8463-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 120 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.

See report on application for additional information.

Eric Gronlund, Chief Engineer
February 8, 2021

REPORT TO THE CHIEF ENGINEER
WATER PERMIT APPLICATION NO. 8463-3
BROOK BYE
FEBRUARY 8, 2021

Water Permit Application No. 8463-3 proposes to appropriate water at a maximum instantaneous diversion rate of 1.78 cubic feet per second (cfs) from the Missouri: Elk Point aquifer. The applicant intends to divert water from a single, 110-foot-deep, well to be located near the center of the SE ¼ Section 35 for irrigation of 120 acres located in the SE ¼ Section 35; all in T93N-R53W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. The site is located in Clay County, approximately 1 mile south of Meckling, SD.

AQUIFER: Missouri: Elk Point (M: EP)

Aquifer Characteristics

The Missouri: Elk Point aquifer is a deposit of glacial outwash composed of fine sand to very coarse gravel (Niehus, 1994). It underlies approximately 219,100 acres of Yankton, Clay, and Union counties (Figure 1) with an estimated 3,287,100 million acre-feet of recoverable water in storage (Hedges et al., 1982). It is hydraulically connected to the Lower Vermillion Missouri and Lower James Missouri aquifers, and the Missouri, Vermillion, and Big Sioux Rivers (Niehus, 1994; Stephens, 1967). Both confined and unconfined groundwater conditions are present in the aquifer (Niehus, 1994; Stephens, 1967). The movement of groundwater within the aquifer is generally from the northwest to the southeast, and towards the Missouri River (Stephens, 1967).

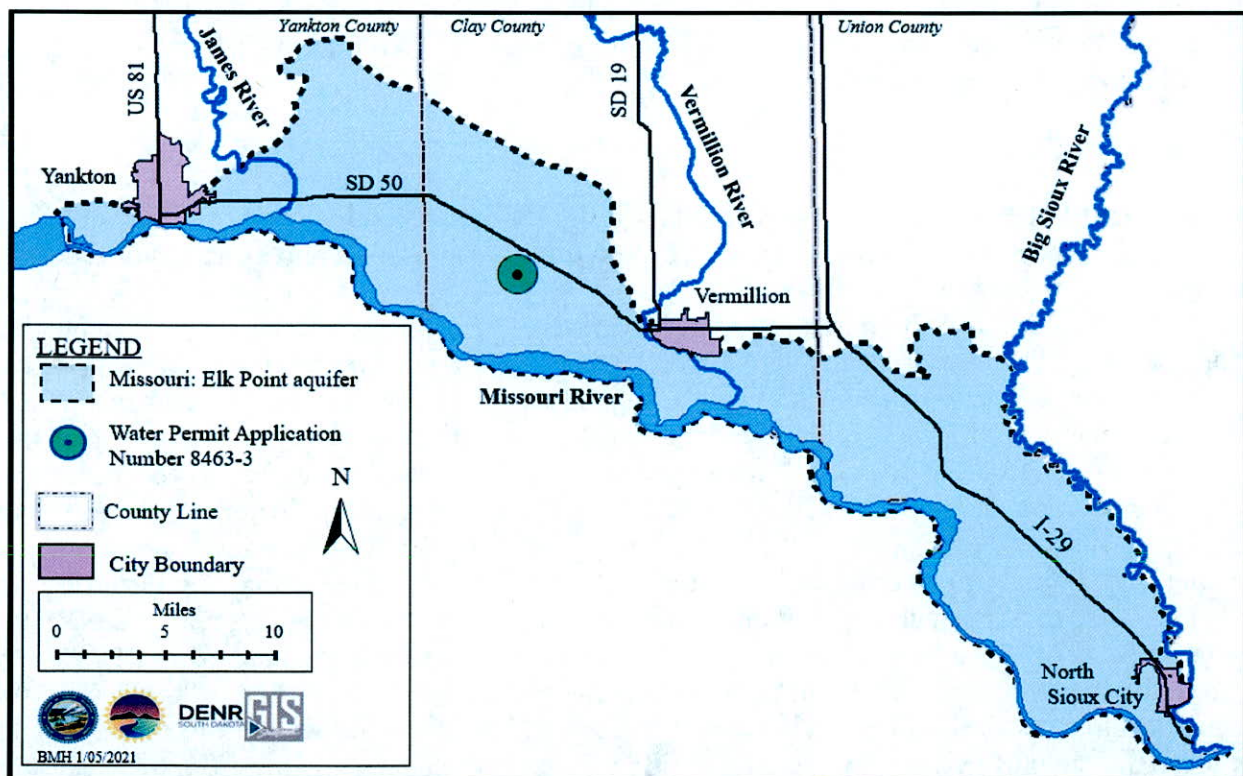


Figure 1. Water Permit Application No. 8463-3 shown within the Missouri: Elk Point aquifer boundary (modified from: Hedges et al., 1982).

There are several water rights within the vicinity of the proposed application site. Water well completion reports show an average of 59 feet of silty, sandy clay overlying sand with gravel layers to an average depth of 104 feet. (Water Rights, 2021a). With the static water level, during the time of drilling at an average of 19 feet below ground surface, this indicates that the proposed site is under confined conditions and has an average of 40 feet of artesian head pressure near the proposed application (Water Rights, 2021a).

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 reasonable probability that there is unappropriated water available for the applicant's proposed use, that the proposed diversion can be developed without unlawful impairment of existing rights, and that the proposed use is a beneficial use and in the public interest. This report will address water availability and potential for unlawful impairment of existing water rights within the Missouri: Elk Point aquifer.

WATER AVAILABILITY

Water Permit Application No. 8463-3 proposes to appropriate water from the Missouri: Elk Point aquifer. The probability of unappropriated water being available from an 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..." If the source of the water is older or lower than the Greenhorn Formation and a water distribution system has applied for a permit, the Board need not consider the balance of recharge to and withdrawal from the aquifer. For this application, a water distribution system is not involved, and the aquifer is not older or lower than the Greenhorn Formation, therefore the balance of recharge and withdrawal must be considered.

Hydrologic Budget

Recharge:

The Missouri: Elk Point aquifer is recharged by infiltration of precipitation where the aquifer is at or near the land surface, inflow from the Lower Vermillion-Missouri and Dakota aquifers, and seepage from the Missouri, Vermillion, James, and Big Sioux Rivers (Bugliosi, 1983; Niehus, 1994). Recharge to the aquifer was estimated by Hedges et al. (1985) to be approximately 3.8 inches per year. With the aforementioned areal extent of the aquifer estimated at 219,100 acres, the annual recharge rate can be estimated at 69,382 acre-feet/year (ac-ft/yr). Stephens (1967) noted that pumping of the aquifer will induce recharge from the Missouri River. Stonesifer (2013) estimated that the Missouri River contributed 22,582 ac-ft/yr of recharge due to the pumping operation of the Lewis and Clark Rural Water System. This estimate is based off inducing at least 50% recharge of the water pumped currently and at full development of the existing and future use permits held by Lewis & Clark RWS. Depending on location and diversion rate, this percentage of induced recharge is likely to be much greater than 50% (Mathiowetz, 2020). This results in a total estimated annual recharge of approximately 92,000 ac-ft/yr for the Missouri: Elk Point aquifer with the recognition that as Lewis & Clark RWS further develops, they will likely induce more recharge. There are other wells, both domestic and appropriative, in close vicinity of the Missouri River that can induce recharge from the river, but that amount of induced recharge has not been quantified.

Discharge:

Discharge from the Missouri: Elk Point aquifer occurs through evapotranspiration in areas where the aquifer is near land surface, well withdrawals, leakage to the underlying Dakota aquifer and outflow to the Missouri and Big Sioux Rivers (Bugliosi, 1983; Niehus, 1994). Currently, there are a total of 621 water rights/permits, consisting of 39 non-irrigation, 577 irrigation, and 5 future use, appropriating water from the Missouri: Elk point aquifer (Water Rights, 2021a). A summary of non-irrigation water rights/permits with estimated water appropriation are listed in Table 1. The total estimated volume of water to be withdrawn can be determined by assuming that water rights/permits limited by an annual volume will pump the entire volume appropriated annually or that water rights/permits limited by diversion rate will pump at the maximum permitted diversion rate 60 percent of the time.

Table 1. Non-irrigation water rights/permits from the Missouri: Elk Point aquifer with permitted appropriation and estimated volume water use (Water Rights, 2021a).

Use ^a	Number of Water Rights/Permits	Appropriation limited by Annual Volume (ac-ft/yr)	Appropriation limited by Diversion Rate (cfs)	Total Estimated Volume (ac-ft/yr)
COM	12	227.0	1.540	896.40
DOM	2		2.780	1,208.40
FWP	4		7.650	3,325.27
IND	5		0.878	381.65
MUN	11	10,686.0	8.330	14,307.72
REC	1	393.3		393.30
RWS	2	32,165.0		32,165.00
SHD	2		0.199	86.50
Total:	39	43,471.3	21.377	52,764.24
a - COM: Commercial; DOM: Domestic; FWP: Fish and Wildlife Propagation; IND: Industrial; MUN: Municipal; REC: Recreational; SHD: Suburban Housing Development				

There are thirteen non-irrigation permits that are required to report their annual use from the Missouri: Elk Point aquifer. Five of these are under development so their systems are not currently using water. Their combined appropriation, a total of 1027 ac-ft/yr, will be included in the total annual volume estimate. Water Right No. 8147-3, a commercial use permit limited by an annual volume of 160 ac-ft/yr, has reported numbers at or above its authorized appropriation. Therefore, its full authorized annual appropriation will be included in the total annual volume estimate. The reported annual usage of the remaining seven permits, from 2006 to present, are shown in Table 2.

The Clay Rural Water System has two permits, 5998A-3 (2.22 cfs) and 7388-3 (2.0 cfs), which are authorized to withdraw an estimated total of 1,834 ac-ft/yr, assuming a 60 percent pumping rate. The reported average pumping is 261 ac-ft/yr. However, beginning in 2012, a significant increase in pumping has been reported from these permits. The average for the reported pumping between 2012-2019 is considered more reflective of the infrastructure currently in place. Therefore, a value of 314 ac-ft/yr will be included in the total annual volume estimate. Lewis and Clark Rural Water System appropriates 32,165 ac-ft/yr from Water Permit Nos. 6736-3 (20,165 ac-ft/yr) and 7207-3 (12,000 ac-ft/yr). Even though the average reported pumping rate is 12,678 ac-ft/yr, this system is continually undergoing development, as a result, their full authorized appropriation of 32,165 ac-ft/yr will be the value included in the total annual volume estimate. The City of Vermillion has reported consistent pumping volume therefore, the average value of

1,192 ac-ft/yr will be included in total annual volume estimate. The City of Yankton is authorized 6,050 ac-ft/yr of water under Water License No. 8212-3. Its reported usage is increasing so the full authorized value will be included in the total annual volume estimate. Summing all the non-irrigation permits yields a value of 40,908 ac-ft/yr. This refines the total volume estimate from Table 1 to 50,201 ac-ft/yr as the value included in the water balance for non-irrigation permits.

Table 2. Non-irrigation pumpage, 2006 – 2019, from the Missouri: Elk Point aquifer (Water Rights, 1979-2019a).

Permit holder	Clay RWS ^a	Lewis & Clark RWS	City of Vermillion ^b	City of Yankton ^b
Permit Number	5998A-3, 7388-3	6736-3, 7207-3	147-3, 6236-3	8212-3
2006	170		1,252	
2007	217		1,344	
2008	213		1,199	
2009	215		1,140	
2010	183		1,071	
2011	137	92	1,127	
2012	525	3,836	1,317	
2013	301	9,368	1,183	
2014	307	11,532	1,121	
2015	278	15,591	1,161	
2016	231	17,091	1,175	66
2017	276	18,051	1,215	531
2018	305	18,143	1,168	504
2019	292	20,397	1,215	1,370
Reported Average (ac-ft/yr):	261	12,678	1,192	618
Total Average (ac-ft/yr):	12,939		1,810	
a - RWS: Rural Water System				
b - These are Municipal use permits				

Well withdrawals from the Missouri: Elk Point are primarily for irrigation use. Table 3 shows the historic irrigation water use from the aquifer as reported to the DENR-Water Rights Program through annual irrigation questionnaires. The average annual reported pumping is 18,857.75 ac-ft/yr (Water Rights, 1979-2019b). However, this is not reflective of the increased pumpage from recent development. Stonesifer (2013) and Farmer (2018a) developed a method to estimate the average annual use from irrigation that accounts for an increasing issuance of water rights/permits and applies the correct allowance for appropriation per permitted acre when it was reduced, in 1978, from 3 ac-ft to 2 ac-ft. Farmer (2018a) determined that an average application rate of 0.35 feet per permitted acre can be utilized to estimate annual use for irrigation.

Currently, there are 577 water rights/permits for irrigation with 75,520.5 total permitted acres for irrigation (Water Rights, 2021a). Farmer (2018b) further refined estimating average annual use by considering the different application rates between turf and crop irrigation. Turf irrigation should be determined separately because they tend to utilize their full authorized allowance for appropriation. Table 4 shows the permits that are considered turf irrigation with the appropriation amount determined from the permitted acres, multiplied by either 2 or 3 ac-ft as specifically allowed for each permit. A value of 1,877.7 ac-ft/yr will be included in the total volume estimate for turf irrigation. Subsequently, the calculation for estimated annual use requires adjustment be-

Table 3. Historic irrigation pumpage from the Missouri: Elk Point aquifer (Water Rights, 1979-2019b).

Year	Number of Permits Reporting	Appropriation (acre-feet/year)	Pumpage (acre-feet/year)
1979	265	124,828.0	10,377.00
1980	267	126,362.0	15,205.00
1981	302	136,318.0	14,233.00
1982	272	123,559.3	18,822.35
1983	274	121,895.7	10,834.04
1984	283	126,743.4	9,194.30
1985	284	125,068.5	13,983.50
1986	288	125,842.5	6,451.60
1987	282	124,104.3	13,439.70
1988	283	124,014.1	28,756.35
1989	294	126,847.3	25,941.90
1990	297	127,965.7	19,425.00
1991	300	126,471.7	18,798.60
1992	295	125,265.7	1,881.95
1993	298	125,576.3	1,475.20
1994	295	122,975.1	10,221.43
1995	292	121,644.3	18,320.24
1996	296	124,606.2	9,412.78
1997	305	126,518.2	17,182.00
1998	313	127,862.6	11,127.24
1999	308	125,225.6	14,748.02
2000	309	124,852.2	26,640.12
2001	313	125,537.4	19,071.88
2002	315	125,555.8	23,547.22
2003	314	125,379.8	26,734.67
2004	322	126,955.8	23,862.25
2005	335	130,046.6	23,964.50
2006	353	136,491.6	27,974.54
2007	366	139,826.6	30,482.84
2008	445	161,640.0	56,538.19
2009	410	155,245.4	6,120.97
2010	419	155,905.4	2,723.87
2011	431	159,700.8	12,107.55
2012	445	161,640.0	56,538.19
2013	543	185,637.7	34,838.46
2014	557	189,492.7	12,084.23
2015	563	191,387.7	17,751.93
2016	564	190,428.8	27,638.64
2017	567	191,366.2	37,013.46
2018	570	191,113.7	8,855.66
2019	575	191,797.2	8,847.29
Maximum:	575	191,797.2	56,528.19
Minimum:	265	121,644.3	1,475.20
Average:	361.2	141,456.0	18,857.75

-cause the acres for turf irrigation need to be removed from the total permitted acres. Subtracting the turf irrigation acres (Table 4) from the total permitted acres yields a value of 74,782.9 acres

for crop irrigation. Applying the 0.35 application rate to the acres for crop irrigation yields approximately 26,174 ac-ft/yr. Summing turf and crop irrigation estimates yields a value of 28,051 ac-ft/yr to be included in the water balance section for irrigation permits.

Table 4. Water rights/permits for irrigation on turf (Water Rights, 2021a).

Permit Number	Name	Acres	Appropriation (ac-ft)
1294-3	Recreation Development Association, Inc.	102.0	306.0
2011-3	Two Rivers Golf Club	95.0	285.0
5786-3	Dakota Dunes Golf Course	173.0	519.0
5935-3	Ted Waitt	1.0	2.0
5936-3	Applied Engineering, Inc.	1.8	3.6
5998-3	Clay Rural Water System, Inc.	300.0	600.0
7225-3	National Field Archery Association	2.0	4.0
8010-3	Ryan Rusher	2.5	7.5
8029-3	Dakota Dunes Community Improvement District	17.8	35.6
8040-3	Heine Electric & Irrigation, Inc.	1.0	2.0
8354-3	Two Rivers, Inc.	30.0	90.0
8380-3	National Field Archery Association	7.0	14.0
8407-3	Gayville-Volin School District 63-1	4.5	9.0
Total:		737.6	1877.7

There are five Future Use permits appropriating water from the Missouri: Elk Point aquifer. The full permitted volume authorized from the permits is utilized when estimating the annual volume usage. The future use areas are all in Clay County and composed of 13,000 ac-ft reserved by Lewis and Clark Rural Water System and 1,900 ac-ft reserved by the City of Vermillion. This is a total of 14,900 ac-ft/yr of water reserved for these permits and will be included in the water balance section for future use.

There are numerous domestic wells on file with the Water Rights Program within the Missouri: Elk Point aquifer (Water Rights 2021b). Domestic users are not required to report their annual water usage and their low diversion rates are not considered a significant portion of the hydrologic budget. Additionally, some domestic well may no longer be in use after the development of the rural water system.

Water Balance:

The Missouri: Elk Point aquifer estimated average annual withdrawal rate is 93,152 ac-ft/yr (non-irrigation: 50,201 ac-ft/yr; irrigation: 28,051 ac-ft/yr; future use: 14,900 ac-ft/yr). Estimated average annual recharge is 92,000 ac-ft/yr. The request for an appropriation of 120 ac-ft/yr by this application results in an exceedance of 1,272 ac-ft/yr in withdrawal compared to recharge for this aquifer. However, the amount of induced recharge is likely much greater than currently estimated because the amount of recharge induced by non- Lewis & Clark RWS wells has not been estimated (Mathiowetz, 2020). Moreover, the wells for the Lewis and Clark RWS induce at least 50% of their recharge from the Missouri River and any additional induced recharge by other users remains unquantified. Therefore, there is a reasonable probability additional induced recharge potential exists in this aquifer to meet the estimated exceedance shown in the hydrologic budget plus the withdrawal proposed by this application.

Observation Well Data

Administrative Rule of South Dakota Section 74:02:05:07 requires that the Water Management Board 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.

The DENR-Water Rights Program monitors 33 observation wells completed into the Missouri: Elk Point aquifer (Water Rights, 2021c). The hydrographs for observation wells within six miles of Water Permit Application No. 8463-3 are shown in Figures 2 through 4. They are representative of the hydrographs for the other observation wells completed in the vicinity of the proposed application. The hydrographs show the water level of the aquifer is relatively stable over the period of record. They indicate that the aquifer responds well to climatic conditions with rising water levels during wet periods and declining water levels during drier periods. They also demonstrate that any drawdowns from pumping are temporary because the water levels typically recover to pre-pumping levels after the irrigation season. The observation well hydrographs show a gradual downward trend due to entrenchment of the Missouri River, below Gavin's Point Dam in Yankton, SD, lowering the water surface elevation of the river (Goodman, 2007). This results in a lowering of water levels in the hydraulically connected aquifer as water level in the aquifer equilibrates to the lower average water surface elevation of the river. Therefore, downward trends are likely caused by the entrenchment of the Missouri River and not from over-appropriation of the Missouri: Elk Point aquifer (Mathiowetz, 2020).

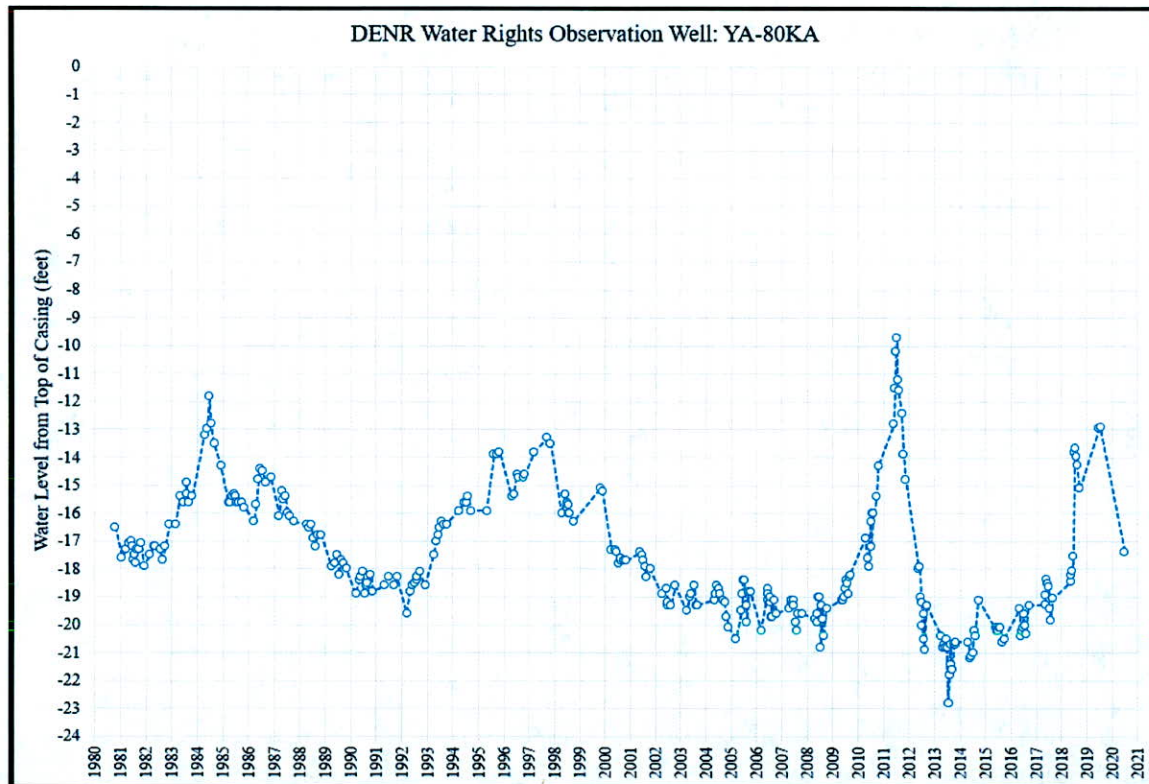


Figure 2. Hydrograph for observation well YA-80KA. It is approximately 6.0 miles west of the proposed well location for Water Permit Application No. 8463-3 (Water Rights, 2021c).

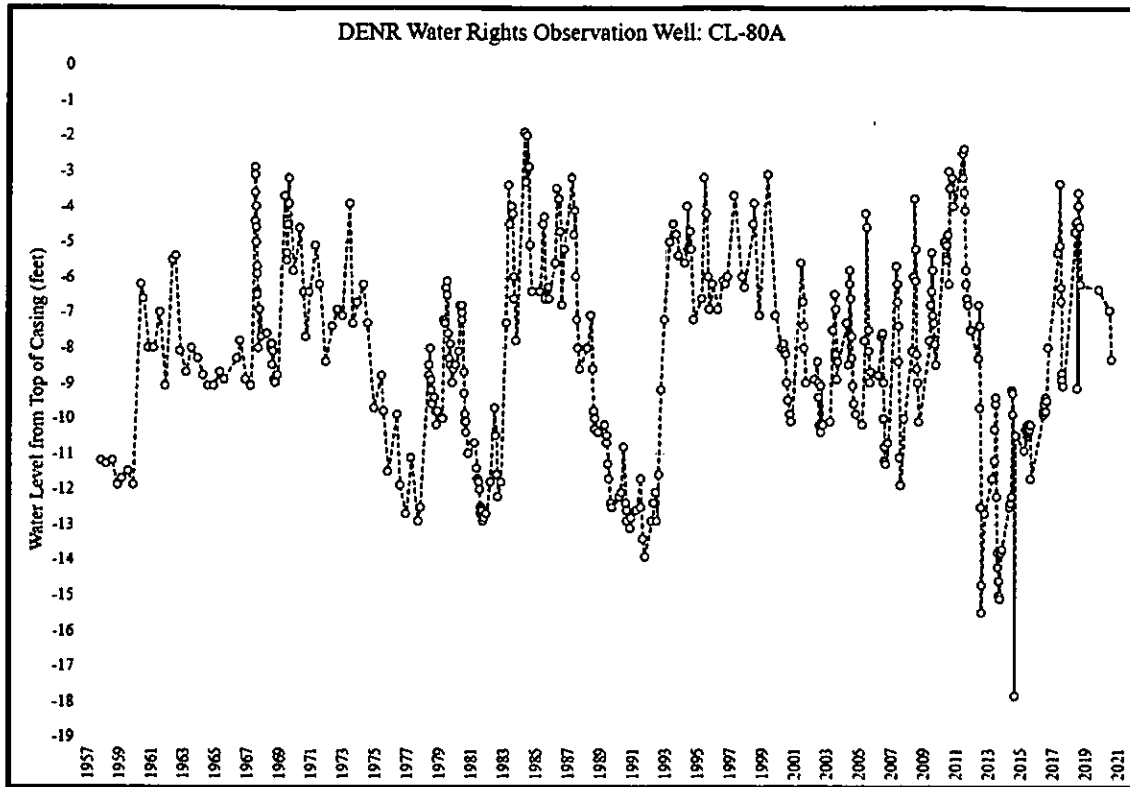


Figure 3. Hydrograph for observation well CL-80A. It is approximately 4.0 miles north of the proposed well location for Water Permit Application No. 8463-3 (Water Rights, 2021c).

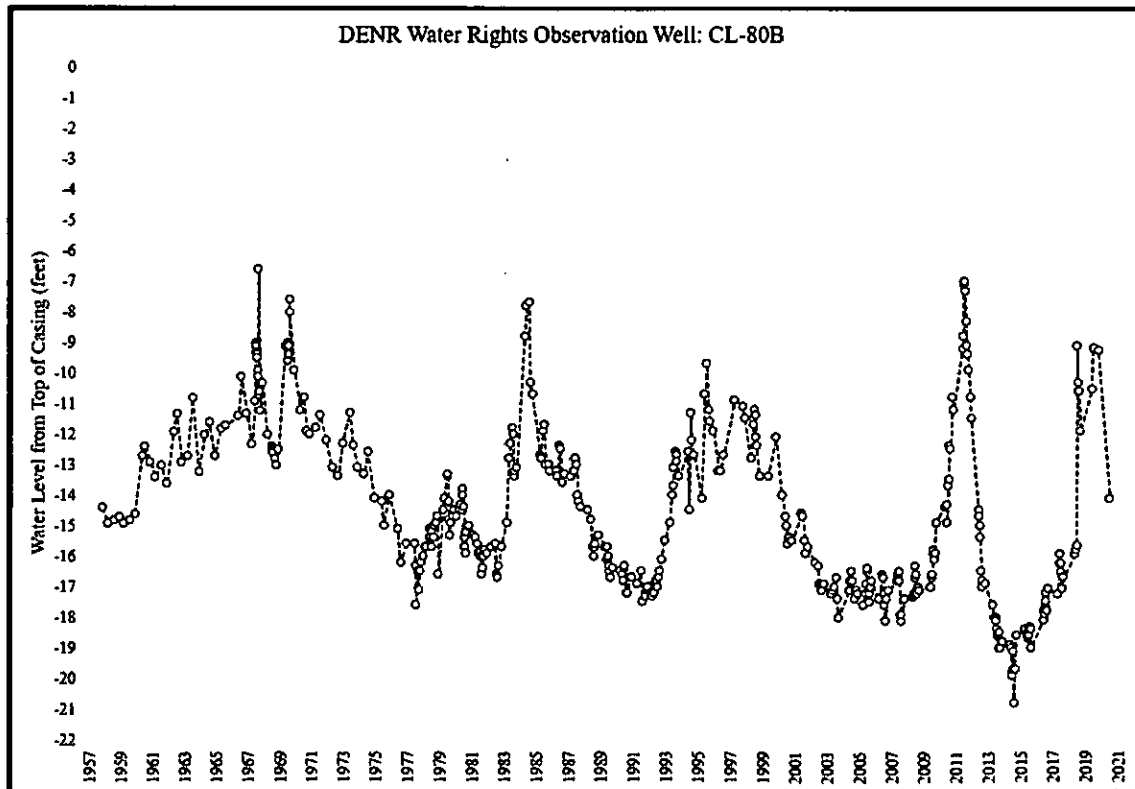


Figure 4. Hydrograph for observation well CL-80B. It is approximately 2.9 miles southwest of the proposed well location for Water Permit Application No. 8463-3 (Water Rights, 2021c).

The U.S. Geological Survey (USGS) operates stream flow gaging station No. 06467500, on the Missouri River at Yankton, SD. Comparing the hydrograph for this gage (Figure 5) to the observation well hydrographs of the Missouri: Elk Point aquifer (Figures 2–4), show both the river and the aquifer react to climatic conditions by rising and falling in a similar fashion. Furthermore, during flood events, as particularly shown in 2011, the water level in the aquifer, especially closer to the Missouri River, rises very quickly beyond what is typically seen for glacial outwash aquifers. This indicates there is hydraulic connection between the aquifer and the river. This means that when the elevation of the water in the river is greater than the aquifer, the river recharges the aquifer. Conversely, when the elevation of the water is higher in the aquifer, the aquifer naturally discharges to the river. As-a-result, as long as there is water in the river, there will be water in the aquifer and there is a reasonable probability unappropriated water is available for this proposed appropriation.

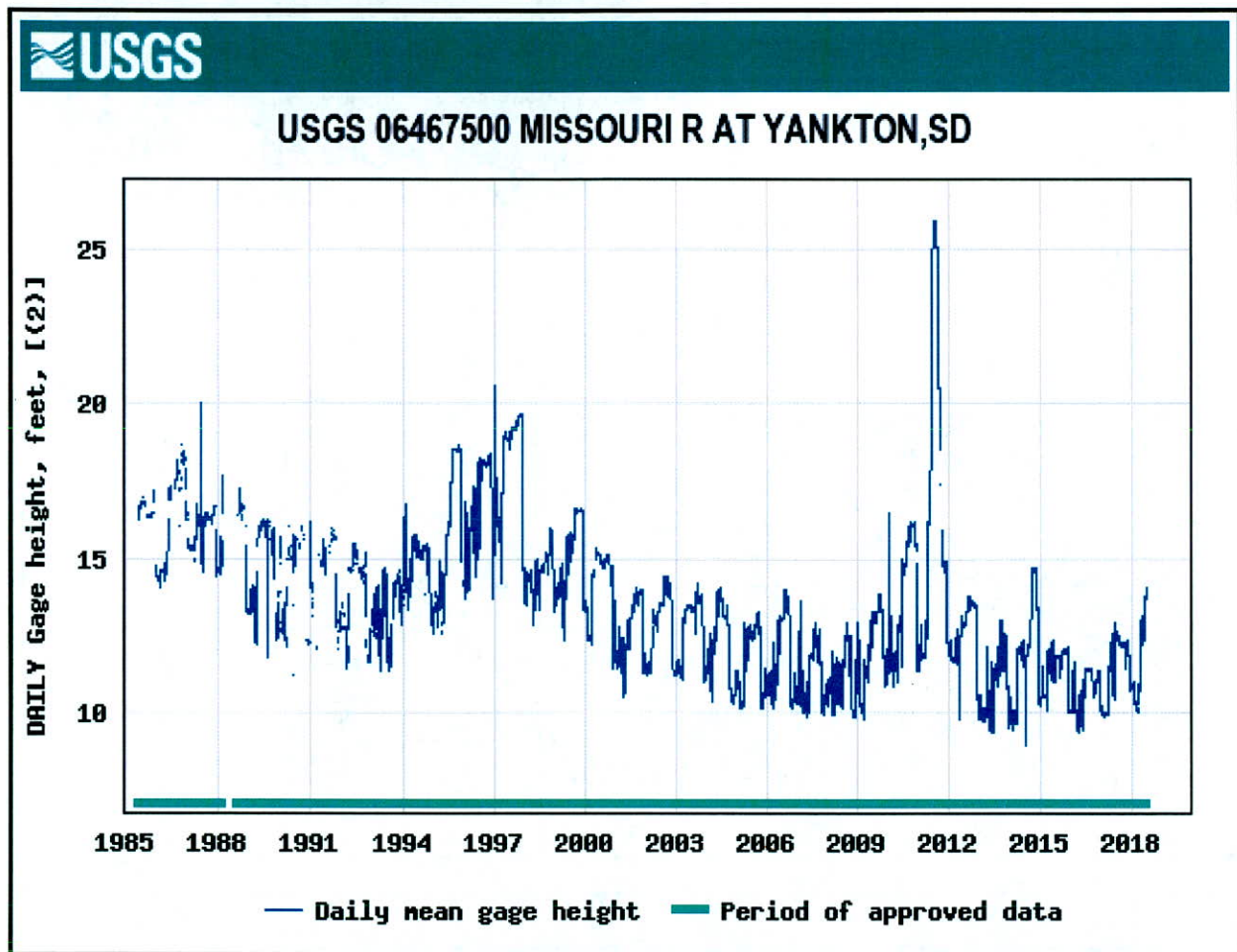


Figure 5. Hydrograph for USGS Stream Gage 06467500 Missouri River at Yankton, SD (USGS, 2021).

POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS

Currently, there are a total of 621 water rights/permits appropriating or reserving water from the Missouri: Elk point aquifer (Water Rights, 2021a). Table 5 lists the water rights/permits shown in Figure 6 within 3 miles of the proposed well location.

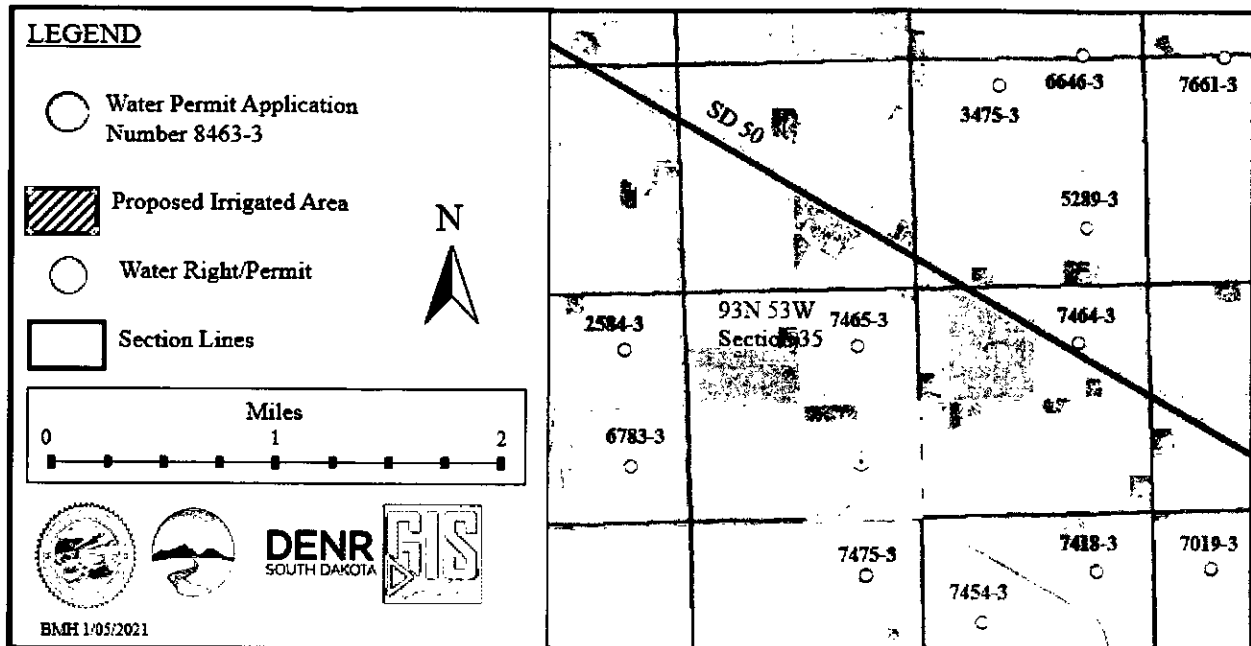


Figure 6. Existing Missouri: Elk Point aquifer water rights/permits in the vicinity of Water Permit Application No. 8463-3 (modified from Hedges, et al., 1982; Water Rights 2021a).

Table 5. Water rights/permits shown in Figure 2 (Water Rights, 2021a).

Permit Number	Name	Rate (cfs)	Acres	Status ^a	Use ^a
2584-3	Freeburg Limited Partnership	3.74	262	LC	IRR
3475-3	DA Olson & Sons	1.03	72		
5289-3	DA Olson & Sons	1.66	116		
6646-3	Freeburg Limited Partnership	1.90	271		
6783-3	DA Olson & Sons	1.78	132		
7019-3	Brooke Bye	1.56	132		
7418-3	Brooke Bye	1.50	105		
7454-3	Douglas Bye	1.78	156		
7464-3	DA Olson & Sons	1.00	78		
7465-3	DA Olson & Sons	1.78	133		
7475-3	Douglas Bye	1.67	131		
7661-3	Freeburg Limited Partnership	5.44	402		
a - LC: Licensed Water Right; IRR: Irrigation					

There are numerous domestic wells on file with the Water Rights Program with the closest being approximately 3.5 miles northwest of the proposed well site (Water Rights 2021b). Users in the vicinity of the proposed application are likely using water provided by the Clay Rural Water System. Nevertheless, when considering the large amount of artesian head pressure (40 feet) and saturated thickness of the aquifer in this area, domestic users with adequate wells are not anticipated to be adversely impacted by the pumping proposed for this application. Even though there are high capacity wells in the Missouri: Elk Point aquifer, there has not been a history of well interference complaints due to pumping (Water Rights, 2021d).

To protect domestic well users, 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 Findings of Facts and Conclusions of Law that noted the reservation of artesian head pressure for delivery of water is 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 considered as an unlawful impairment, it conflicts with SDCL 46-1-4 (Water Rights, 1995). Consequently, some existing well owners may need to lower their pumps due to deeper water levels depending on the specific characteristics of the Missouri: Elk Point aquifer at their location; particularly since the aquifer is under confined conditions near the proposed diversion point for this application. Nearby adequate wells are not expected to be adversely impacted as defined in ARSD 74:02:04:20(7). Furthermore, the majority of the Missouri: Elk Point aquifer is under unconfined conditions. In an unconfined aquifer, drawdown from pumping is generally not significant far from the well. Therefore, unconfined conditions near the proposed well site would minimize potential well interference from drawdown. Nevertheless, if this application is approved, the water permit should include a qualification that the well owner should control their withdrawals so there is not a reduction of water for adequate domestic wells or for adequate wells having prior water rights.

When considering the large amount of artesian head pressure, saturated thickness of the aquifer in this area, the hydrographs of nearby observation wells not showing detrimental impact of pumping and, the lack of well interference complaints due to pumping, there is reasonable probability that the proposed diversion can be developed without unlawfully impairing existing appropriative or domestic water users with adequate wells.

SDCL 46-5-6:

Pursuant to SDCL 46-5-6, the diversion rate for an irrigation appropriation cannot be in excess of one cfs for every 70 acres, or “the equivalent thereof.” The statute does provide that: “The Water Management Board may allow a greater diversion, in volume or rate or both, if the method of irrigation, any time constraints on diversion of water, or the type of soil so requires. However, no annual volume may be greater than three acre-feet per acre delivered to the land.” Water Permit Application No. 8463-3 proposes to divert water at a maximum instantaneous diversion rate of 1.78 cfs for the irrigation of 120 acres or at a rate of 1.04 cfs per 70 acres. The applicant did not provide a reason for the exceedance however, the proposed pivot layout shows the pivot center offset to the south from the actual center of the section. This is possibly due to the presence of

buildings and a grove in the northwest quarter that is not a portion of this irrigation effort. The smaller pivot requires a greater flow rate to deliver water to the proposed acreage. This type of reason has been accepted by the Water Management Board in past.

CONCLUSIONS:

1. Water Permit Application No. 8463-3 proposes to appropriate water at a maximum instantaneous diversion rate of 1.78 cubic feet per second, from a single, 110-foot deep well, out of the Missouri: Elk Point aquifer.
2. Based on the hydrologic budget, including consideration of the potential for induced recharge in this aquifer and observation well data with consideration of the Missouri River entrenchment issue, there is reasonable probability unappropriated water is available for this proposed application.
3. There is a reasonable probability the diversion proposed by this application can be made without unlawfully impairing existing appropriative or domestic users with adequate wells.
4. Application No. 8463-3 has requested a diversion rate in excess of the statutory limit of one cfs per 70 acres. The applicant did not provide a reason however, the proposed pivot layout indicates a smaller pivot will require an increased diversion rate to achieve the irrigation requirements. This reason has been accepted by the Water Management Board in the past.



Blaise Hansen
SD DENR – Water Rights Program

Reviewed By:



Adam Mathiowetz
SD DENR-Water Rights Program

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Water Rights. 2021b. *Well Completion Reports*. SD DENR-Water Rights Program, Joe Foss Building, Pierre, SD.

Water Rights. 2021c. *Observation Well Files*. SD DENR-Water Rights Program, Joe Foss Building, Pierre, SD.

Water Rights. 2021d. *Clay County Files*. SD DENR-Water Rights Program, Joe Foss Building, Pierre, SD.

AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

RECEIVED

MAR 15 2021

WATER RIGHTS
PROGRAM

BROOK BYE
31472 458TH AVE
VERMILLION SD 57069

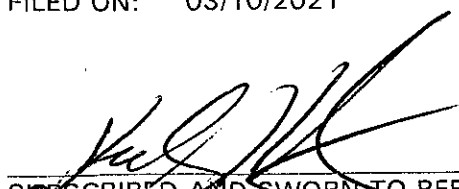
STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

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
3 + 10 NOTICE OF APPLICATIO

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 10th DAY OF March, 2021
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT \$24.59 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: 03/10/2021

FILED ON: 03/10/2021


SUBSCRIBED AND SWORN TO BEFORE ME THIS 10th DAY OF March, 2021


NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 07/04/2026

Ad text : 3+10

NOTICE OF APPLICATION NO. 8463-3 to Appropriate Water

Notice is given that Brook Bye, 31472 458th Ave, Vermillion SD 57069 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Missouri:Elk Point Aquifer (110 feet deep) located near the center of the SE 1/4 Section 35 for irrigation of 120 acres located in the SE 1/4 Section 35; all in T93N-R53W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately one mile south of Meckling SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8463-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineers recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352) and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by March 22, 2021.

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

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

Published once at the total approximate cost of \$24.59

AFFIDAVIT OF PUBLICATION

PLAIN TALK

RECEIVED
FEB 25 2021
WATER RIGHTS
PROGRAM

BROOK BYE
31472 458TH AVE
VERMILLION SD 57069

STATE OF SOUTH DAKOTA
COUNTY OF CLAY

JACKIE LAMMERS, BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT (S)HE IS THE CLASSIFIED MANAGER 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 19th DAY OF February, 2021
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT \$24.15 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: 02/19/2021

FILED ON: 02/19/2021

Jackie Lammers

SUBSCRIBED AND SWORN TO BEFORE ME THIS 19th DAY OF February, 2021

Cassandra Berlin

NOTARY PUBLIC, SOUTH DAKOTA

MY COMMISSION EXPIRES 07/04/2026

Ad text : NOTICE OF APPLICATION NO. 8463-3 to Appropriate Water

Notice is given that Brook Bye, 31472 458th Ave, Vermillion SD 57069 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Missouri:Elk Point Aquifer (110 feet deep) located near the center of the SE 1/4 Section 35 for irrigation of 120 acres located in the SE 1/4 Section 35; all in T93N-R53W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately one mile south of Meckling SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8463-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineers recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

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

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

Published once at the total approximate cost of \$24.15.

Published February 19, 2021.



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

March 9, 2021

Brook Bye
31472 458th Ave
Vermillion SD 57069

Dear Mr. Bye:

Regarding your Water Permit Application No. 8463-3, I have talked with Jackie from the Press & Dakota printed in Yankton. She indicated your Notice was not published on February 19, 2021 in the Press & Dakota. The notice is now scheduled to be published on March 10th. The date for anyone to file a petition will be March 22, 2021.

The Notice was published in the Plain Talk printed in Vermillion and we have received the affidavit.

If you have questions, please give me a call.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
(605) 773-3352

enclosures

NOTICE OF APPLICATION NO. 8463-3 to Appropriate Water

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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_

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, March 9, 2021 8:52 AM
To: Jackie Lammers (jackie.lammers@yankton.net)
Subject: 8463-3, Brook Bye
Attachments: 8463-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on March 10, 2021.

Brook Bye, 31472 458th Ave, Vermillion SD 57060 (605 670-9132) is responsible for payment.

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

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

Karen Schlaak
Water Rights Program
(605) 773-3352



Schlaak, Karen

From: Schlaak, Karen
Sent: Monday, February 8, 2021 11:44 AM
To: Jackie Lammers (jackie.lammers@yankton.net)
Subject: 8463-3, Brook Bye
Attachments: 8463-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on February 19, 2021.

Brook Bye, 31472 458th Ave, Vermillion SD 57069 (605 670-9132) has been notified to contact you to authorize publication and arrange for payment.

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

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

Karen Schlaak

Water Rights Program
(605) 773-3352



*Jackie called 3/9/21 have
stated she does not record
of receiving this email,
so notice was not published
in Press & Dakotan.*

*I resent Notice to be
published March 10th*

Schlaak, Karen

From: Schlaak, Karen
Sent: Monday, February 8, 2021 11:43 AM
To: 'classifieds@plaintalk.net'
Subject: 8463-3, Brook Bye
Attachments: 8463-3public.short.docx; FORM8.FRM.doc

Attached is a notice to be published on February 19, 2021.

Brook Bye, 31472 458th Ave, Vermillion SD 57069 (605 670-9132) has been notified to contact you to authorize publication and arrange for payment.

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

Karen Schlaak

Water Rights Program
(605) 773-3352





DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

February 8, 2021

Brook Bye
31472 458th Ave
Vermillion SD 57069

Dear Mr. Bye:

Water Permit Application No. 8463-3 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 at Vermillion SD (Ph # 605 624-2695) and the Press & Dakotan printed at 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,

Karen Schlaak

Karen Schlaak
Water Rights Program
(605) 773-3352

enclosures

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

NOTICE OF APPLICATION NO. 8463-3 to Appropriate Water

Notice is given that Brook Bye, 31472 458th Ave, Vermillion SD 57069 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Missouri:Elk Point Aquifer (110 feet deep) located near the center of the SE 1/4 Section 35 for irrigation of 120 acres located in the SE 1/4 Section 35; all in T93N-R53W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres. This site is located approximately one mile south of Meckling SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8463-3 with qualifications because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by March 1, 2021.

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

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

Published once at the total approximate cost of_



DENR
SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

APR 08 2021

Brook Bye
31472 458th Ave
Vermillion SD 57069

Dear Mr. Bye:

Enclosed is Water Permit No. 8463-3 authorizing construction of the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

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

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

Sincerely,

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

enclosure

8463-3
RECEIVED

JUN 10 2021

WATER RIGHTS
PROGRAM**NOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USE**Date 6-8-2021TO: Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

FROM:

Brook Bye
(name)
31472 458th Ave.
(address)
Vermillion S.D. 57069 605-670-9132
(city, state, zip) (phone)

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

Water Permit No. 8463-3 states that the water use system is to be constructed by 3/22/2026, and water is to be put to beneficial use by 3/22/2030.
(date) (date)

The water use system was completed on 5/5/2021.
(date)

Applying the water to beneficial use was completed on 6/3/2021.
(date)

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

Brook Bye
(signature)





**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

June 15, 2021

8463-3

Brook Bye
31472 458th Ave
Vermillion SD 57069

Dear Mr. Bye:

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

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

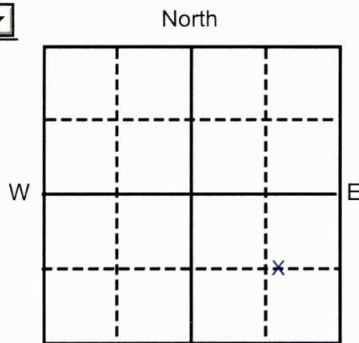
Someone from our office will contact you prior to the inspection to set up a time that is convenient for you. If you have any questions, please contact me.

Sincerely,

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

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE 1/4 SE 1/4 Sec 35 Twp 93 Rg 53County CLAYPlease mark well
location with an "X"

Well Completion Date

04/01/2021

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?
>1200 ft. from SEPTIC TANK (identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

REVERSE ROTARY

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	<u>16</u> IN	<u>0</u> FT	<u>80</u> FT	<u>22</u> IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
<u>BENTONITE</u>	<u>28</u>	<u>9.4</u> Lb/gal	<u>6</u> Ft	<u>65</u> Ft
		Lb/gal	Ft	Ft

Describe grouting procedure

TREMIE METHOD

SCREEN:

☐ Perforated pipe ☒ Manufactured
Diameter 16 Inches Length 29 FeetMaterial PVCSlot Size .085 Set From 80 Feet to 100 FeetOther information .050 100 to 109WAS A PACKER OR SEAL USED? ☐ Yes ☒ No

If so, what material?

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? HTH TABLETS☐ No, Why Not?Lab to which water
quality sample sent for analysisWell Owner: BROOKE BYE

Business Name:

Address: 31472 458TH AVECity, State, Zip: VERMILLION ☒ SD ☒ 57069

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
TOP SOIL	0'	3'
SANDY BROWN CLAY	3'	22'
FINE SAND	22'	45'
SANDY CLAY	45'	58'
SAND/GRAVEL/ SMALL ROCKS	58'	110'

STATIC WATER LEVEL 20 FEET

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____ GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:
☐ Bailed
☐ Other

Pumping Level Below Land Surface

_____ Ft. After _____ Hrs. pumped _____ GPM

_____ Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

42°49'32.9" N
97°03'59.0" W
This well was drilled under license # 810 and this report is true and accurate.Drilling firm: HEINE ELECTRIC AND IRRIGATION

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder

RECEIVED

MAY 21 2021

Date: 4/16/21WATER RIGHTS
PROGRAM



8463-3
DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES
JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

JUN 16 2023

Brook Bye
31472 458th Ave
Vermillion SD 57069

8463-3

Dear Mr. Bye:

Enclosed is Water License No. 8463-3. 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.

As 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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 8463-3

(1) Brook Bye; 31472 458th Ave, Vermillion SD 57069, made Application No. 8463-3, December 16, 2020, for a water permit to divert 1.78 cubic feet of water per second from groundwater, one well (Missouri: Elk Point Aquifer), Clay County, South Dakota for irrigation purposes. Permit No. 8463-3, with a priority date of December 16, 2020, was approved March 22, 2021, and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before March 22, 2026, and for the application to beneficial use of water on or before March 22, 2030.

(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 1.45 cubic feet of water per second for beneficial use. The location of the diversion point is:

- 1,130 ft W & 1,140 ft N of the SE corner of Section 35, T93N, R53W (SE ¼ SE ¼)
(Latitude 42.82577 Longitude -97.06630)

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

Section 35, T93N, R53W	
NW ¼ SE ¼	18.0 acres
NE ¼ SE ¼	27.0 acres
SW ¼ SE ¼	28.0 acres
SE ¼ SE ¼	37.0 acres
TOTAL: 110.0 acres	

(4) Pursuant to South Dakota Water Law 46-5-30.1 Brook Bye, the holder and/or owner of Water Right No. 8463-3 is issued a license to appropriate water, the right to use 1.45 cubic feet of water per second from groundwater, one well (Missouri: Elk Point Aquifer), with a priority date of December 16, 2020 from the location specified in (2) of this license for irrigation purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 8463-3 and subject to the following qualifications:

1. The well approved under this water right will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this water right shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8463-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with the 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. *(The well was drilled by Heine Electric and Irrigation in 2021. A copy of the well completion report is on file with the Water Rights Program.)*

continued

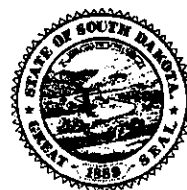
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Water Right No. 8463-3 authorizes a maximum diversion rate of 1.45 cfs for the irrigation of 110.0 acres with an annual volume not to exceed 2 acre feet of water per acre per year. *(The diversion rate was reduced from 1.78 cfs to 1.45 cfs based on the system as developed.)*
4. This Water Right 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

JUN 16 2023

date



**Report of Examination of Works and/or Application of Water to Beneficial Use
For Permit No. 8463-3**

I have this day, September 13, 2022, made a thorough examination of the water use system owned by Brook Bye 31472 458th Ave., Vermillion, SD 57069, holder of Permit No. 8463-3, bearing the priority date of December 16, 2020. This permit authorizes the diversion of 1.78 cu. ft. per second of the waters of groundwater (Missouri: Elk Point Aquifer) authorizing the irrigation of 120 acres located in Clay County.

Inspection contacts: Brook Bye

A. Works used to divert the water:

Well Information

- 1) Well Drilling Firm: Heine Electric & Irrigation
- 2) No. of Wells: 1
- 3) Depth(s): 110 feet
- 4) Well log is available: Yes

Casing:

- 1) Diameter: 16 inches
- 2) Length: 80 feet
- 3) Type: Plastic

Screen:

- 1) Diameter: 16 inches
- 2) Length: 29 feet
- 3) Type: PVC
- 4) Static water level: 20 feet

Pump:

- 1) Make: McDonald
- 2) Model: 650S530HP106
- 3) Capacity: 650 GPM

Motor:

- 1) Make: Unknown
- 2) Model No.: Unknown
- 3) Horsepower rating: 30 hp

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

- 1) Type: Aluminum Size: 8 inches Length: 15 feet

C. Works used to apply water to beneficial use:

Center Pivot:

- 1) Make: Valley
- 2) Overall length: 1,147 feet
- 3) Number of towers: 6
- 4) End gun: Yes
- 5) Capacity: 700 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
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 1,130 feet west and 1,140 feet north of the southeast corner of Section 35-T93N-R53W
Latitude 42.82577, Longitude -97.06630 (SE ¼ SE ¼).
- 2) The works are capable of diverting and conveying to the places of use 1.45 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 35-T93N-R53W

<u>NW ¼ SE ¼</u>	<u>18 acres</u>
<u>NE ¼ SE ¼</u>	<u>27 acres</u>
<u>SW ¼ SE ¼</u>	<u>28 acres</u>
<u>SE ¼ SE ¼</u>	<u>37 acres</u>

comprising a total of 110 acres of land and the license should be issued for 1.45 cfs.

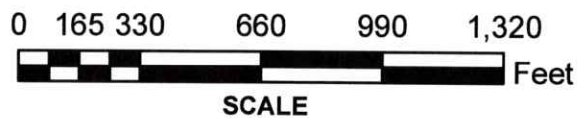
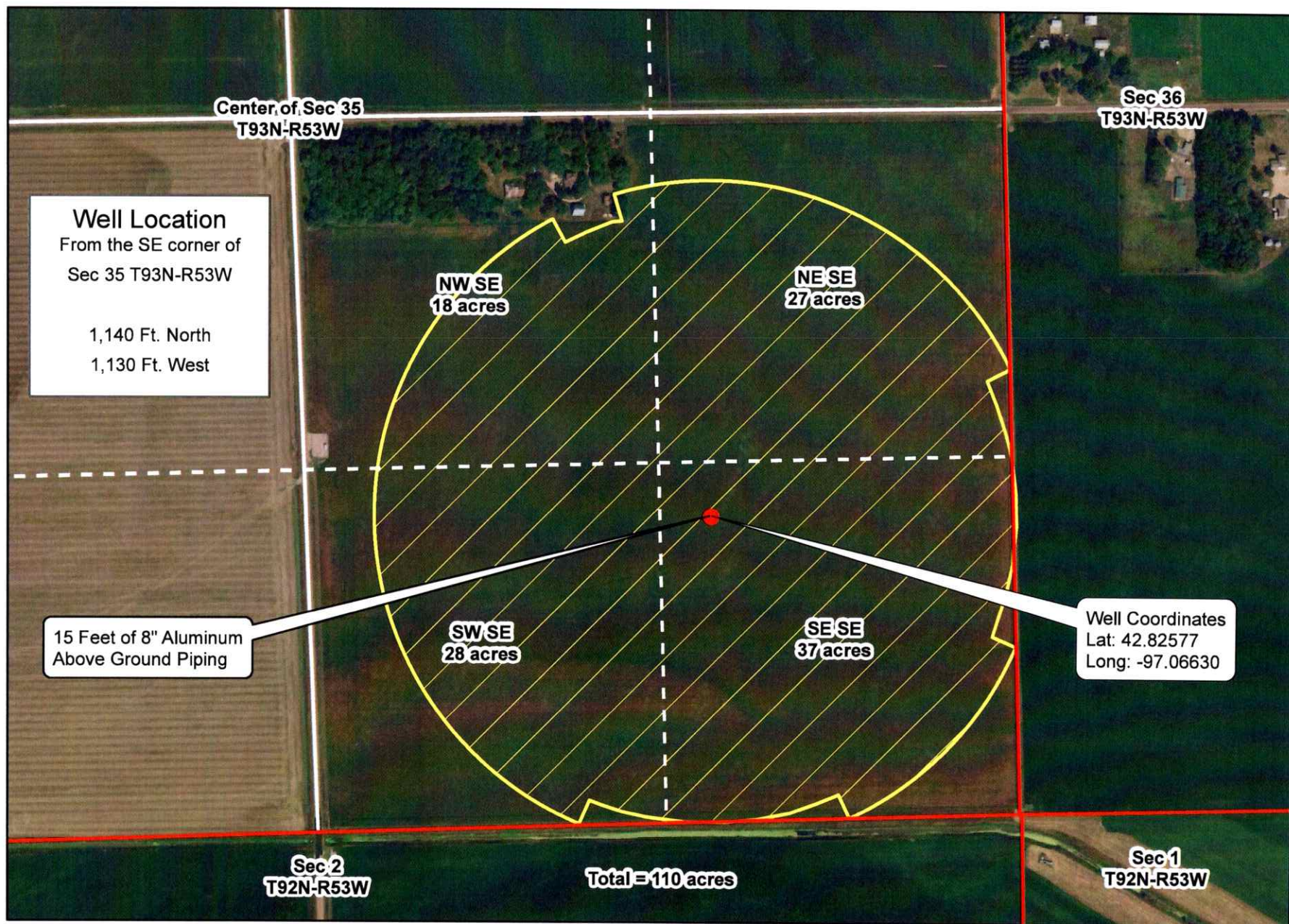
- 3) All structures, wells and lands on map: Yes

F. Comments or other permit(s) associated with the project: None

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

Date report completed: June 6, 2023

Water Permit No. 8463-3



Keith DeJong
Keith DeJong, PE Ret.
Staff Engineer
September 15, 2022