

WATER PERMIT NO. 7817-3

Name of Applicant: **Brian Chicoine**

Address: **32650 480th Ave, Elk Point SD 57025** Phone: **712 251-0061**

Amount of Water Claimed: **1.11 cfs** Total Acres: **45 acres**

Source of Water Supply: **groundwater (one well)**

Water to be used for: **irrigation** County: **Union**

Type of Waste Disposal System:

Location: **5 miles southeast of Elk Point**

PRIORITY Date Received: **2-27-13** Application/License Fee: **\$ 700**

Corrected Application Received: **4-4-13** Period of Annual Use: **May 1 – September 30**

Remarks: **Requesting diversion rate greater than statutory limit**

Diversion Point: **NE 1/4 NE 1/4 Sec 2-T90N-R49W**

Land to be Irrigated: **NE 1/4 NE 1/4 Sec 2-T90N-R49W**

Depth of Well: **116 feet deep**

Well Driller: **Dakota Drilling & Backhoe**

Remarks:

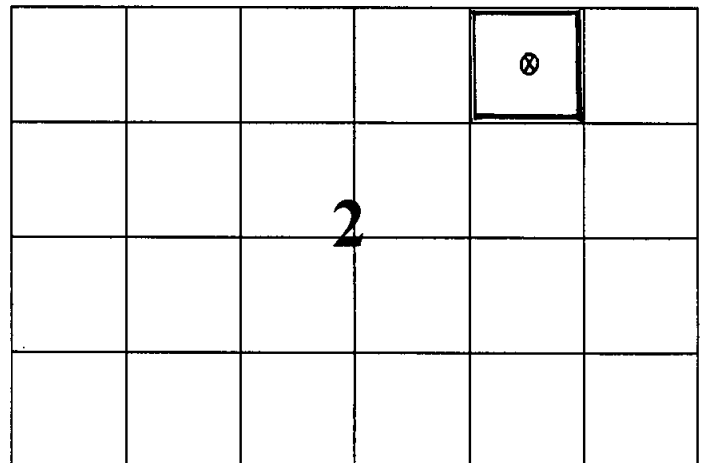
Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **4-4-13**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



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

 Mail to:
 PMB 2020
 DNR - Water Rights
 523 E Capitol Ave
 Pierre, SD 57501-3182
 ph. (605) 773-3352

 No. 7817-3 (office use only)
 Hydrologic Unit 10170101
 Basin Missouri River 605-356-2632
 Newspaper Leader-Examiner Box 310 Elk Point 57025
605-665-
Preso & Dakota 319 Walnut Houston 57078 7811

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FEB 27 2013

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 Brian Chicoine

 (check one) ☐ Owner ☒ Tenant/lessee ☐ Owner's Legal Agent

(name and complete address if different than above name)

 Mailing Address 32650 480th Ave. Elk Point SD 57025
 (Address) (City) (State) (Zip Code)

 Home Phone 605/966-5271 Cell 712/251-0061 Email btchic@evertek.net

 2. Amount of water claimed 1.11 *CFS or 500 **GPM ***AF Total Acreage 45
 (*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

 4. Location of point of diversion 1 well in NE1/4 NE1/4, sec 2, 90N - 49W
 (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

 County Union

 5. County or counties where water will be used Union

 6. Annual period during which water is to be used May - 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
NE1/4, NE1/4, sec 2 90N - 49W	45		

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

116 foot deep, 12 inch diameter well to supply water for center pivot to irrigate row crops.

 I, Brian Chicoine, the applicant, certify that I have read this application,
 have examined the attached map, and that the matters stated are true.

SOUTH DAKOTA
WATER PERMIT NO. 7817-3

Date of first receipt of application February 27, 2013.

Date of return to applicant for corrections, amendments or changes February 28, 2013.

Date of receipt of corrected application April 4, 2012.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7817-3 to Brian Chicoine, 32650 480th Ave, Elk Point SD 57025 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. 7817-3 appropriates 1.11 cubic feet of water per second from one well to be completed into the Missouri:Elk Point Aquifer (116 feet deep) located in the NE 1/4 NE 1/4 Section 2 for irrigation of 45 acres located in the NE 1/4 NE 1/4 Section 2; all in T90N-R49W.
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 February 27, 2013.
4. The date of approval of Permit No. 7817-3 is June 24, 2013.
5. One-fifth of the construction is to be completed on or before December 24, 2015.
6. All construction is to be completed on or before June 24, 2018.
7. Water is to be put to beneficial use on or before June 24, 2022.
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 this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 7817-3 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. 7817-3 authorizes a maximum diversion rate of 1.11 cfs for the irrigation of 45 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

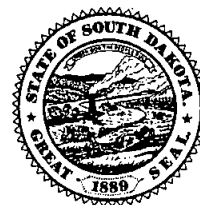
By: *Jeanne Goodman*

Jeanne Goodman, Chief Engineer
Water Rights Program

Department of Environment and Natural Resources

JUL 05 2013

date



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 Dakota Drilling & Backhoe, Inc.
(if yes, please provide copies of logs)

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

c) Well Depth 116 Depth to Top of Water Bearing Material Depth to Water from Surface

d) Distance to nearest existing domestic well:

On applicant's property n/a

On property owned by others 1/2 MILE

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)

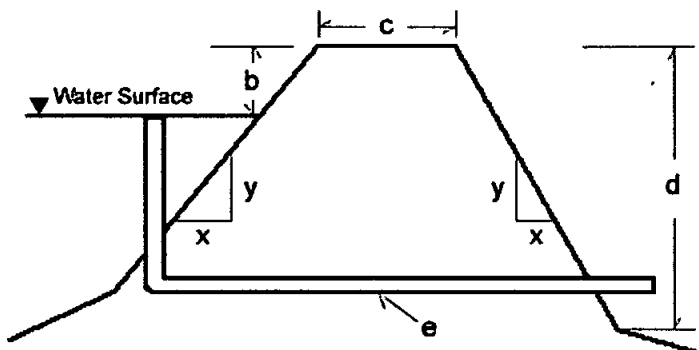
Upstream

Downstream

h) Surface Area of Impoundment

i) Storage Acre Feet

j) Drainage Area Above Dam Acres





United States Department of Agriculture
Farm Service Agency

PLSS: 2_90N_49W
Farm: 3825

Union County

1:8,734



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April 27, 2012

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APR - 4 2013

WATER RIGHTS PROGRAM

- Wetland Determination Identifiers**
- ☒ Restricted Use
 - ☒ Limited Restrictions
 - ☐ Exempt from Conservation Compliance Provisions

Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact wetland boundaries and determinations, or contact NRCS.

Common Land Units

Non Cropland

2010 Ortho-Photography - Not to Scale

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 2/27, 20 13

RECEIVED OF Brian E Chicoine 32650 480th Ave Elk Point SD 57025

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

Fee for Application for Permit No. <u>7817-3</u> to Appropriate Water, to construct and to put water to beneficial use	500	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>7817-3</u>	200	00
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	700 00

No. 06175

By David D. Edwards
Chief Engineer



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

February 28, 2013

Brian Chicoine
32650 480th Ave
Elk Point SD 57025

Dear Mr. Chicoine:

Thank you for submitting the *Application for a Permit to Appropriate Water* for Union County. In order to complete the application, the following is required.

- Enclosed is the aerial photo map submitted with the application. Please outline the 45 acres to be irrigated and mark the proposed well location with an "X".
- Your application requests 500 gallons per minute (gpm). State Statutes limit diversions to 1 cubic feet of water per second (cfs) for each 70 acres irrigated. This would mean that you are allowed approximately 0.64 cfs or 288 gpm to irrigate the total 45 acres. We understand that in order to accommodate certain irrigation methods, a greater diversion rate is required. Please justify in writing your request for a diversion rate greater than the statutory limit (please explain diversion rate requirement for the project).

If you have any questions, please contact me.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
605 773-3352
karen.schlaak@state.sd.us

enclosures

March 29, 2013

Brian Chicoine
32650 480th Ave
Elk Point, SD 57025

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APR - 4 2013

**WATER RIGHTS
PROGRAM**

Karen Schlaak
Water Rights Program
PMB 2020
523 East Capitol
Pierre, SD 57501

Dear Karen:

Please find enclosed an outlined aerial photo of my field with the well location marked, as requested.

As to the issue of my requested gpm: In visiting with Vern Vacock, the well driller, the well will be in the 425 to 450 gpm range. The reason for my request above the state statue is two-fold. The first being soil type. This ground is classified, according to the USDA Soil Survey, as a Forney Silt Clay (FC). This is a very tight, easily compacted, sticky soil when wet. Proper irrigation management means waiting until the top is dry and firm enough to support the weight of the pressurized pivot so as not to ball up the tires and leave deep ruts. When this soil starts to dry out it cracks and can very quickly develop deep and wide fractures/cracks, severing plant roots. Thus irrigation timing is critical. Too early, the pivot gets stuck or at a minimum leaves deep, lasting ruts. Waiting too long, hot air infiltrates the cracks drying the soil further and faster than normal, to a point where excess water is required to fill the soil profile closing the cracks.

The ability to quickly and timely complete an application of an inch of water is paramount. A slow moving pivot (i.e. low gallonage) can not complete a revolution in time to avoid drought stress damage, especially when the hot July & August winds blow. The pass can not simply be started earlier because of the rutting and mud balling issues.

Our family has been irrigating since the mid 1950's. In our experience, a minimum of 400 – 500 gpm rate, which equates to a 72 to 96 hour revolution time, is needed to avoid these problems. On this soil type, this is a manageable minimum, which leads me to my second reason for the requested increase.

We are working with our local Rural Electric Coop through East River Electric on their load management program to conserve electricity and manage demand on the electric grid system. Too small of a well (less than 300 gpm) would require more constant running of the pivot and well to stay ahead of crop water needs. This could only be achieved by not participating in REC's load management program. Non participation greatly increases my cost of electrical power, increasing my cost of production, and affecting the bottom line. It would also place unnecessary demand on the electrical grid system.

Thank you for your consideration of my application and the requested flow rate. If you need additional information please feel free to call me on my cell at 712-251-0061 or email me at btchic@evertek.net.



Brian Chicoine

Water Rights Program - DENR
Conversation File Documentation

NAME OF PERSON OR FILE: Water Permit Application No. 7817-3, Brian Chicoine

ADDRESS: 32650 480th Avenue, Elk Point SD COUNTY: Union

DATE: May 13, 2013 TELEPHONE: cell 712 251 0061

RE: number of acres

I contacted Mr. Chicoine regarding the number of acres to be irrigation by Application No. 7817-3. The application is for 45 acres all within one quarter-quarter section. I said normal a quarter-quarter describes 40 acres. Mr. Chicoine stated that this is a 45 acre quarter-quarter due to this being a correction line section and therefore is oversized.

NAME:

Eric Humlund



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 7817-3, Brian Chicoine**

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. 7817-3, Brian Chicoine, 32650 480th Avenue, Elk Point SD 57025.

The Chief Engineer is recommending APPROVAL of Application No. 7817-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 7817-3 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. 7817-3 authorizes a maximum diversion rate of 1.11 cfs for the irrigation of 45 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.

Jeanne Goodman, Chief Engineer
June 3, 2013

REPORT TO THE CHIEF ENGINEER
ON
WATER PERMIT APPLICATION NO. 7817-3
BRIAN CHICOINE
APRIL 11, 2013

Water Permit Application No. 7817-3 proposes to appropriate water from one well to be completed into the Missouri: Elk Point aquifer at a maximum diversion rate of 1.11 cubic feet of water per second (cfs). The well will be located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 2, T90N-R49W and is expected to be approximately 116 feet deep. This application proposes to irrigate 45 acres located in NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 2, in T90N-R49W in Union County. The applicant is requesting a diversion rate greater than the statutory limit.

AQUIFER: Elk Point management unit of the Missouri aquifer (M:EP)

GEOLOGY AND AQUIFER CHARACTERISTICS:

The Missouri: Elk Point is a surficial aquifer composed of unconsolidated glacial outwash material ranging from fine sand to coarse gravel (Niehus, 1994). The aquifer generally lies below the flood plain of the Missouri River, and also below the flood plain of the Big Sioux River in the southern part of Union County (Niehus, 1994). In places, the aquifer directly overlies and is hydraulically connected to the Dakota aquifer and is hydraulically connected at its northern boundary to the Lower James-Missouri and the Lower Vermillion-Missouri aquifers as well as the Missouri and Vermillion Rivers. Niehus (1994) found the aquifer is also hydraulically connected to the Big Sioux aquifer in the northeast portion of Union County. The proposed well site is located in southern Union County more than three miles west of the Big Sioux River and less than five miles east of the Missouri River. The Elk Point management unit of the Missouri aquifer encompasses approximately 234,700 acres of Clay, Union, and Yankton Counties, as determined by Hedges and others (1982) and Niehus (1994). The aquifer contains an estimated 3,287,100 acre feet of recoverable water in storage, of which an estimated 1,494,600 acre-feet of recoverable water is in storage in Union County (Hedges and others, 1982). The maximum thickness of the Missouri aquifer is 146 feet with an average thickness of 84 feet (Niehus, 1994). The saturated thickness of the aquifer in the area is estimated to be approximately 71 feet (Water Rights, 2013a). The transmissivity of the aquifer ranges from 20,700 to 24,700 square feet per day (ft^2/d) in Yankton County (Bugliosi, 1986), and it is reasonable to assume it will be similar here. The specific capacity of wells completed into the aquifer ranges from approximately 124 to 173 gallons per minute per foot ($(\text{gal}/\text{min})/\text{ft}$) (Bugliosi, 1986). The aquifer can be under confined or unconfined (water-table) conditions but is confined in the area of this application.

SDCL 46-2A-9

In accordance with SDCL 46-2A-9, a permit may be issued to appropriate water only if there is reasonable probability that there is unappropriated water available for the applicant's proposed use, that the proposed diversions 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 review the availability of unappropriated water and existing rights within the Missouri: Elk Point aquifer.

WATER AVAILABILITY:

This application proposes to appropriate water from the Missouri: Elk Point aquifer. If this application is approved, it is likely that the actual water use will be less than 90 acre feet per year (ac-ft/yr). The probability of unappropriated water available from the aquifer can be evaluated using 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 public water system has applied for a permit, the Board need not consider the recharge/withdrawal issue. Here, a public water system is not involved and the aquifer is not older or lower than the greenhorn formation therefore withdrawal/recharge issue must be considered.

Recharge versus Discharge:*Recharge:*

Recharge to the Missouri: Elk Point aquifer occurs through seepage from streams and by infiltration of precipitation (Bugliosi, 1986; Niehus, 1994). Recharge is also provided to the aquifer from the Big Sioux, Lower Vermillion-Missouri, and Dakota aquifers as well as during times of high flow from the Big Sioux and Missouri Rivers. The average annual recharge rate to the Missouri: Elk Point aquifer is estimated to be 3.8 in/yr based on observation well analysis (Hedges and others, 1985). Given the area of the management unit in Clay, Union, and Yankton Counties of 234,700 acres, average annual recharge to the aquifer is estimated to be 74,322 ac-ft/yr. Recharge in Union County is estimated to be 36,480 ac-ft/yr based on the 115,200 acres that the aquifer underlies in the county (Hedges and others, 1982).

Discharge:

Discharge from the Missouri: Elk Point aquifer is by evapotranspiration, discharge to the Big Sioux and Missouri Rivers during low flow, to the underlying Dakota aquifer, and withdrawal from wells (Niehus, 1994). There are a number of completion reports on file with the SD DENR-Water Rights Program for domestic use wells completed into the Missouri: Elk Point aquifer (Water Rights, 2013b), and there are currently 557 water rights/permits appropriating water from the Missouri: Elk Point aquifer of which 309 are in Union County (Water Rights, 2013c). In addition, there are five future use permits in Clay County reserving 14,900 ac-ft/yr of water from the aquifer. The distribution of these appropriations for the entire aquifer and their types are shown in Table 1.

Water Rights/Permits	Number
Commercial	7
Domestic	2
Fish and Wildlife Propagation	4
Industrial	5
Irrigation	524
Municipal	10
Recreational	1
Rural Water System	2
Suburban Housing Development	2
Future Use Permits	Number
Lewis & Clark Rural Water System (13,000 ac-ft/yr)	4
City of Vermillion (1,900 ac-ft/yr)	1

Table 1. Water rights/permits from the Missouri: Elk Point aquifer (Water Rights, 2013c).

The amount of water that can be expected to be withdrawn through water rights/permits authorizing water use for non-irrigation purposes at the current appropriation level can be estimated by assuming:

1. Water rights/permits limited by an annual volume will pump the entire volume appropriated.
2. Water rights/permits limited only by diversion rate will pump at the maximum permitted diversion rate 60 percent of the time.
3. Future use permits can be fully developed.

The expected water use for non-irrigation purposes, including that reserved for future use, from the Missouri: Elk Point aquifer is less than 61,300 ac-ft/yr based on current water appropriations. Union County accounts for less than 5,700 ac-ft/yr of this based on current water appropriations.

Lewis and Clark Rural Water System currently reserves 13,000 ac-ft/yr for future use and has permits appropriating 32,165 ac-ft/yr (Water Rights, 2013b). These account for a significant portion of the annual water usage in Clay County, and most of the water from these wells will be induced from the Missouri River. More recharge can be induced with more pumping in particular from the Missouri River because it is hydraulically connected to the aquifer.

The annual reported water use from the Missouri: Elk Point aquifer for irrigation purposes in Union County is displayed in Table 2. The average pumpage reported, for irrigation purposes, over the 1979 to 2011 period of record in the Missouri: Elk Point aquifer is 15,922.64 ac-ft/yr. The amount of water usage from domestic wells is not significant to the hydrologic budget.

YEAR	NO. OF PERMITS	APPROPRIATION (AC-FT/YR)	PUMPAGE REPORTED (AC-FT/YR)
1979	206	93310.02	7066
1980	210	94734.88	10063
1981	227	100428.6	8422
1982	209	91841.78	15429.85
1983	211	90519.28	6520.91
1984	211	93088.86	5746.3
1985	215	92328.88	10087.3
1986	215	91724.88	3191.3
1987	216	91579.88	9082
1988	218	92063.68	22195.3
1989	226	93847.88	18658.2
1990	230	95368.88	12730.5
1991	231	95168.88	11601.6
1992	238	94037.88	1010.6
1993	230	93782.3	1145.2
1994	226	90715.45	7721.45
1995	226	90563.45	13798.95
1996	229	92683	5121.58
1997	237	94643	11406
1998	244	96211.8	7259.62
1999	240	93873.8	10741.15
2000	240	93320.4	20369.1
2001	242	93065.6	12284.62
2002	241	92412	15353.97
2003	240	91692	19653
2004	244	92572	16550.28
2005	251	94321.6	17322.4
2006	256	95252.6	18149.43
2007	257	95974.6	18817.78
2008	261	97230.6	6141.62
2009	264	98914.6	3214.82
2010	267	99102.6	1518.01
2011	272	100120.6	7289.7
MIN	206	90519.28	1010.6
MAX	272	100428.6	22195.3
AVE	234.24	94136.25	10777.68

Table 2. Irrigation from the Missouri: Elk Point aquifer in Union County (Water Rights, 1979-2011)

There are a number of new permits and pending applications from the Missouri: Elk Point aquifer. Once they are developed, the average pumping for irrigation purposes is expected to increase significantly. Since January 1, 2012, there have been 90 permits issued from the Missouri: Elk Point aquifer authorizing irrigation for a total of 11,265.5 acres. The average annual withdrawal is still expected to be significantly less than the average annual recharge. As of April 11, 2013, an additional 20 permit applications have been submitted for appropriation of water from the Missouri: Elk Point aquifer. The pending permits have a total diversion rate of 32.79 cfs, and 1,700.85 acres of coverage as shown in Table 3 (Water Rights, 2013a). Hedges and others (1985) state that:

“Management units of the Missouri Aquifer (Elk Point, Greenwood, Peoria, Pierre, and Tower) exhibit good hydraulic connection to the Missouri River. With proper well spacing and aquifer management practices these aquifers could produce virtually unlimited supplies of water.”

Recognizing that Lewis and Clark RWS withdraw water from the Missouri: Elk Point aquifer that is induced from the Missouri River, and considering the remaining hydrologic budget, there is reasonable probability that unappropriated water is available for this application.

PERMIT NO.	DIV. RATE (CFS)	ACRES
7693-3	0.67	27.7
7711-3	1.67	115
7712-3	1.78	74.54
7713-3	2.22	114.29
7714-3	1.67	59.32
7749-3	2.28	160
7768-3	1.78	48
7769-3	1.78	48
7770-3	1.78	70
7771-3	1.78	160
7772-3	1.78	120
7773-3	1.78	70
7774-3	1.78	35
7775-3	1.78	41
7776-3	1.78	140
7785-3	0.92	35
7800-3	2.22	110
7801-3	1.56	108
7802-3	1.78	165
TOTAL	32.79	1700.85

Table 3. List of pending permits from the Missouri: Elk Point aquifer (Water Rights, 2013a)

Observation Well Data:

Administrative Rule of South Dakota Section 74:02:05:07 requires that “the Water Management Board shall rely upon the record of observation well measurements to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated average annual recharge to the aquifer”.

The SD DENR-Water Rights Program monitors 37 observation wells completed into the Missouri: Elk Point aquifer with two of these wells located within one and one quarter miles of the proposed well site. Hydrographs for these wells are shown in Figures 1 and 2.

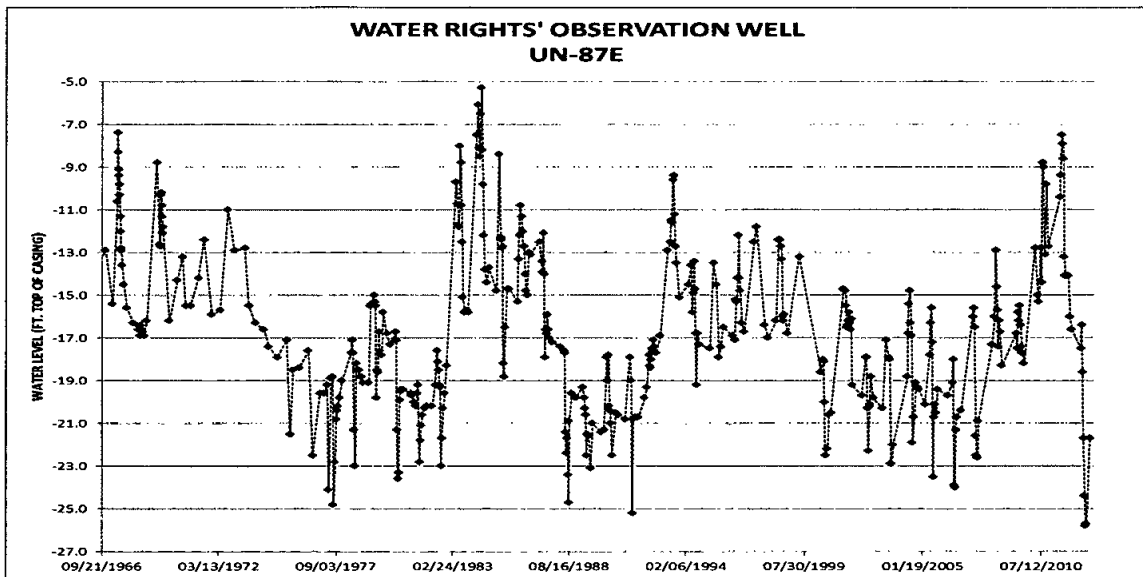


Figure 1. Hydrograph for SD DENR-Water Rights' Observation Well UN-87E completed into the Missouri: Elk Point aquifer approximately one mile southeast of the well site proposed by Application No. 7817-3 (Water Rights, 2013b).

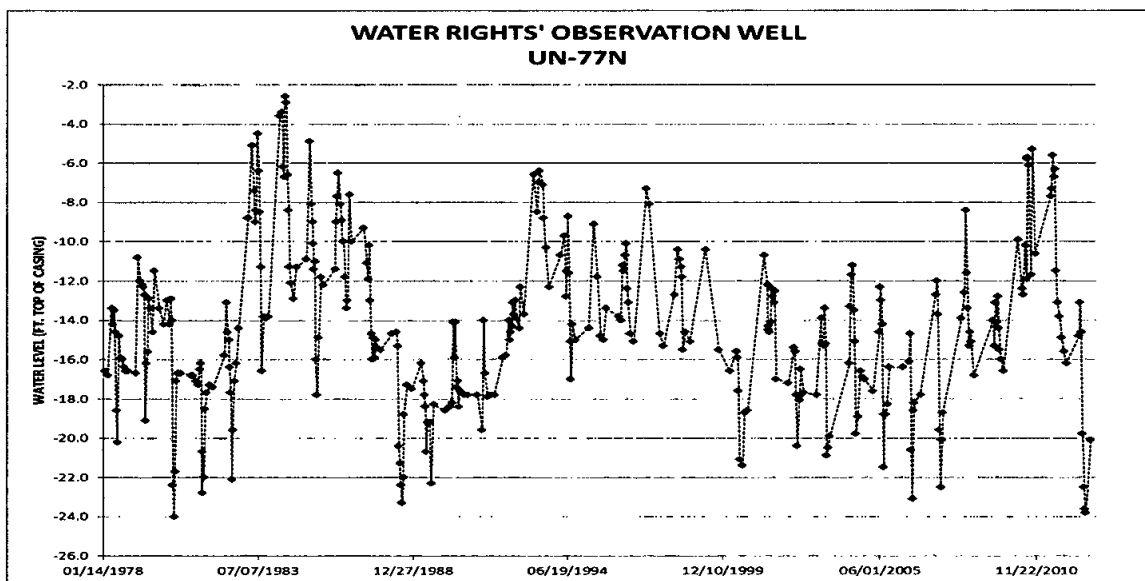


Figure 2. Hydrograph for SD DENR-Water Rights' Observation Well UN-77N completed into the Missouri: Elk Point aquifer less than one and one quarter miles northeast of the well site proposed by Application No. 7817-3 (Water Rights, 2013b).

The observation well data shows the aquifer responds well to climatic conditions with rising water levels during wet years and gradually declining water levels during dry years. The observation well data shows that at the current level of development, climatic conditions mask the temporal effects of well withdrawals. The observation well data documents the hydraulic connection between the Missouri: Elk Point aquifer and the Missouri River (e.g. in particular, high groundwater levels associated with flooding in 2011).

Because of this obvious hydraulic connection between Missouri: Elk Point aquifer and the Missouri River and the availability of water in the Missouri River, there is a reasonable probability that additional recharge to the Missouri: Elk Point will be induced with additional pumping. Natural discharge from the aquifer can be captured for pumping. Additional pumping from the Missouri: Elk Point aquifer can also induce recharge from the underlying Dakota aquifer. Therefore, there is reasonable probability that unappropriated water is available from the aquifer to support this appropriation.

EXISTING WATER RIGHTS:

The proposed well site is located in southern Union County more than three miles west of the Big Sioux River and less than five miles east of the Missouri River. Figure 3 shows the nearby existing water rights located in the Missouri: Elk Point aquifer. The locations of the existing water rights/permits were determined using the best data reasonably available. The nearest water right/permit is Water Right No. 2868-3, for Kevin Beermann, located more than one half mile northeast and up-gradient from the proposed well site. There are pending permits located in close proximity to the proposed well site. The nearest pending permit is No. 7772-3, for Robert and Theresa Geary, located more than 1,000 feet southwest of the proposed well site.



Figure 3. Existing water rights/permits located within close proximity to the well site proposed by Application No. 7817-3 (Water Rights, 2013c).

Based on the observation well data and the distance between wells, drawdown is not expected to be significant nor likely to cause adverse impacts to existing water rights or domestic wells. The precise drawdown cannot be quantified without aquifer testing. With that in mind, this permit should adhere to and include the standard permit qualification which applies to most groundwater permits/rights stating that:

“The well approved under this permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall

control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights”.

SDCL 46-6-6.1 does not protect artesian head pressure as a means of delivery and the Water Management Board has consistently recognized that to place water to maximum beneficial use a certain amount of drawdown may occur. To balance interests between irrigation use and delivery of water by artesian pressure, the Water Management Board has 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”

In reality, the assurance of reasonable domestic use provided by SDCL 46-6-6.1 and ARSD 74:02:04:20(7) generally ensures not only that interference will not be adverse to domestic well users but also in existing appropriative rights (i.e. in most cases, the protection afforded to adequate domestic wells by water law, would lead to enforcement of the “standard permit qualification” before there is a reduction of needed water supplies to appropriative rights). Although drawdown is expected to be minimal, as shown by the observation well hydrographs, some drawdown will occur. Depending on the extent of drawdown, some existing well owners may need to lower their pumps to accommodate deeper water levels. However, when considering the statute and rule, there is a reasonable probability that any well interference from these proposed applications will not be adverse to adequate domestic wells.

SDCL 46-5-6

Pursuant to SDCL 46-5-6, the diversion rate for an irrigation appropriation cannot be in excess of one cubic foot of water per second for every seventy acres, or “the equivalent thereof”. The statute provides that the Water Management Board may allow a greater diversion if the method of irrigation so requires. Water Permit Application No. 7817-3 proposes to divert at a rate of 1.11 cfs to irrigate 45 acres, or the equivalent of 1.73 cfs per 70 acres to a center pivot irrigation system. The applicant cites soils and rural electric load management as the basis for the request.

CONCLUSIONS:

1. This application proposes to appropriate water from the Missouri: Elk Point aquifer.
2. There is a reasonable probability that unappropriated water is available from the Missouri: Elk Point aquifer to supply this proposed appropriation.
3. The Missouri: Elk Point aquifer is confined in the area of this application, but drawdown from pumping is not expected to be significant very far from a production well.
4. There is a reasonable probability that the well proposed by this application will not adversely impact existing water rights or domestic wells.



Nicole Van Dyk
SD DENR-Water Rights Program

Approved by



Ken Buhler
SD DENR-Water Rights Program

REFERENCES:

Bugliosi, E.F., 1986, Water Resources of Yankton County, South Dakota: U.S. Geological Survey Water-Resources Investigations Report 84-4241. 41 p.

Hedges, L.S., Burch, S.L., Iles, D.L., Barari, R.A., 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

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; U.S. Army Corps of Engineers Contract DACW 45-80-C-0185

Niehus, C.A., 1994, Water Resources of Lincoln and Union Counties, South Dakota: U.S. Geological Survey Water-Resources Investigations Report 93-4195, 57p.

Water Rights, 1979-2011, Irrigation Questionnaire Summaries 1979-2011, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2013a, Observation Well Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2013b, Water Well Completion Reports, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2013c, Water Right/Permit Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

AFFIDAVIT OF PUBLICATION

RECEIVED

State of South Dakota)

JUN 17 2013

:ss

County of Union)

WATER RIGHTS
PROGRAM

Kelly Kruihoff,

an employee of the Leader-Courier, deposes and says that

The Leader-Courier

is a legal weekly newspaper of a general circulation, printed and published in Elk Point, County of Union, State of South Dakota, and has been such legal newspaper during the time hereinafter mentioned, and that affiant is and was during all the time hereinafter mentioned in charge of the advertising department thereof, and has personal knowledge of all the facts stated in this affidavit: and that the notice and advertisement headed:

Notice of Application No. 7817-3

To Appropriate Water

a printed copy of which is hereunto attached and made a part hereof, was printed and published in the said newspaper at least once in

each week for 1 successive weeks; that said newspaper at the time of the first publication of said notice hereinafter stated, had, and still has, a bona fide circulation of over two hundred paid copies weekly, and had been published in the said County of Union for more than one year immediately prior to the date of the said publication of said notice, and that said newspaper during said times, was, and is, printed in part in an office maintained at said city of Elk Point, the said place of publication; that the first publication of said notice in said newspaper was

on Thursday, the 13 day of June, 2013

and that the succeeding publications were

on Thursday, the _____ day of _____, _____

on Thursday, the _____ day of _____, _____

on Thursday, the _____ day of _____, _____

that the fees for the printing and publishing of said notice and advertisement in said newspaper as aforesaid were

\$ 23.78, that the full amount of the fee charged insures to the benefit of the publisher of the said newspaper, that no agreement or 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 other person whomsoever.

Kelly Kruihoff

Subscribed and sworn to before me

this 13 day of June, 2013

My commission expires 6-21-17

SUSAN ODSON
NOTARY PUBLIC
SOUTH DAKOTA

Notary Public

NOTICE OF APPLICATION NO. 7817-3 TO

APPROPRIATE WATER

Notice is given that Brian Chicoine, 32650 480th Ave, Elk Point SD 57025 has filed an application for a water permit to appropriate 1.11 cubic feet of water per second from one well to be completed into the Missouri:Elk Point Aquifer (116 feet deep) located in the NE 1/4 NE 1/4 Section 2 for irrigation of 45 acres located in the NE 1/4 NE 1/4 Section 2; all in T90N-R49W. The applicant is requesting a diversion rate greater than the statutory limit.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7817-3 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. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. 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.

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 June 24, 2013.

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. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application.

Steven M. Pirner, Secretary,
Department of Environment and
Natural Resources.
Publish June 13, 2013
Published once at the total approximate cost of \$23.78
24-9-79

RECEIVED

JUN 19 2013

WATER RIGHTS
PROGRAM

AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

6+13

NOTICE OF APPLICATION
NO. 7817-3 to Appropriate Water

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Published once at the total approximate cost of \$26.48.

Department of Environment and Natural Resources
PMB 2020
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

KELLY HERTZ BEING FIRST DULY SWORN ON OATH DEPOSES AND SAYS THAT 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. 7817-3**

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE NEWSPAPER ON THE 13th DAY OF June 2013 THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION OF SAID **NOTICE** TO WIT **\$26.48** 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: **6/13/2013**

FILED ON: **6/13/2013**

SUBSCRIBED AND SWORN TO BEFORE ME THIS 13th DAY OF June 2013

NOTARY PUBLIC, SOUTH DAKOTA

MY COMMISSION EXPIRES

8/19/2015

2013



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

June 4, 2013

Leader-Courier
PO Box 310
Elk Point SD 57025

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7817-3 to Appropriate Water. Please publish the notice once on June 13, 2013. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notice is to be published and arrange for payment. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Brian Chicoine, 32650 480th Ave, Elk Point SD 57025 (Ph # 605-966-5271).

Please send the Water Rights Program an affidavit or the enclosed Proof of Publication form immediately.

The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

June 4, 2013

Press & Dakotan
319 Walnut
Yankton SD 57078

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Natural Resources Engineer
605 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

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

June 4, 2013

Brian Chicoine
32650 480th Ave
Elk Point SD 57025

Dear Mr. Chicoine:

Water Permit Application No. 7817-3 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 Leader-Courier printed at Elk Point SD (Ph # 605-356-2632) and the Press & Dakotan printed at Yankton SD (Ph # 605-665-7811). You will need to contact the newspaper(s) 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 newspaper(s) to authorize publication of your Notice and to arrange for payment. Early contact with the paper(s) can eliminate delays. Upon receiving authorization from you, the publisher has been instructed to publish your notice. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(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.

Instruction to Newspaper - Publish the Notice on June 13, 2013. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 7817-3 to Appropriate Water

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Published once at the total approximate cost of_____.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

JUL 05 2013 .

Brian Chicoine
32650 480th Ave
Elk Point SD 57025

Dear Mr. Chicoine:

Enclosed is Water Permit No. 7817-3 authorizing construction of your 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,

Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

SOUTH DAKOTA WATER WELL COMPLETION REPORT

7817-3

07-92

Location NE 1/4 NE 1/4 Sec 2 Twp 90N Rg 49W

County

North

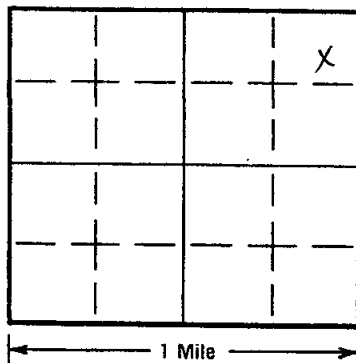
Union

Please mark well location with an "X"

W

E

Well-Completion Date

7-3-12

LOCATION:

Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? 1320 ft. from Septic (identify source).

PROPOSED USE:

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

METHOD OF DRILLING:

Mud Rotary

CASING DATA:

- ☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>SCH 40 LB/FT</u>	<u>12 IN</u>	<u>0 FT</u>	<u>116 FT</u>	<u>17 1/2 IN</u>
_____ 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>	_____	_____ lb./gal	<u>30 ft</u>	<u>10 ft</u>
_____	_____	_____ lb./gal	_____ ft	_____ ft

Describe grouting procedure Pump in with grout pumpSCREEN: ☒ Perforated pipe ☐ ManufacturedDiameter 12 IN Length 40 FEETMaterial PVCSlot Size .60 Set From 76 Feet to 116 Feet

Other information _____

WAS A PACKER OR SEAL USED? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

DISINFECTION: Was well disinfected upon completion?

_____ YES, How: _____

Laboratory sent for water quality analysis

☒ NO, Why Not?IrrigationWell Owner: Brian Chicoine

Business Name: _____

Address: 32650 480th Ave.
Elk Point, SD 57025

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
<u>Heavy clay</u>	<u>0</u>	<u>46</u>
<u>Silt</u>	<u>46</u>	<u>55</u>
<u>Clay</u>	<u>55</u>	<u>67</u>
<u>Med. sand</u>	<u>67</u>	<u>72</u>
<u>Med. sand + gravel</u>	<u>72</u>	<u>120</u>

STATIC WATER LEVEL 19 Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced Flowrate _____ GPM

Can well be completely shut in? _____

WELL TEST DATA:

☒ Pumped Describe: _____☐ Bailed _____☐ Other _____

Pumping Level Below Land Surface

36 ft. After 1 Hrs. pumped 450 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate 400 GPM

REMARKS

RECEIVED

FEB 11 2013

WATER RIGHTS PROGRAM

This well was drilled under license # 667

And this report is true and accurate.

Drilling firm Dakota Drilling & Backhoe, Inc.Signature of License Representative: Vernon Data

Signature of Well Owner or Equitable Property Holder: _____

Date: _____

5-20-13

RECEIVED

AUG 14 2013

WATER RIGHTS
PROGRAMNOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USE

Date

8/12/13

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

FROM:

Brian Chicoine

(name)

32650 480th Ave

(address)

Elk Point SD 57025

(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. 7817-3 states that the water use system is to be constructed by6/24/18

(date)

, and water is to be put to beneficial use by

6/24/22

(date)

The water use system was completed on

5/1/13

(date)

Applying the water to beneficial use was completed on

5/1/13

(date)

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

Brian Chicoine
(signature)





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

August 14, 2013

7817-3

Brian Chicoine
32650 480th Ave
Elk Point SD 57025

Dear Mr. Chicoine:

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 the irrigation system authorized under Water Permit No. 7817-3.

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