

WATER PERMIT NO. 8030-3

Name of Applicant: **Reid Bird**

Address: **31605 473rd Ave, Elk Point SD 57025** Phone: **712 251-6343**

Amount of Water Claimed: **1.78 cfs** Total Acres: **140 acres**

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

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

Type of Waste Disposal System:

Location: **10 miles northwest of Elk Point**

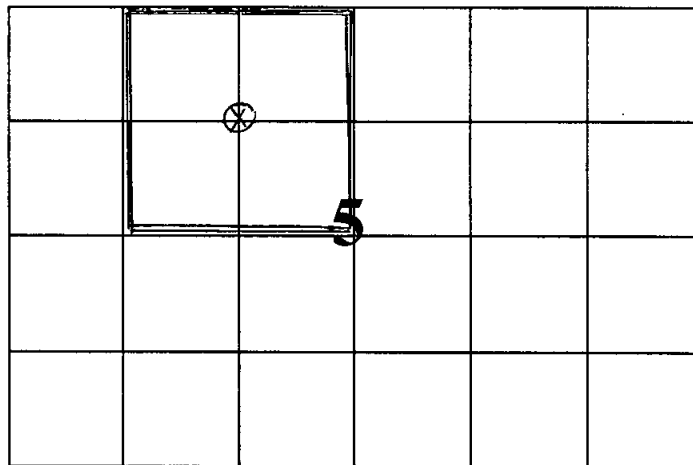
PRIORITY Date Received: **6-16-14** Application/License Fee: **\$1050**

Corrected Application Received: Period of Annual Use: **April 1 – October 31**

Remarks:

Diversion Point: **center of NW 1/4 Sec 5-T92N-R50W**

Land to be Irrigated: **NW 1/4 Sec 5-T92N-R50W**



Depth of Well: **200 feet deep**

Well Driller:

Remarks:

Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **6-17-14**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

RECEIVED

JUN 16 2014

WATER RIGHTS
PROGRAM

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

(office use only)
No. 8030-3 Hydrologic Unit 10170202
Basin Sioux River 605-356-2622
Newspaper Leader-Courier Box 310 Elk Point 57025
605-665-7811
Preset Dekaton 319 Walnut Yankton 57078

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 Reid Bird

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

(name and complete address if different than above name)

Mailing Address 31605 473 Ave Elk Point SD 57025
(Address) (City) (State) (Zip Code)

Home Phone _____ Cell 712-251-6343 Email _____

2. Amount of water claimed 1.78*CFS or 800 **GPM _____ ***AF Total Acreage 140
(*Cubic Feet per Second) (**Gallons per Minute) (***Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply Lower Vermillion-Missouri Aquifer

4. Location of point of diversion center, nw 1/4 of section 5, T92n R50w
(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 April 1-October 31

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
nw of nw, section 5, t92n r50w	36		
sw of nw section 5 t92n r50w	32		
ne of nw, section 5 t92n r50w	36		
se of nw, section 5 t92n r50w	36		

8. Give a description of the project. (Attach sheet if more space is needed)
center pivot irrigation of the above listed property.

I, Reid Bird, 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. 8030-3

Date of first receipt of application June 16, 2014.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8030-3 to Reid Bird, 31605 473rd 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. 8030-3 appropriates 1.78 cubic feet of water per second from one well to be completed into the Lower Vermillion:Missouri Aquifer (200 feet deep) located in the center of the NW 1/4 Section 5 for irrigation of 140 acres located in the NW 1/4 Section 5; all in T92N-R50W.
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 – October 31.
3. The date from which applicant may claim right is June 16, 2014.
4. The date of approval of Permit No. 8030-3 is September 22, 2014.
5. One-fifth of the construction is to be completed on or before March 22, 2017.
6. All construction is to be completed on or before September 22, 2019.
7. Water is to be put to beneficial use on or before September 22, 2023.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The well approved under Permit No. 8030-3 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. 8030-3 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. 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

OCT 03 2014

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 _____
(if yes, please provide copies of logs)

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

c) Well Depth 200 Depth to Top of Water Bearing Material 120 Depth to Water from Surface 110

d) Distance to nearest existing domestic well:

On applicant's property none On property owned by others >1000'

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)

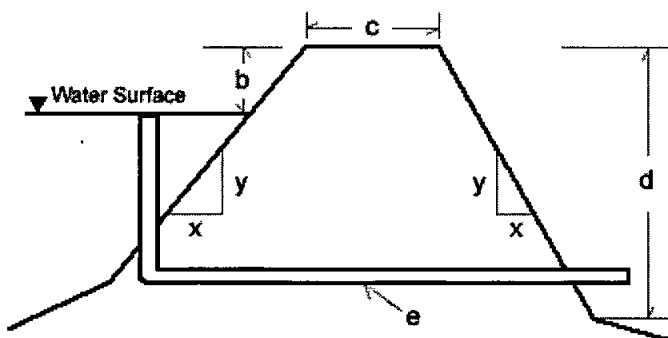
Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

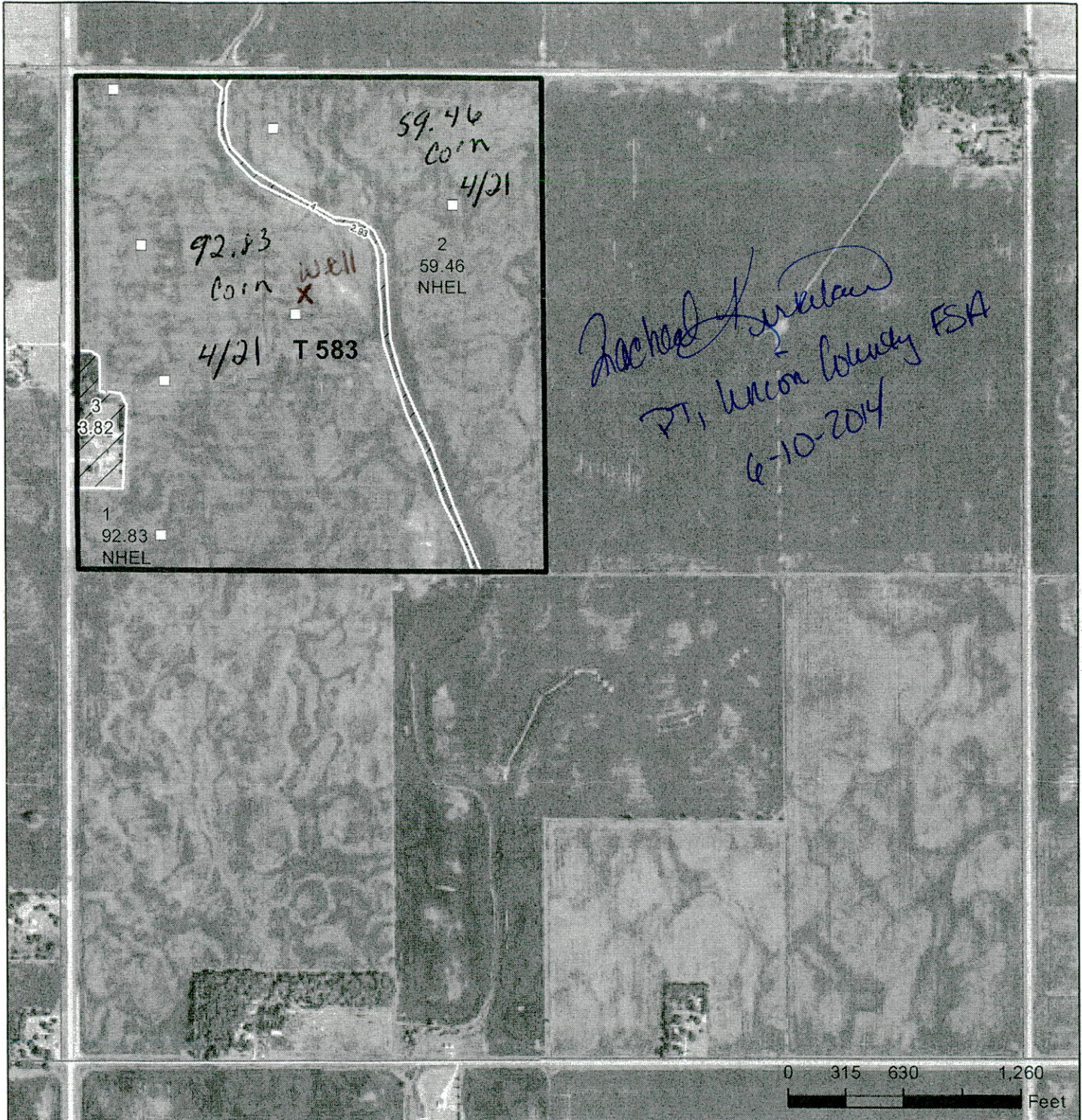
j) Drainage Area Above Dam _____ Acres





United States
Department of
Agriculture

Union County, South Dakota



Common Land Unit

Cropland / Non-cropland

Conservation Reserve Program

Wetland Determination Identifiers

- Restricted Use
- ▽ Limited Restrictions
- Exempt from Conservation Compliance Provisions

Tract Boundary Section Line



2012 Ortho-Photography - not to scale

2014 Program Year
RECEIVED Map Created February 20, 2014

JUN 16 2014

WATER RIGHTS
PROGRAM

Farm 6072

5 -92N -50W

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. 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 boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 6/16, 20 14

RECEIVED OF Reid Bird 31605 473rd 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>8030-3</u> to Appropriate Water, to construct and to put water to beneficial use	850	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>8030-3</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	1050	00

No. **06887**

By James Goodman
Chief Engineer



**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. 8030-3, Reid Bird**

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. 8030-3, Reid Bird, 31605 473rd Avenue, Elk Point SD 57025.

The Chief Engineer is recommending APPROVAL of Application No. 8030-3 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 Permit No. 8030-3 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. 8030-3 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. 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
September 3, 2014

REPORT TO THE CHIEF ENGINEER
ON
WATER PERMIT APPLICATION NO. 8030-3
REID BIRD
SEPTEMBER 3, 2014

Water Permit Application No. 8030-3 proposes to appropriate water at a maximum diversion rate of 1.78 cubic feet of water per second (cfs) from a well to be completed into the Lower Vermillion Missouri aquifer to irrigate 140 acres located in the NW ¼ Section 5; T92N-R50W. The well is expected to be approximately 200 feet deep and located in the approximate center of the NW ¼ Section 5; T92N-R50W in Union County.

AQUIFER: Lower Vermillion Missouri (LVM)

Area Hydrogeology:

The Lower Vermillion Missouri aquifer is primarily composed of outwash and alluvium that grade from coarse sand to coarse gravel (Niehus, 1994). The aquifer generally lies in the flood plain of the Vermillion River in Clay and Union Counties. The aquifer is generally overlain by till and underlain by the Dakota Formation (Niehus, 1994). The aquifer is generally under confined conditions (Niehus, 1994; Water Rights, 2014a). The Lower Vermillion Missouri aquifer is hydraulically connected to the Upper Vermillion Missouri: South aquifer in the north, the Missouri: Elk Point aquifer in the south, and the underlying Dakota aquifer. Hedges and others (1982) estimated the Lower Vermillion Missouri aquifer to underlie approximately 125,600 acres and contain an estimated 1,884,000 acre-feet (ac-ft) of recoverable water in storage.

The SD DENR-Geological Survey is currently conducting a study of the Upper Vermillion Missouri aquifer. The study area includes the boundary region between the Upper Vermillion Missouri and Lower Vermillion Missouri aquifers. Preliminary data from the study (shown in Buhler, 2014) has shown the boundary region is further south than described by Hedges and others (1982), as shown in Figure 1. Considering the on-going SD DENR-Geological Survey study and the Lower Vermillion Missouri aquifer map from Stonesifer (2013), the Lower Vermillion Missouri aquifer likely underlies at maximum, approximately 106,000 acres.

A test hole log was not submitted with the application. However, there is sufficient information available from SD DENR-Geological Survey lithologic logs (SDGS, 2014) and DENR-Water Rights Program observation wells (2014a), water rights/permits (2014b), and water well completion reports (2014c). At the proposed well site the top of the aquifer is likely 100 to 140 feet below ground surface and has a thickness of 30 to 45 feet. The potentiometric surface is expected to be approximately 1,110 to 1,120 ft above mean sea level. Therefore, the static water level in a well at the proposed well site is expected to be between 100 and 110 feet below grade.

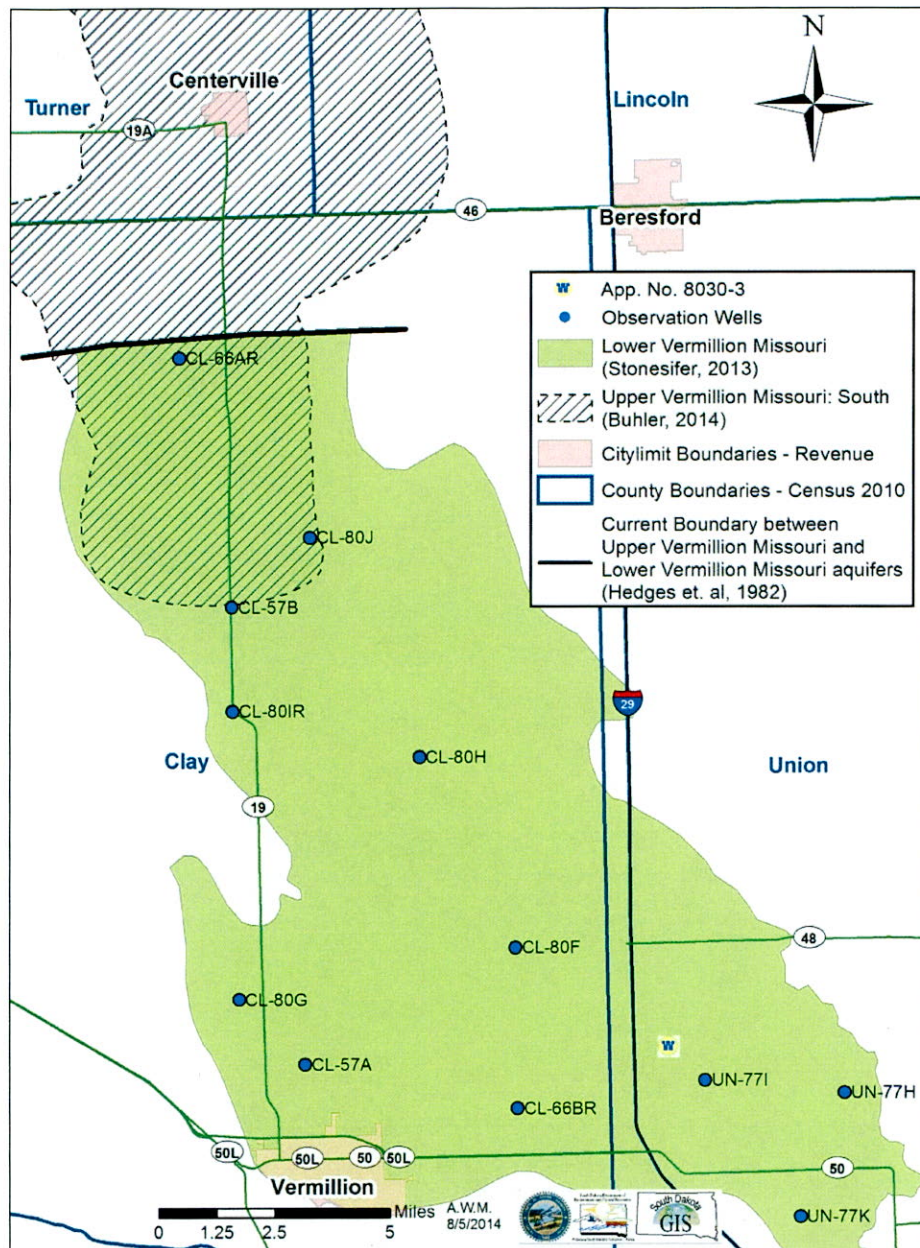


Figure 1- Preliminary map of the Upper Vermillion Missouri: South aquifer (Buhler, 2014) and a map of the Lower Vermillion Missouri aquifer (Stonesifer, 2013)

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

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

WATER AVAILABILITY:

This application proposes to appropriate water from the Lower Vermillion Missouri aquifer. The probability of unappropriated water available from the aquifer can be evaluated by considering SDCL 46-6-3.1, which requires “No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source.” 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. In this case, the aquifer is not stratigraphically lower than the Greenhorn Formation and the applicant is not a public water system.

In applying SDCL 46-6-3.1, the Sixth Judicial Circuit Court ruled in 2005 that if the Water Management Board uses average annual recharge, then it should also use average annual withdrawals to determine if unappropriated water is available from the aquifer (*Hines v. South Dakota Dept. of Environ. and Nat'l Resources, Hughes County 04-37*) (Memorandum Decision, April 29, 2005).

A 2012 First Judicial Circuit Court’s rulings ultimately stated that data must be present to show it is probable the average annual recharge exceeds the average annual discharge by at least the amount requested by the water permit application being considered (*Hanson County Dairy v. Robert Bender and Stace Nelson*) (Memorandum Decision, April 11, 2012).

Later in 2012, the First Judicial Circuit Court stated that in deciding whether or not it is probable that the quantity of water withdrawn will exceed the quantity of the average estimated annual recharge is to be based according to the best information reasonably available, and that nothing in South Dakota law requires a recharge study (*Longview Farms, LLP v. South Dakota Dept. of Environ. and Nat'l Resources*) (Memorandum Decision, May 17, 2012).

Observation Wells:

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 of the aquifer.

The DENR-Water Rights Program monitors 12 observation wells completed into the Lower Vermillion Missouri aquifer (Water Rights, 2014a). The hydrographs for the observation wells are shown in Appendix 1. The hydrograph for the nearest observation well, UN-77I, to the proposed well site is shown in Figure 15. Seven of the twelve observation wells (CL-57A, CL-66BR, CL-80F, CL-80G, CL-80H, CL-80IR, and UN-77I) completed into the Lower Vermillion Missouri aquifer show a declining linear trendline on the water level. All of the observation wells have shown lower water levels recently due the below normal precipitation from 2011 through 2013 and/or the high pumping during 2012 and 2013.

The shape of the hydrograph shown in Figure 15, especially the significant drop off of water level following the high peak in 2011, is found in 8 of the 12 observation wells (CL-57A, CL-

66BR, CL-80F, CL-80G, CL-80H, UN-77H, UN-77I, and UN-77K). The decline following the flooding is not as large in some observation wells (see Figure 12) as it is in others (see Figure 8).

The decline from the peak water level in 2011 for those eight observation wells is between 10 and 15 feet. Approximately half of the decline has happened since the spring of 2012. Some of the decline may be attributed to the dry conditions in 2012 and 2013 along with the higher pumpage that comes with drier conditions. Six of the 12 observation wells (CL-57A, CL-66BR, CL-80F, CL-80J, UN-77H and UN-77I) have their lowest recorded water level in 2014. Furthermore, another four observation wells (CL-66AR, CL-80H, CL-80IR, and UN-77K) are within 1.5 feet of their lowest recorded water level. Precipitation and difference from normal precipitation on an annual and growing season basis for Vermillion and irrigation pumpage from the Lower Vermillion Missouri aquifer is shown in Table 1.

Year	No. of Permits Reporting	Irrigation Pumpage (ac-ft)	Annual Precip (in.)	Difference from Annual Normal (25.6 in.)	Apr-Sep Precip (in.)	Difference from Apr-Sep Normal (18.74 in.)
2013	71	4109.1	20.81	-4.55	14.88	-3.86
2012	61	7759.51	17.70	-7.66	11.72	-7.02
2011	62	2195.06	21.85	-3.51	18.56	-0.18
2010	59	144.56	35.54	10.18	30.76	12.02
2009	58	482.64	28.48	3.12	18.57	-0.17
2008	55	4301.25	28.60	3.24	18.78	0.04
2007	50	2909.12	25.93	0.57	15.92	-2.82
2006	43	2647.51	24.14	-1.22	16.58	-2.16
2005	45	1410.24	33.44	8.08	28.13	9.39
2004	39	1747.48	28.36	3.00	20.88	2.14
2003	40	1800.56	25.78	0.42	20.25	1.51
2002	40	1762.32	23.85	-1.51	19.28	0.54
2001	38	2036.96	35.35	9.99	20.69	1.95
2000	38	2041.72	23.56	-1.80	14.68	-4.06
1999	38	900.63	26.89	1.53	23.87	5.13
1998	36	1032.91	34.57	9.21	24.53	5.79
1997	36	1085.00	21.10	-4.26	16.06	-2.68
1996	36	997.60	31.40	6.04	23.01	4.27
1995	37	506.61	31.41	6.05	22.18	3.44
1994	39	517.28	21.16	-4.20	16.96	-1.78
1993	39	506.61	29.07	3.71	23.11	4.37
1992	39	168.80	36.78	11.42	24.91	6.17
1991	39	1670.10	21.61	-3.75	16.61	-2.13
1990	38	2113.20	23.54	-1.82	17.09	-1.65
1989	38	2301.20	16.63	-8.73	14.65	-4.09
1988	38	2083.80	21.69	-3.67	19.05	0.31
1987	37	1115.40	25.23	-0.13	17.38	-1.36
1986	45	1047.50	27.73	2.37	21.85	3.11
Min	36	144.56	16.63	-8.73	11.72	-7.02
Max	71	7759.51	36.78	11.42	30.76	12.02
Avg	44.07	1835.52	26.51	1.15	19.68	0.94

Table 1- Precipitation and difference from Normal for Vermillion, South Dakota (NCDC, 2014) and irrigation pumpage from the Lower Vermillion Missouri aquifer (Water Rights, 1980-2014)

Although there are irrigation records from 1979 and some precipitation records back to the late 1800's, the precipitation data prior to 1986 starts to have periods of missing data and would be improper to use. Current climatic conditions are similar to the late 1980's and early 1990's, 1987 through 1991 to be specific. During the period of 1987 to 1991 the largest volume of water pumped and the greatest difference from normal precipitation occurred during 1989. The

growing season during a three year period from 1989 to 1991 had 7.87 inches less precipitation than normal. During the growing season from 2011 to 2013, precipitation was 11.06 inches below normal.

Compared to the average of 1986 through 2013, there was 5,924 ac-ft and 2,274 ac-ft more pumped for irrigation in 2012 and 2013, respectively. That is approximately 4.2 and 2.2 times more than the average. Compared to 1989, there was 5,458 ac-ft and 1,808 ac-ft more pumped for irrigation in 2012 and 2013, respectively. That is approximately 3.3 and 1.8 times more than was pumped in 1989.

Irrigation water rights/permits are required to submit an annual irrigation questionnaire to the DENR-Water Rights Program. In 1989, there were 38 irrigation permits that reported with 32 of those reporting pumping. In 2012, there were 61 irrigation permits that reported with 54 of those reporting pumping. In 2013, there were 71 irrigation permits that reported with 64 of those permits reporting pumping. That is an increase of 23 permits reporting with 22 more pumping in 2012, and 33 more permits reporting with 32 more pumping in 2013 with than in 1989.

Declining water levels/trend lines in observation wells completed into the outwash deposits found in the Missouri River floodplain (i.e. the Missouri: Elk Point aquifer) have been well documented and generally attributed to entrenchment of the river since the construction of the dams (Mathiowetz, 2014; Iles, 1979; Christensen and Stephens, 1967). The influence of the Missouri River appears to extend north past the river's flood plain into the buried outwash deposits that are typically under confined conditions. Although it is possible the river and aquifers are reacting to the same hydrologic conditions rather than being hydrologically connected, evidence suggests that they are connected.

In 2011, the Missouri River flooded, and the observation wells showed a high spike in water levels. However, annual precipitation, presumably a measure of recharge, at Vermillion was 3.5 inches below normal during the same year. This further indicates that the stage of the river has significant influence on the water level of the observation wells. The influence of the Missouri River flooding and then receding is noticeable as far away from the river as observation well CL-80H, approximately 12 miles from the Missouri River (see map in Figure 1 and Figure 2). The hydrograph that most clearly demonstrates the influence of the Missouri River is likely greater than local recharge on water level is CL-66BR (see Figure 2). Figure 2 is a hydrograph of observation wells CL-66BR and CL-80H with USGS stream gages on the Missouri River near Yankton and Gayville.

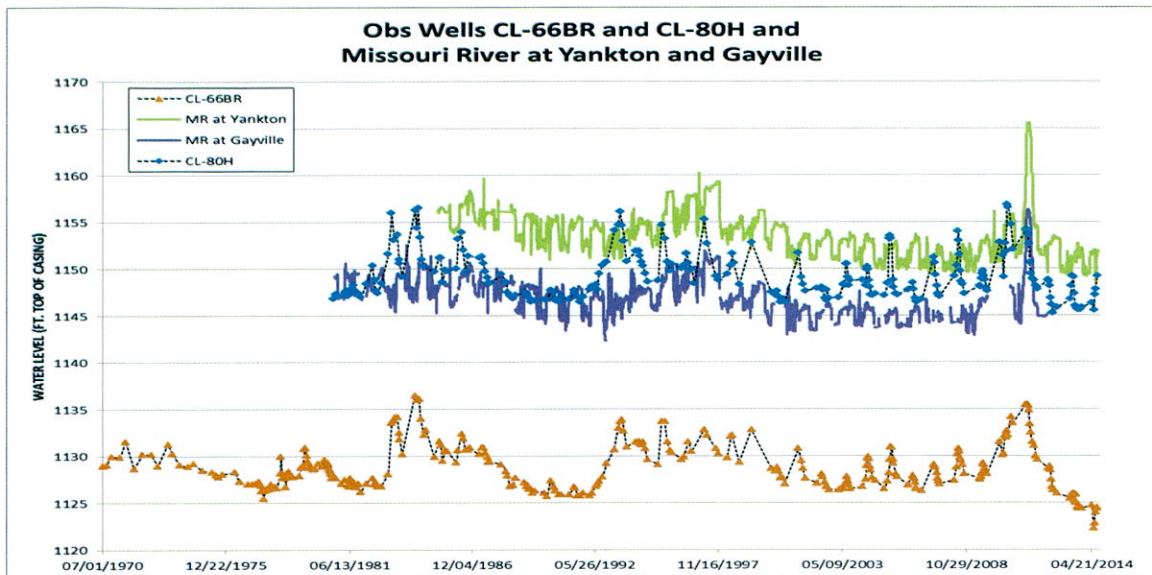


Figure 2- Hydrographs of CL-66BR, CL-80H and Missouri River Gages near Yankton and Gayville (USGS, 2014: Water Rights, 2014a)

The hydraulic gradient perpendicular to the potentiometric surface of the Lower Vermillion Missouri and Missouri: Elk Point aquifers is fairly constant from observation well CL-80H, completed into the Lower Vermillion Missouri aquifer, down to the Missouri River near Sioux City. This also suggests a strong hydraulic connection between the aquifers and the Missouri River. Mapping the amount of water level decline from the peak in 2011 to the low in 2014, along the same path as the hydraulic gradient, identifies an increase in water level decline linearly related to the distance to the river and further indicates the significant hydraulic connection.

North of CL-80H the influence of the Missouri River is not seen as shown by Lower Vermillion Missouri aquifer observation well CL-57B and observation well for the Parker-Centerville aquifer, TU-77N (See Figure 3). The above normal precipitation in 2010 created high water conditions in early 2011 in these more northern observation wells, but there was no spike as seen in the observation wells south of CL-80H. This spike is most clearly seen in the hydrograph for CL-66BR corresponding to flooding (see Figure 8). However, the following years of 2012 and 2013 show declining water levels that are not significant and do not follow the Missouri River as closely as do the observation wells south of CL-80H (see the map in Figure 1). This is due to the below normal precipitation and presumably recharge during those years (see Table 1).

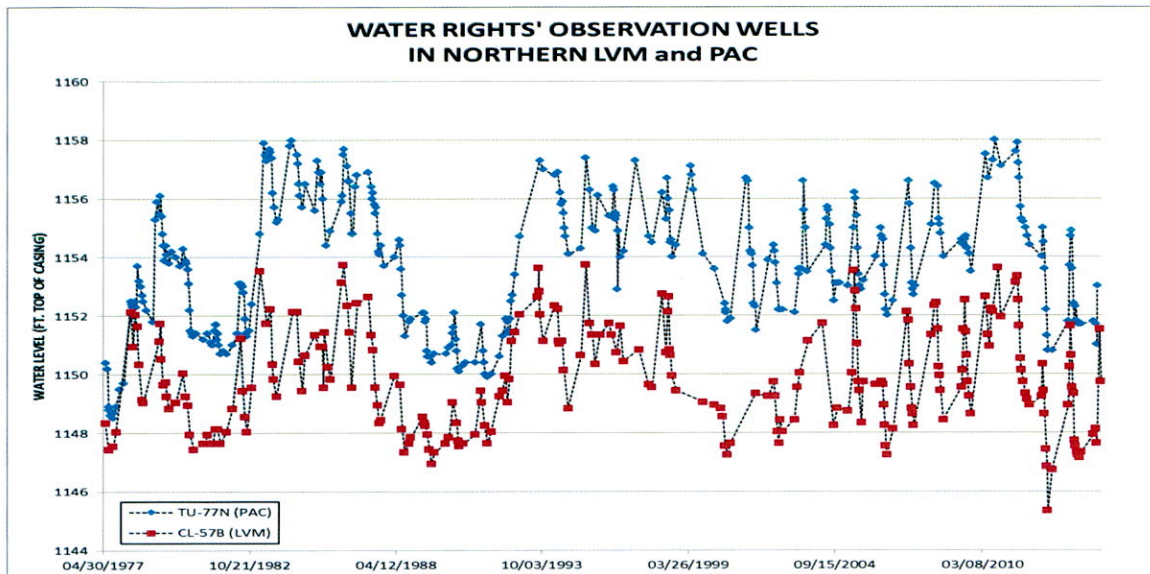


Figure 3- Hydrograph for CL-57B and TU-77N (Water Rights, 2014a)

The declining water levels shown in some of the observation wells are indicative of the strong hydraulic connection of the Lower Vermillion Missouri aquifer to the Missouri: Elk Point aquifer and in turn the Missouri River. While the changes in water level in the observation wells completed into the southern portion of the Lower Vermillion Missouri aquifer are dominated by the Missouri River, the effects of climate (i.e. precipitation) can still be seen. Thus, climatic conditions still mask the short term impacts of well withdrawals. Therefore, there is a reasonable probability that unappropriated water is available for this proposed appropriation.

Recharge and Discharge:

Recharge:

Recharge to the Lower Vermillion Missouri aquifer likely occurs from the underlying Dakota aquifer and possibly from percolation of snowmelt and precipitation (Niehus, 1997). Recharge also likely comes from groundwater inflow from the Upper Vermillion Missouri: South aquifer. Hedges and others (1985) estimated a recharge rate of 3.8 inches per year (in/yr) to the unconfined portions of the aquifer using observation well analysis. Stonesifer (2013) used Hedges and others (1985) methodology and incorporated additional observation well data since 1985. Stonesifer (2013) estimated a recharge rate to the unconfined portion of the Lower Vermillion Missouri aquifer to be 4.58 in/yr.

It is assumed the quaternary aged alluvium and the Lower Vermillion Missouri are hydraulically connected. Therefore, the unconfined portions of the Lower Vermillion Missouri aquifer are assumed to be the alluvium and shallow sand and gravels mapped by Jensen (2000) along the Vermillion River. The area of the unconfined portion using the current boundary, from Hedges and others (1982), is assumed to be approximately 22,350 acres. The unconfined area of the Lower Vermillion Missouri aquifer using the preliminary data from the SD DENR-Geological Survey found in Buhler's (2014) report on 21 permit applications from the Upper Vermillion Missouri aquifer is assumed to be approximately 12,000 acres. Applying Stonesifer's (2013) recharge rate, 4.58 in/yr, to the estimated range of unconfined area of the aquifer, 12,000 to 22,350 acres, yields an estimated recharge rate range of 4,580 to 8,530 ac-ft/yr. Stonesifer

(2013) noted recharge and discharge happen simultaneously. He stated this meant that using observation well analysis to determine recharge rate yielded a rate that was lower than the actual recharge rate to the aquifer.

Figure 4 shows a map of the Lower Vermillion Missouri aquifer and the unconfined portions of the aquifer. It also illustrates appropriations considered supplied from the Lower Vermillion Missouri aquifer (LVM) with each broken into a section that is within the preliminary area of the Upper Vermillion Missouri: South aquifer (UVM: S) and an area that is not.

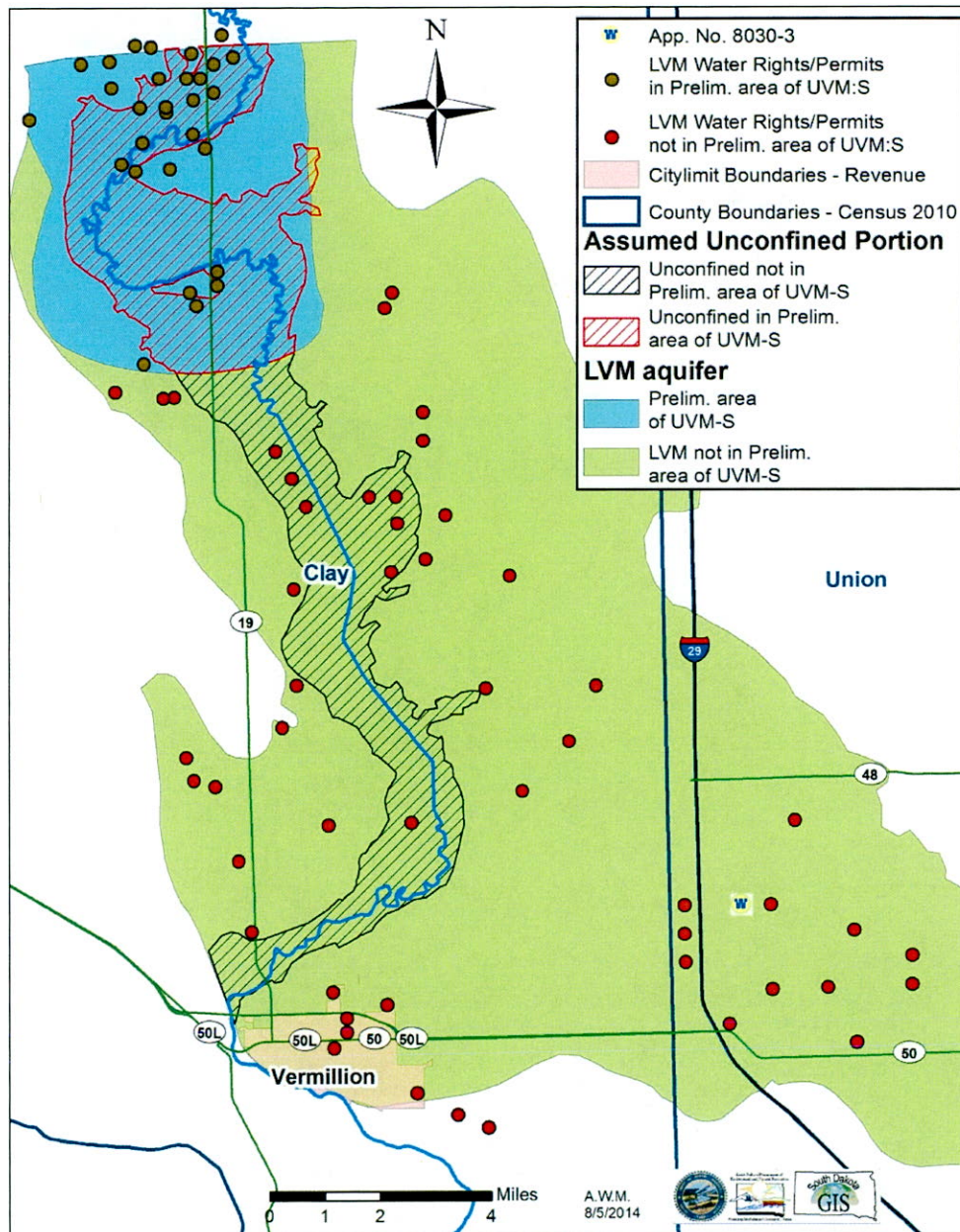


Figure 4- Map of the portions of the aquifer including unconfined portions (Stonesifer, 2013) and water rights/permits (Water Rights, 2014b) divided by the preliminary boundary of the Upper Vermillion Missouri: South aquifer (Buhler, 2014)

Discharge:

The Lower Vermillion Missouri aquifer naturally discharges to the Missouri: Elk Point aquifer and through well withdrawals (Niehus, 1994). There are 80 water rights/permits appropriating water from the Lower Vermillion Missouri as it is currently defined by Hedges and others (1982) (Water Rights, 2014b). However, there are 29 water rights/permits considered to be supplied from the Lower Vermillion Missouri but are now likely in the Upper Vermillion Missouri: South, based on the preliminary aquifer boundaries from SD DENR-Geological Survey study found in Buhler's (2014) report on 21 permit applications from the Upper Vermillion Missouri aquifer.

Only two of the 51 water rights/permits not within the preliminary boundaries of the Upper Vermillion Missouri: South aquifer are for non-irrigation purposes, Water Right Nos. 1870-3 for USD Facilities Mgmt. and 6397-3 for SD DOT (Water Rights, 2014b). The expected maximum use by Water Right Nos. 1870-3 and 6397-3 is 27.3 ac-ft/yr. This estimate is based on pumping at the maximum allowed diversion rate for 60 percent of the time.

There are two water right/permits that are for non-irrigation purposes, Water Right Nos. 3905-3 and 5979-3 for Clay Rural Water System, of the 29 water rights/permits within the preliminary boundary of the Upper Vermillion Missouri: South aquifer (Water Rights, 2014b). The expected maximum use by Water Right Nos. 3905-3 and 5979-3 is 1,176 ac-ft/yr. Water Right No. 3905-3 is limited by diversion rate and the 60 percent assumption used for Water Right Nos. 1870-3 and 6397-3 is used. Water Right No. 5979-3 is limited by an annual volume and is assumed to pump the entire volume.

Table 2 shows the historic irrigation pumpage from the Lower Vermillion Missouri aquifer, shown using both the current boundary between the Lower Vermillion Missouri and the Upper Vermillion Missouri: South aquifers (Hedges et. al, 1982) and the preliminary boundary between the aquifers (Buhler, 2014). The average annual irrigation pumpage by the water rights/permits appropriating from the Lower Vermillion Missouri aquifer not within the preliminary boundaries of the Upper Vermillion Missouri: South aquifer is 1,131 ac-ft/yr. The average annual pumpage for irrigation for the current boundaries of the Lower Vermillion Missouri (Hedges et. al, 1982) is 1,718 ac-ft/yr.

Hydrologic Budget:

The expected annual use from the Lower Vermillion Missouri aquifer ranges from 1,159 to 2921.3 ac-ft/yr. The estimated average annual recharge ranges from 4,580 to 8,530 ac-ft/yr. Therefore there is a reasonable probability that unappropriated water is available for this proposed appropriation.

Preliminary boundary of UVM:S (Buhler, 2014)				Current boundary of LVM (Hedges et. al, 1982)		
Year	No. of Permits Reporting	Appropriation (ac-ft)	Pumpage (ac-ft)	No. of Permits Reporting	Appropriation (ac-ft)	Pumpage (ac-ft)
2013	44	13438.9	2856.49	71	21090.3	4109.1
2012	32	10703.7	3355.27	61	19865.7	7759.51
2011	32	10703.7	1219.42	62	19987.7	2195.06
2010	29	10277.7	133.95	59	19561.7	144.56
2009	29	10277.7	444.86	58	18961.7	482.64
2008	26	8949.45	895.96	55	17587.5	4301.25
2007	24	8425.45	1282.46	50	16655.5	2909.12
2006	24	8425.45	1681.97	43	15254.45	2647.51
2005	25	8905.45	1056.36	45	15844.5	1410.24
2004	25	8905.45	1117.9	39	15013.5	1747.48
2003	26	9439.45	1311.99	40	15199.5	1800.56
2002	26	9439.45	1096.65	40	15199.5	1762.32
2001	24	8771.45	1654.56	38	14879.5	2036.96
2000	24	8771.45	1513.59	38	14879.5	2041.72
1999	24	8771.45	659.12	38	14879.5	900.63
1998	24	8771.45	752.51	36	14150.5	1032.91
1997	25	8819.14	542	36	13656.1	1085.00
1996	25	8819.14	572.48	36	14096.0	997.60
1995	26	9032.34	265.03	37	14307.2	506.61
1994	26	9032.34	268.92	39	14673.7	517.28
1993	32	11696.24	0	39	15308.0	506.61
1992	32	11696.24	136.7	39	15308.2	168.80
1991	32	11696.24	1365.1	39	15308.2	1670.10
1990	31	12045.34	1622.2	38	15657.3	2113.20
1989	31	12045.34	1786.1	38	15657.3	2301.20
1988	32	12477.34	1765.6	38	15657.3	2083.80
1987	31	12255.34	993.4	37	15435.3	1115.40
1986	38	16865.34	1007.5	45	20477.3	1047.50
1985	39	17049.34	1192.2	46	20661.3	1328.20
1984	40	17412.34	691	47	20754.3	691.00
1983	31	12138.34	716.3	38	15480.3	716.30
1982	30	12250.84	798.35	37	15862.8	871.04
1981	42	19661	1499.84	43	23003.0	1543
1980	40	19341	2317.72	47	22683.0	2417
1979	42	19341	1024.42	49	22683.0	1163
Min	24	8425.45	0	36	13656.14	144.56
Max	44	19661	3355.27	71	23003	7759.51
Avg	30.4	11618.6	1131.4	44	17019	1718

Table 2- Irrigation water use from the Lower Vermillion Missouri aquifer in South Dakota (Water Rights, 1980-2014)

EXISTING WATER RIGHTS:

There are three water rights/permits authorizing diversion points, within approximately one mile of the proposed well site (Water Rights, 2014b). The nearest well authorized by a water right/permit is approximately one-half mile east of the proposed well site. There are a number of domestic wells on file with the DENR-Water Rights Program within approximately one mile of the proposed well site (Water Rights, 2014a).

Observation well UN-77I is within approximately one mile of four high capacity wells and CL-80H is within approximately 1,400 feet of a high capacity well (Water Rights, 2014a and 2014b). The hydrographs for UN-77I and CL-80H (see Figures 15 and 11, respectively) document that there is minimal drawdown created by pumping nearby high capacity wells. Furthermore, there

has been a history of irrigation in the area with no complaints filed with the DENR-Water Rights Program in the immediate area and no complaints in Clay or Union Counties regarding well interference since 1989. Therefore, due to the low drawdown created by pumping high capacity wells completed into the Lower Vermillion Missouri aquifer, the distance between wells, and the development of irrigation from the aquifer without a history of well interference complaints, there is a reasonable probability that this proposed diversion can be made without adversely impacting existing appropriative or domestic users.

Since the Lower Vermillion Missouri aquifer is generally under confined conditions, drawdown may extend some distance from the pumped well. It may be possible that drawdown from this proposed appropriation may be measurable in nearby domestic and appropriative right wells. However, the impact of drawdown is not expected to be significant due to the low drawdown created by pumping high capacity wells, the distance between wells, and the development of high capacity wells in the area without a history of complaints.

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 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”

Depending on the specific characteristics of the Lower Vermillion Missouri aquifer at the well site proposed by this application, some existing well owners may need to lower their pumps to accommodate deeper water levels. However, when considering the statute (SDCL 46-6-6.1) and rule (ARSD 74:02:04:20(7)), well interference from the proposed appropriation is not likely to cause a significant impact. Therefore, there is a reasonable probability that any interference will not be adverse.

CONCLUSIONS:

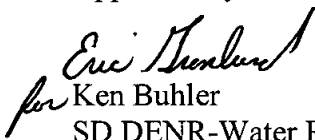
1. This application proposes to appropriate water from the Lower Vermillion Missouri aquifer at a maximum diversion rate of 1.78 cfs for the irrigation of 140 acres.
2. There are 12 observation wells completed into the Lower Vermillion Missouri aquifer. Seven of the 12 observation well hydrographs show declining trendlines on the water level data. Furthermore, eight of the 12 show a water level that has dropped substantially since a peak during the flooding of 2011.
3. Six of the 12 observation wells have had their lowest recorded water level in 2014 with an additional four within 1.5 feet of their lowest recorded water level.

4. Compared to the average of 1986 through 2013, there was 5,924 ac-ft (4.2 times) and 2,274 ac-ft (2.2 times) more water pumped for irrigation in 2012 and 2013, respectively. Compared to 1989, there was 5,458 ac-ft (3.3 times) and 1,808 ac-ft (1.8 times) more water pumped for irrigation in 2012 and 2013, respectively.
5. There were 38 irrigation permits appropriating from the Lower Vermillion Missouri aquifer with 32 reporting pumping in 1989. In 2012, there were 61 irrigation permits with 54 reporting pumping. In 2013, there were 71 irrigation permits with 64 permits reporting pumping.
6. The influence of the Missouri River on water levels of the Lower Vermillion Missouri aquifer are apparent as far north as observation well CL-80H. The change in stage of the river dominates the effect of local precipitation (recharge). However, the effects of recharge and natural discharge still mask the impacts of well withdrawals. Therefore, there is a reasonable probability that unappropriated water is available for this proposed appropriation.
7. Based on a hydrologic budget, there is a reasonable probability that unappropriated water is available for this proposed appropriation.
8. There is a reasonable probability that the diversion proposed by this application can be made without adversely impacting existing appropriative or domestic users.



Adam Mathiowetz
SD DENR-Water Rights Program

Approved by:


for Ken Buhler

SD DENR-Water Rights Program

REFERENCES:

Buhler, K.B. 2014. Report to the Chief Engineer on 21 Water Permit Application from the Upper Vermillion Missouri Aquifer. SD DENR-Water Rights Program. Pierre, South Dakota.

Christensen, C.M. and J.C, Stephens. 1967. Geology and Hydrology of Clay County South Dakota: Part II Hydrology. SD DENR-Geological Survey Bulletin 19. Vermillion, SD.

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- Water Rights. 2014b. Water Right/Permit Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights. 2014c. Well Completion Reports. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.

Appendix 1

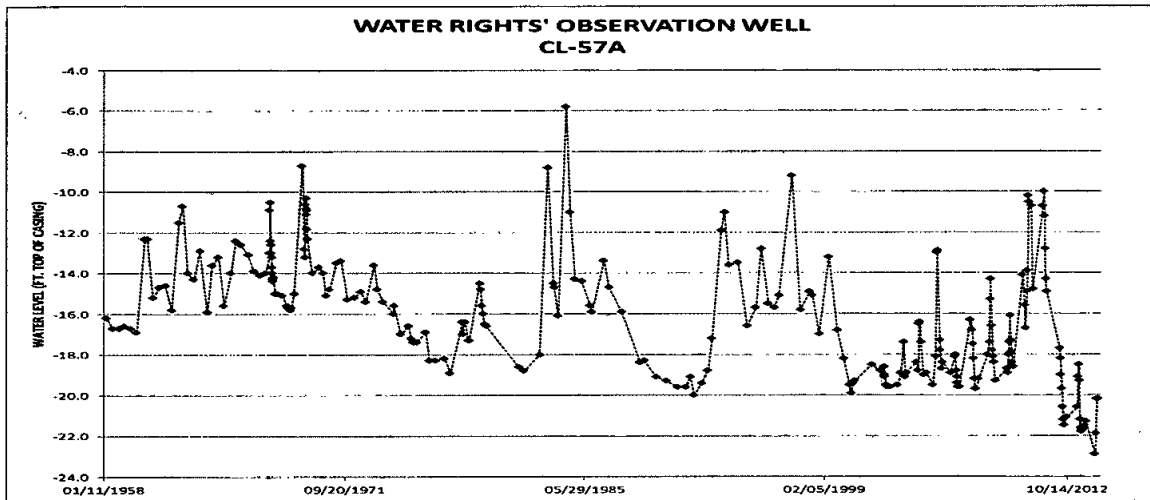


Figure 5- Hydrograph for observation well CL-57A (Water Rights, 2014a)

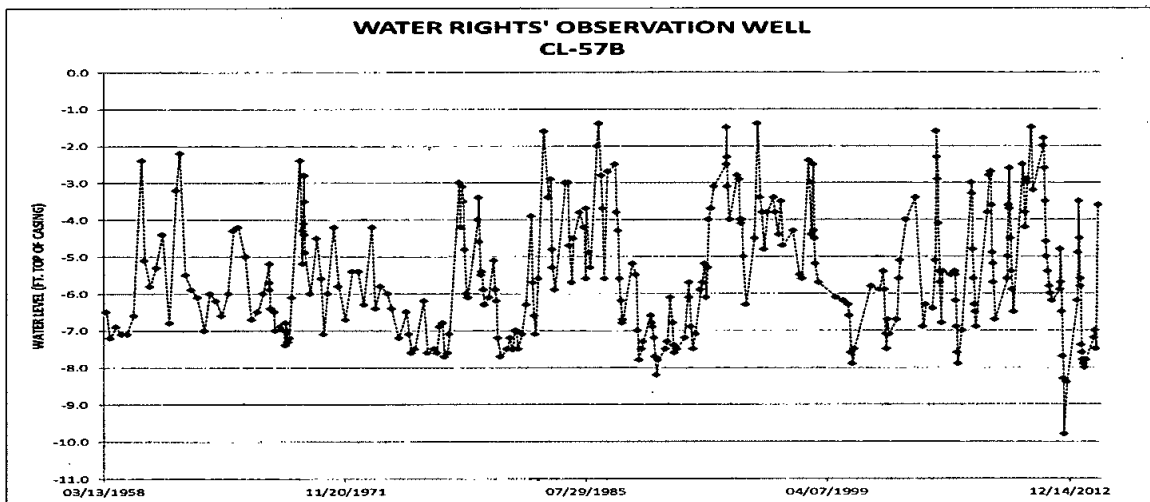


Figure 6- Hydrograph for observation well CL-57B (Water Rights, 2014a)

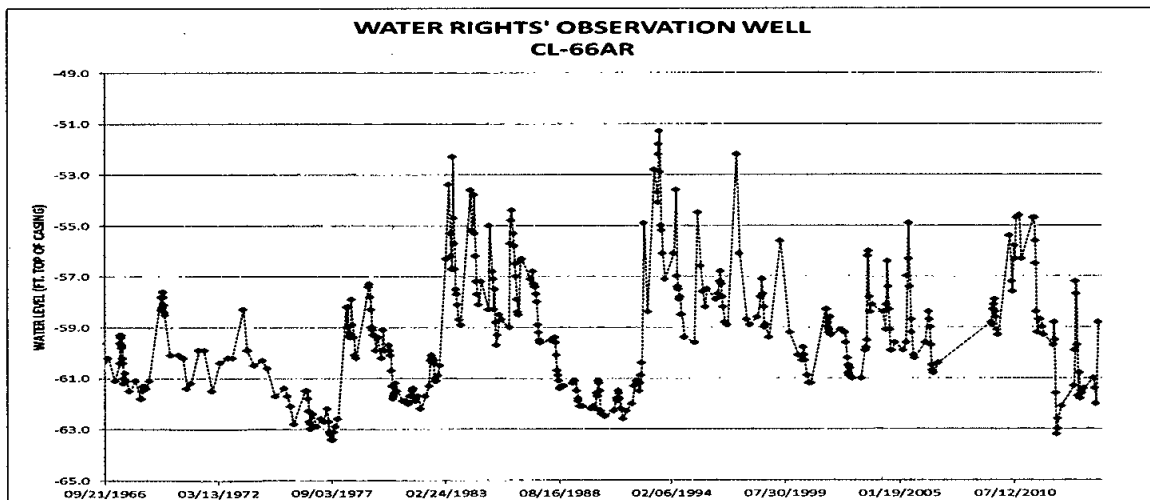


Figure 7- Hydrograph for observation well CL-66AR (Water Rights, 2014a)

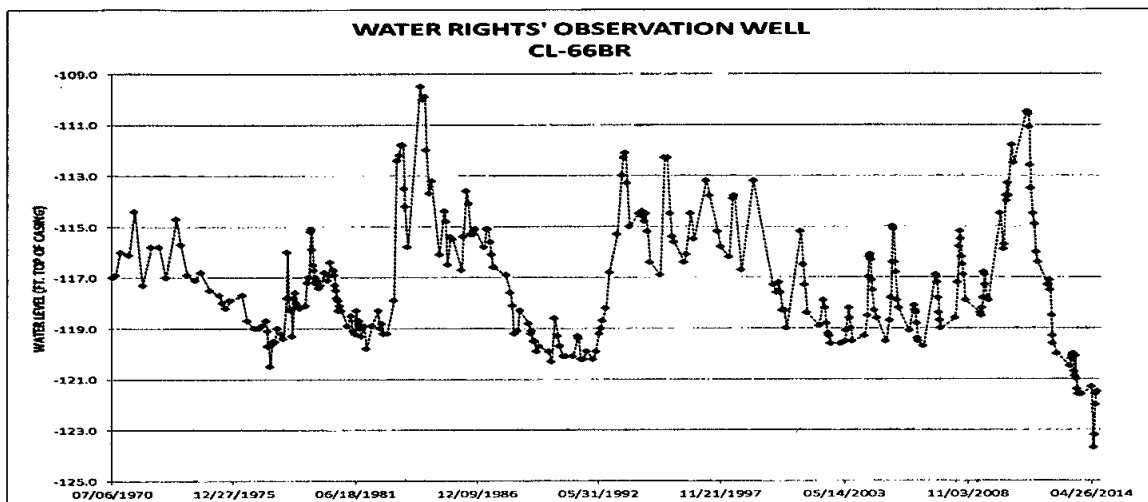


Figure 8- Hydrograph for observation well CL-66BR (Water Rights, 2014a)

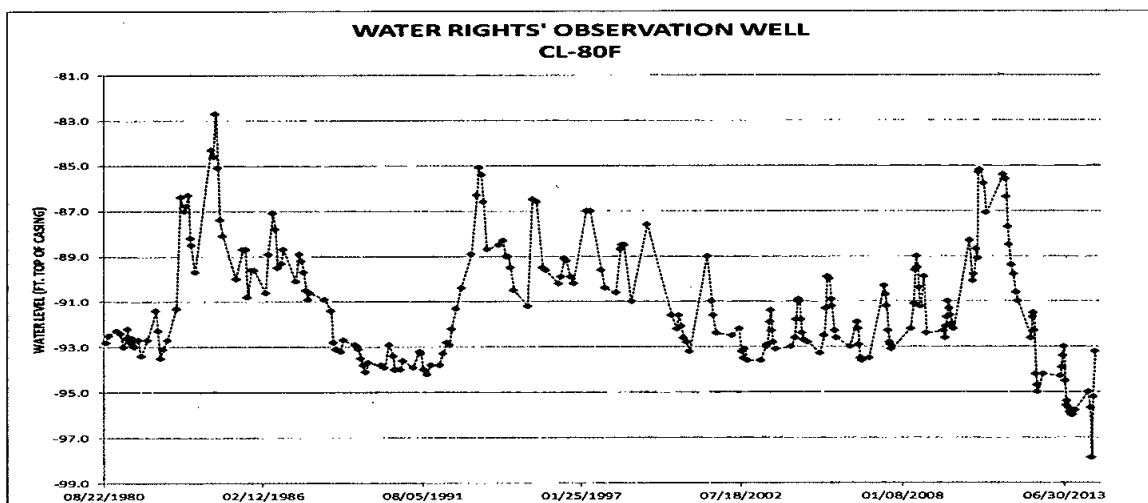


Figure 9- Hydrograph for observation well CL-80F (Water Rights, 2014a)

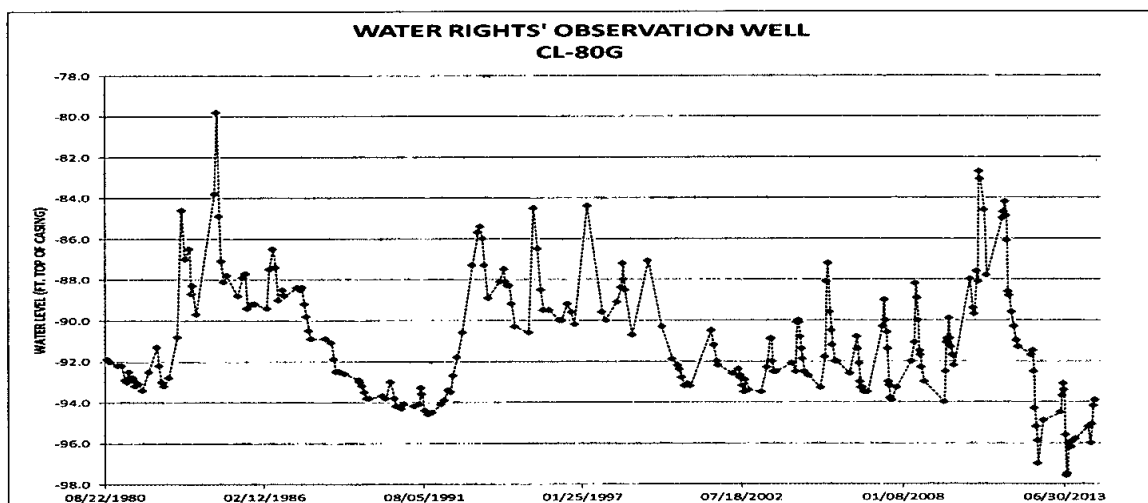


Figure 10- Hydrograph for observation well CL-80G (Water Rights, 2014a)

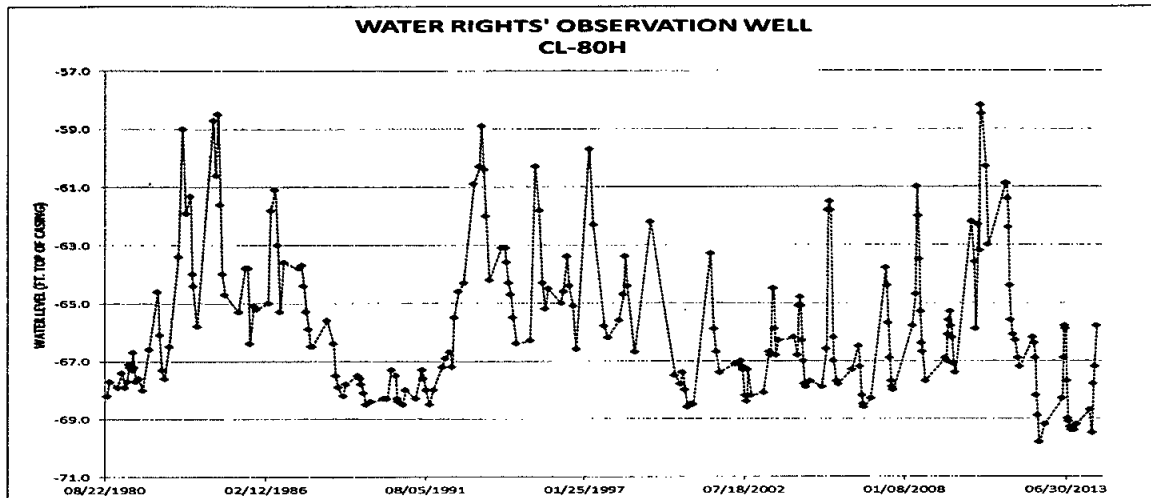


Figure 11- Hydrograph for observation well CL-80H (Water Rights, 2014a)

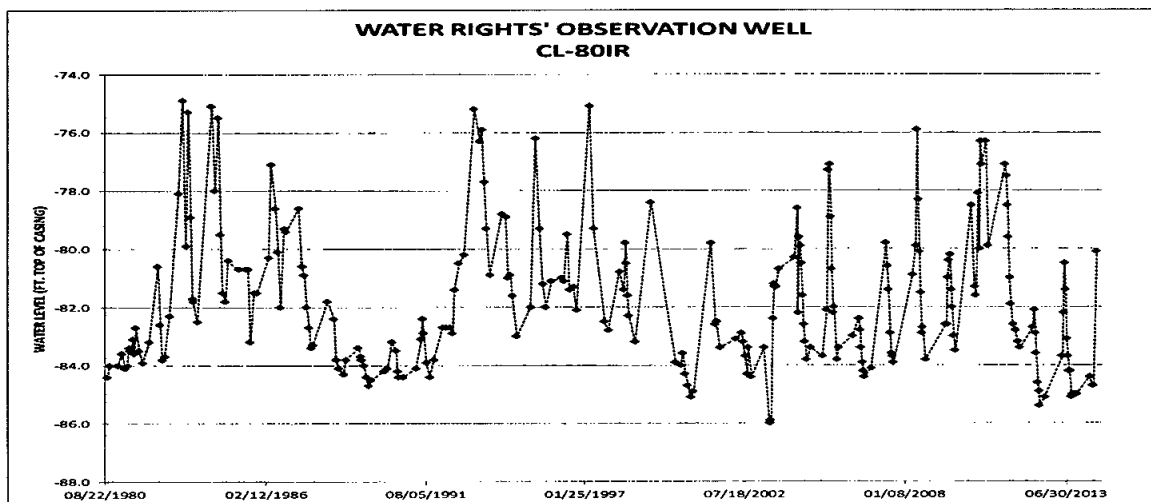


Figure 12- Hydrograph for observation well CL-80IR (Water Rights, 2014a)

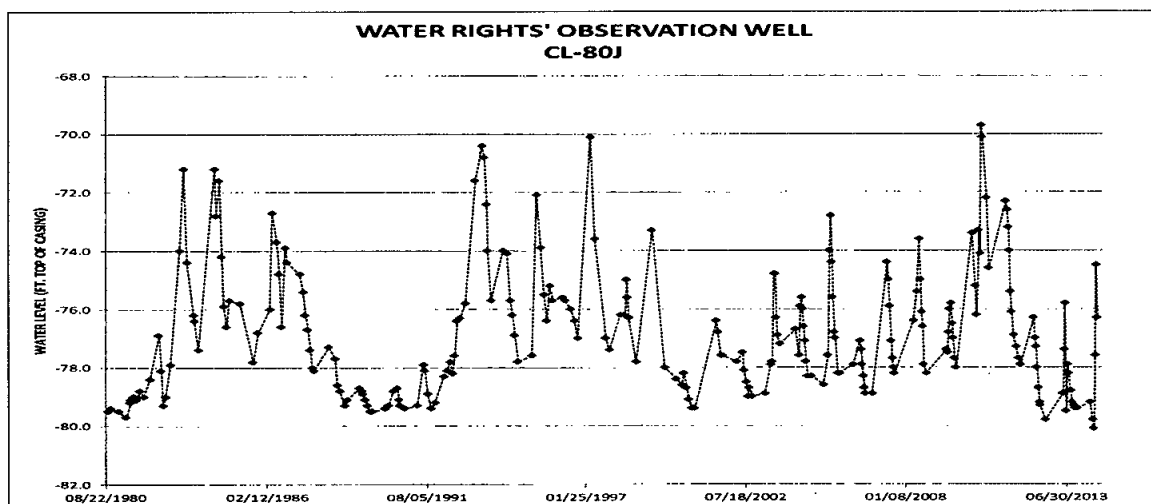


Figure 13- Hydrograph for observation well CL-80J (Water Rights, 2014a)

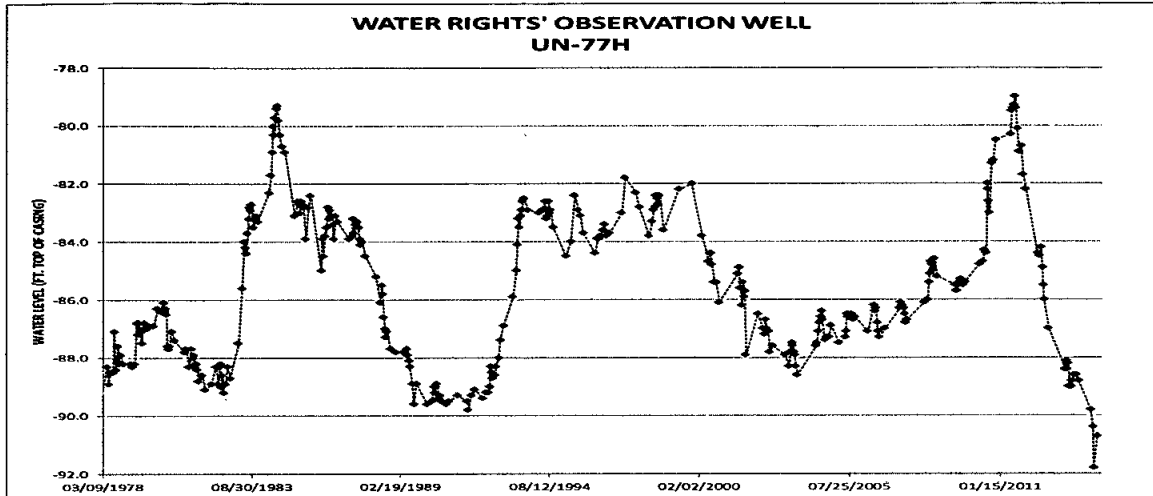


Figure 14- Hydrograph for observation well UN-77H (Water Rights, 2014a)

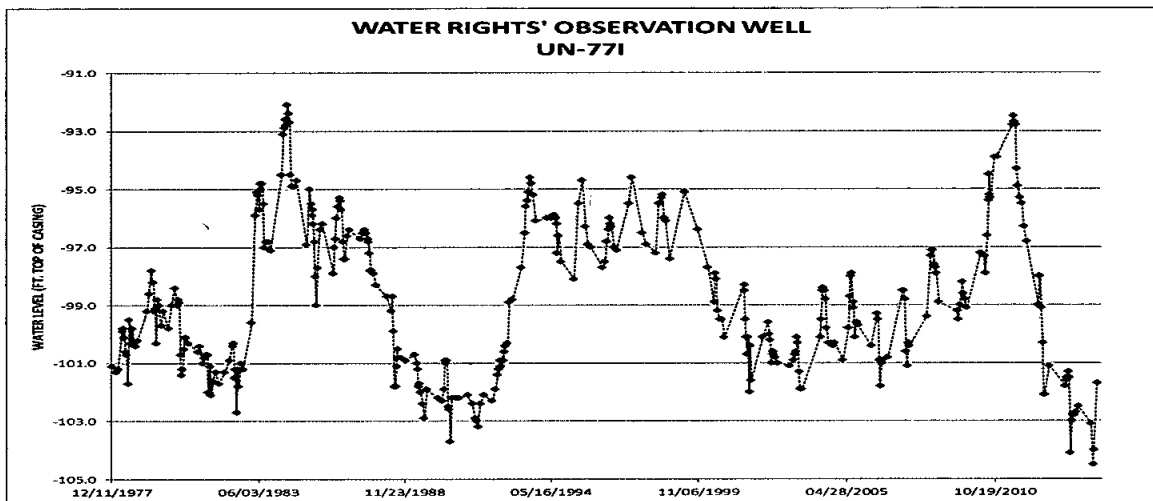


Figure 15- Hydrograph for observation well UN-77I (Water Rights, 2014a)

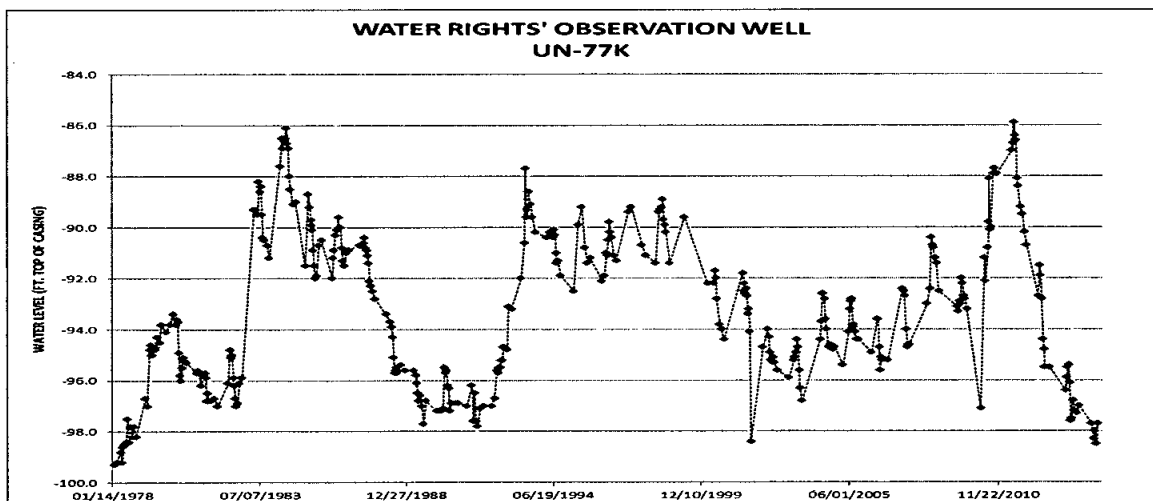


Figure 16- Hydrograph for observation well UN-77K (Water Rights, 2014a)

AFFIDAVIT OF PUBLICATION

State of South Dakota)
:SS
County of Union)

Bruce L. Odson,
the publisher 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. 8030-3

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 11 day of September, 2014

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

\$ 22.88, 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.

Subscribed and sworn to before me

this 11 day of September, 2014

My commission expires 6-21-17

SUSAN ODSON
NOTARY PUBLIC
SOUTH DAKOTA

Notary Public

NOTICE OF APPLICATION NO. 8030-3 TO APPROPRIATE WATER

Notice is given that Reid Bird, 31605 473rd Ave, Elk Point SD 57025 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second from one well to be completed into the Lower Vermillion:Missouri Aquifer (200 feet deep) located in the center of the NW 1/4 Section 5 for irrigation of 140 acres located in the NW 1/4 Section 5; all in T92N-R50W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8030-3 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 September 22, 2014.

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 Sept. 11, 2014
Published once at the total approximate cost of \$22.88
37-5-76

RECEIVED

SEP 12 2014

WATER RIGHTS
PROGRAM

RECEIVED

SEP 15 2014

WATER RIGHTS
PROGRAM

AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

9+11

NOTICE OF APPLICATION
NO. 8030-3 to Appropriate Water

Notice is given that Reid Bird, 31605 473rd Ave, Elk Point SD 57025 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second from one well to be completed into the Lower Vermillion:Missouri Aquifer (200 feet deep) located in the center of the NW 1/4 Section 5 for irrigation of 140 acres located in the NW 1/4 Section 5; all in T92N-R50W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8030-3 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.

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Published once at the total approximate cost of \$25.49.

Department of Environment and Natural Resources
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. 8030-3

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE NEWSPAPER ON THE 11th DAY OF September 2014 THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION OF SAID NOTICE TO WIT \$25.69 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: 9/11/2014

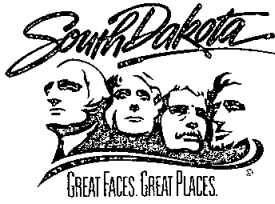
FILED ON: 9/11/2014

SUBSCRIBED AND SWORN TO BEFORE ME THIS 11th DAY OF September 2014

NOTARY PUBLIC, SOUTH DAKOTA

MY COMMISSION EXPIRES

8/19/2015



DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES

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



September 3, 2014

Leader-Courier
PO Box 310
Elk Point SD 57025

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 8030-3 to Appropriate Water. Please publish the notice once on September 11, 2014. 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 Reid Bird, 31605 473rd Ave, Elk Point SD 57025 (Ph # 712-251-6343).

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

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



September 3, 2014

Press & Dakotan
319 Walnut
Yankton SD 57078

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Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures



DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES

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



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

September 3, 2014

Reid Bird
31605 473rd Ave
Elk Point SD 57025

Dear Mr. Bird:

Water Permit Application No. 8030-3 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 September 11, 2014. 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. 8030-3 to Appropriate Water

Notice is given that Reid Bird, 31605 473rd Ave, Elk Point SD 57025 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second from one well to be completed into the Lower Vermillion:Missouri Aquifer (200 feet deep) located in the center of the NW 1/4 Section 5 for irrigation of 140 acres located in the NW 1/4 Section 5; all in T92N-R50W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8030-3 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 September 22, 2014.

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.

Published once at the total approximate cost of _____.



**DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES**

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



OCT 03 2014

Reid Bird
31605 473rd Ave
Elk Point SD 57025

Dear Mr. Bird:

Enclosed is Water Permit No. 8030-3 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

8030-3

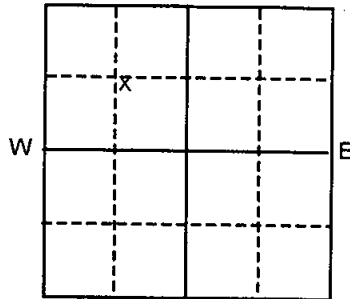
SD EForm - 1621LD V1

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE 1/4 NW 1/4 Sec 5 Twp 92N Rg 50WCounty Union

North

Please mark well
location with an "X"

Well Completion Date

May 18, 2018

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?
1,300.0 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	16.00 IN	0.0 FT	180.0 FT	22.00 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Bentonite	58	9.5 Lb/gal	0.0 Ft	165.0 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure
Tremie

SCREEN:

☒ Perforated pipe ☐ Manufactured
Diameter 16.00 Inches Length 60.0 FeetMaterial PVCSlot Size 0.085 Set From 180.0 Feet to 240.0 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? HTH Tablets
☐ No, Why Not?
 Lab to which water quality sample sent for analysis
Well Owner: Reid Bird

Business Name:

Address: 31605 473rd AveCity, State, Zip: Elkpoint SD 57025

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Top soil	0	3
Glacial Till	3	29
Gray sandy clay	29	113
Rock	113	114
Sand and gravel with clay layers	114	125
Coal	125	128
Sand and gravel with rocks	128	240

STATIC WATER LEVEL 110.0 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

125.0 Ft. After 1.0 Hrs. pumped 800.0 GPM

_____ Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

Elevation: 1225' asl42°49'6.79"N96°46'50.05"WThis well was drilled under license # 810 and this report is true and accurate.Drilling firm: Heine Electric & Irrigation

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

RECEIVED

Date: 8-14-18

SEP 13 2018

WATER RIGHTS
PROGRAM

**Report of Examination of Works and/or Application of Water to
Beneficial Use
For Permit No. 8030-3**

I have this day, February 26, 2025, made a thorough examination of the water use system constructed by Reid Bird of 31605 473rd Ave, Elk Point SD 57025 holder of Permit No. 8030-3, bearing the priority of June 16, 2014 authorizing the diversion of 1.78 cu. ft. per second of the waters of groundwater, Lower Vermillion:Missouri Aquifer for irrigation purposes, in Union County.

Inspection contact & relationship Brennan Bird, son

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: Heine Electric and Irrigation
- 2) No. of Wells 1
- 3) Depth(s) 240 feet
- 4) Well log is available Y If no, explain in comments

Casing:

- 1) Diameter 16 inches
- 2) Length 180 feet
- 3) Type plastic

Screen:

- 1) Type PVC
- 2) Length 60 feet
- 3) Static water level 110 feet

Pump:

- 1) Make Grundfos
- 2) Model submersible
- 3) Capacity 800 GPM

Motor:

- 1) Make Grundfos
- 2) Model No. submersible
- 3) Horsepower rating 40 hp

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

- 1) Type steel
- 2) Size 8 inches
- 3) Length 20 feet

C. Works used to apply water to beneficial use:

Center pivot:

- 1) Make Valley
- 2) Overall length 1300 feet
- 3) Number of towers 7
- 4) End gun Y
- 5) Capacity 800 GPM

Chemigation Equipment:

- 1) Does chemigate N

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by Y
- 2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period Y
List any extended period of nonuse: none
- 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: from the NW corner of Sec 5 T92N-R50W 1320 ft E and 1320 ft S, latitude of 42.81897 and longitude of -96.78108 , center of NW ¼.
2. The works are capable of diverting and conveying to the place of use 1.78 cu. ft. per second of water which is to be used for irrigation. Water has been put to beneficial use to the maximum extent as follows: All land is located in Sec 5 NW ¼ NW ¼ - 33ac NE ¼ NW ¼ - 33 ac SE ¼ NW ¼ - 33 ac SW ¼ NW ¼ - 24 ac comprising a total of 123 acres of land and the license should be issued for 1.76.
3. All structures, wells and lands on map Y
If no, describe: none

F. Comments or other permit(s) associated with the project:

none.



Mark D Rath
Water Right Inspector
DANR, Water Rights Program

Date report completed: May 8, 2025



0 0.2 0.4 0.8 1.2 1.6 Miles



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

JUN 06 2025

Reid Bird
31605 473rd Ave
Elk Point, SD 57025

No. 8030-3

Dear Mr. Bird:

Enclosed is Water License No. 8030-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

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

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

Sincerely,

Mark Mayer, PE
Director of Office of Water
(605) 773-3352

Note: The number of acres authorized for irrigation under Water Right No. 8030-3 has been reduced to 123, based on the system as constructed.

Note: The inspection found your system for Water Right No. 8030-3 to be capable of diverting 1.78 cfs (approx. 800 gpm). Pursuant to SDCL 46-5-6 diversion of water under this license is limited to 1.76 cfs (approx. 790 gpm).

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**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 8030-3**

(1) Reid Bird, 31605 473rd Ave, Elk Point, SD 57025, made Application No. 8030-3, June 16, 2014, for a water permit to divert 1.78 cubic feet of water per second from groundwater, one well (Lower Vermillion Missouri Aquifer), Union County, South Dakota for irrigation purposes. Permit No. 8030-3, with a priority date of June 16, 2014, was approved September 22, 2014, and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before September 22, 2019, and for the application to beneficial use of water on or before September 22, 2023.

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

- 1,320 feet E and 1,320 feet S from the NW corner of Section 5, T92N, R50W
(approx. center of NW $\frac{1}{4}$) (Latitude 42.81897 and Longitude -96.78108)

(3) The amount of appropriation may not exceed 2 acre-feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: April 1 – October 31.

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

Section 5, T92N, R50W
NE $\frac{1}{4}$ NW $\frac{1}{4}$ - 33 acres
NW $\frac{1}{4}$ NW $\frac{1}{4}$ - 33 acres
SW $\frac{1}{4}$ NW $\frac{1}{4}$ - 24 acres
SE $\frac{1}{4}$ NW $\frac{1}{4}$ - 33 acres
Total – 123 acres

(5) Pursuant to South Dakota Water Law 46-5-30.1 Reid Bird, the holder and/or owner of Water Right No. 8030-3 is issued a license to appropriate water, the right to use 1.76 cubic feet of water per second from groundwater, one well (Lower Vermillion Missouri Aquifer), with a priority date of June 16, 2014, 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. 8030-3 and subject to the following qualifications:

1. The well approved under Permit No. 8030-3 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. 8030-3 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. *(The well was drilled in 2018 by Heinie Electric & Irrigation. A copy of the well completion report is on file with the Water Rights Program.)*
3. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.



Mark Mayer, PE
Director of Office of Water

6/6/25

date

