

WATER PERMIT NO. 7327-3

Name of Applicant: Myron Bierema

Address: 30821 412th Ave, Springfield SD 57062

Phone: 605 369-5409

Amount of Water Claimed: 1.78 cfs

Total Acres: 97 acres

Source of Water Supply: groundwater (one well)

Water to be used for: irrigation

County: Bon Homme

Type of Waste Disposal System:

Location: 5 miles northwest of Springfield

PRIORITY

Date Received: 3-2-12

Application/License Fee: \$ 950

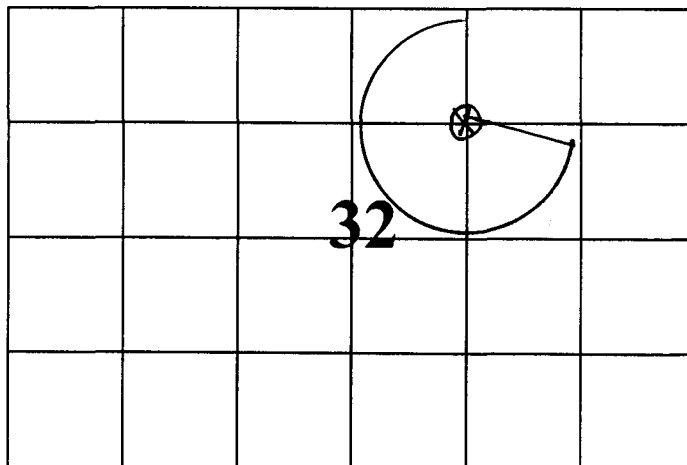
Corrected Application Received:

Period of Annual Use: May 1 – October 30

Remarks:

Diversion Point: center of NE ¼ Sec 32-T94N-
R60W

Land to be Irrigated: NE ¼ Sec 32-T94N-R60W



Depth of Well: 230 feet deep

Well Driller:

Remarks:

Type of Map: aerial

Prepared by: Ervin Bierman, Bon Homme FSA

Reviewed and the Number Assigned on: 3-2-12

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

RECEIVED
MAR - 2 2012
WATER RIGHTS
PROGRAM

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>7327-3</u> (office use only)	Hydrologic Unit <u>101 70101</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Tyndall Tribune PO Box 520</u>	
	<u>605-589-3242</u>	<u>57066</u>

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.) _____

- Name of Applicant Myron Bierema (check one) ☒ Owner ☐ Tenant/lessee Phone 605-369-5409
Mailing Address 30821 412th AVE, Springfield State S.D. 57062
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed 1.78*CFS or 800 **GPM ***AF Total Acreage 97
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Well, Chateau Tyndall Aquifer
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) 1 well in Allion Township NE 1/4 section 32-T94N-R-60-W (approximate center) in center of section County Bon Homme
- County or counties where water will be used Bon Homme
- Annual period during which water is to be used May 1 - Oct 30
- 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
<u>NE 1/4 section 32-T94-N R-60-W</u>			
<u>Allion Township</u>	<u>97</u>		

8. Give a description of the project. (Attach sheet if more space is needed)
center pivot - Requesting greater diversion rate than statutory Limit

STATE OF SOUTH DAKOTA) SS
County of Bon Homme

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Attach map and any other technical information. (see instructions)

I, Myron Bierema, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Applicant's signature Myron Bierema

Subscribed and sworn to before me this 28th day of Feb 20 13

[Signature]
5-31-13 Notary Public signature

**SOUTH DAKOTA
WATER PERMIT NO. 7327-3**

Date of first receipt of application March 2, 2012.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7327-3 to Myron Bierema, 30821 412th Ave, Springfield SD 57062 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. 7327-3 appropriates 1.78 cubic feet of water per second (cfs) from one well to be completed into the Choteau:Tyndall Aquifer (230 feet deep) located in center of the NE ¼ Section 32 for irrigation of 97 acres located in the NE ¼ Section 32; all in T94N-R60W.
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 – October 30.
3. The date from which applicant may claim right is March 2, 2012.
4. The date of approval of Permit No. 7327-3 is April 23, 2012.
5. One-fifth of the construction is to be completed on or before October 23, 2014.
6. All construction is to be completed on or before April 23, 2017.
7. Water is to be put to beneficial use on or before April 23, 2021.
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. 7327-3 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. 7327-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 97 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: Garland Erbele
Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

SEP 07 2012
date



Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter 38 in. Depth 230
- b) Casing Type Plastic Diameter 16 in. Thickness _____
- c) Screen Type _____ Diameter _____ Thickness _____
- d) Gravel Pack _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material _____
- f) Depth to Water (ground surface to water level) _____
- g) Distance to nearest existing domestic well: _____

On applicants property 1500 ft On property owned by others _____

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) _____
- b) System Capacity (gallons) _____ Year Constructed _____
- c) Connected to the City of _____ Sanitary System _____

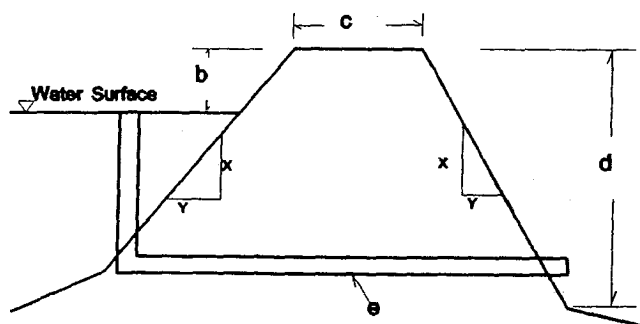
3. Dugout Information

- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

- a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:



- b) Freeboard _____
- c) Crest Width _____
Crest Length _____
- d) Height _____
- e) Primary Outlet Capacity _____
If pipe, diameter _____
- f) Secondary Spillway Capacity _____
Spillway Width _____
- g) X & Y Slope _____
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

November 07, 2011

PLSS: 32_94N_60W
Farm: 86

Bon Homme County

1:7,912



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.

Wetland Determination Identifiers

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

Common Land Units

Non Cropland

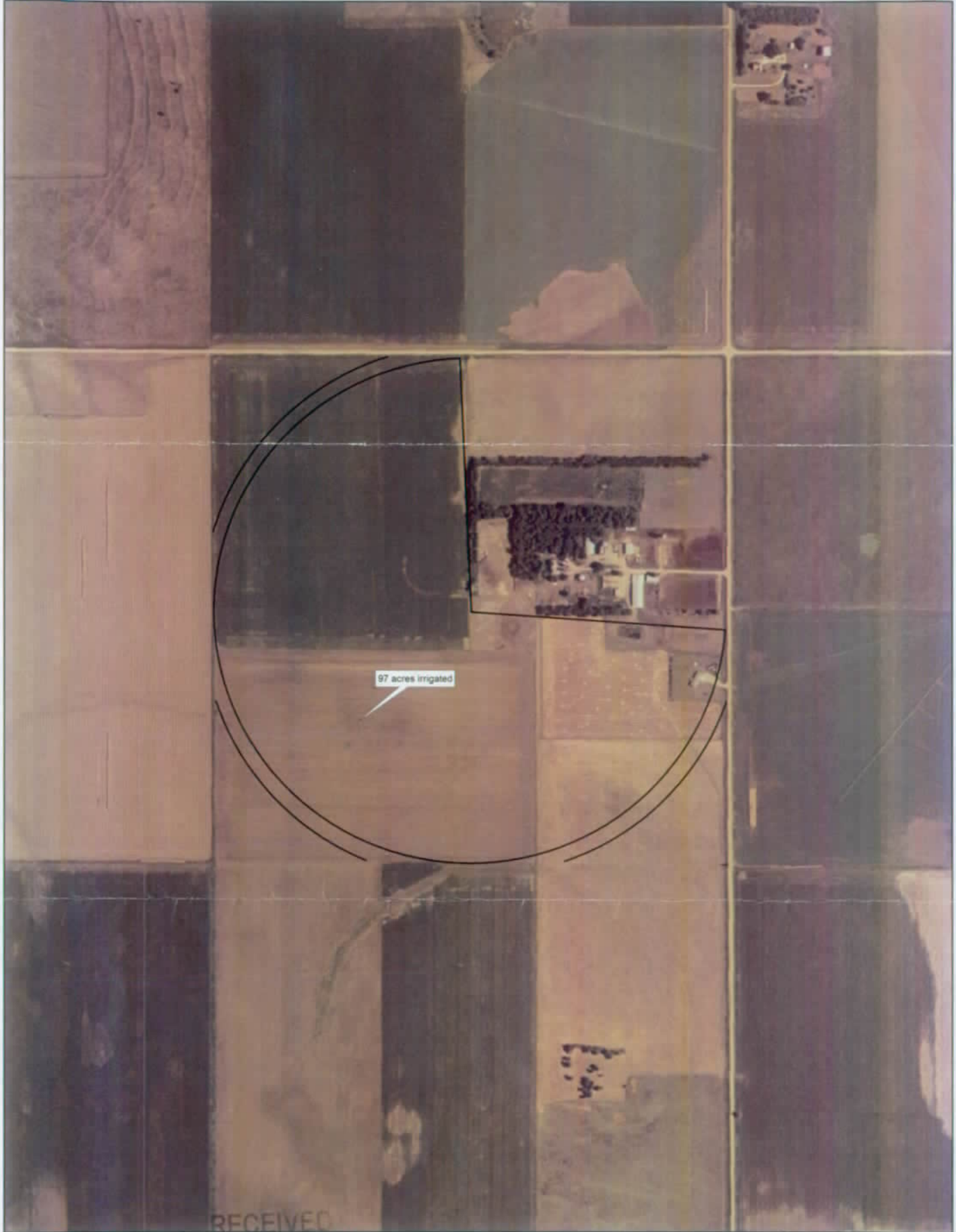
RECEIVED

MAR - 2 2012

WATER PROTECTION

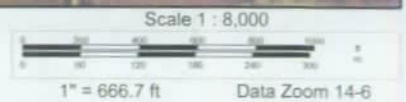
2010 Ortho-Photography - Not to Scale

Eric R. Brown C.E.D. 2-27-2012



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MAR - 2 2012
WATER RIGHTS PROGRAM



RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 3/2, 20 12

RECEIVED OF Myron Bierema 30821 412th Ave Springfield SD 57062

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

Fee for Application for Permit No. <u>7327-3</u> to Appropriate Water, to construct and to put water to beneficial use	750	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>7327-3</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	950 00

No. **05366**

By L. O. Erbe
Chief Engineer



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 7327-3, Myron Bierema**

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. 7327-3, Myron Bierema, 30821 412th Avenue, Springfield SD 57062.

The Chief Engineer is recommending APPROVAL of Application No. 7327-3 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. 7327-3 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. 7327-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 97 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.

Garland Erbele, Chief Engineer
March 28, 2012

REPORT TO THE CHIEF ENGINEER
ON
WATER PERMIT APPLICATION NO. 7327-3
MYRON BIEREMA
MARCH 14, 2012

Water Permit Application No. 7327-3 proposes to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Choteau: Tyndall aquifer. The well is expected to be approximately 230 feet deep and is to be located in the center of the NE¼ Section 32, T94N-R60W. Water will be used to irrigate 97 acres located in the NE¼ Section 32, T94N-R60W. This application is requesting a diversion rate that exceeds the statutory limit of one cfs per 70 acres.

AQUIFER: Tyndall Management Unit of the Choteau aquifer (CH:T)

GEOLOGY AND AQUIFER CHARACTERISTICS:

The Tyndall Management Unit of the Choteau aquifer is a buried outwash deposit that fills a preglacial valley in central Bon Homme County. Originally this outwash was named the Tyndall-Scotland aquifer (Jorgensen, 1971) and was thought to extend to the northeast, ultimately into Yankton and Hutchinson Counties. Hedges and others, (1982) separated the "Tyndall-Scotland" aquifer into the Choteau: Tyndall aquifer and the Scotland management unit of the Lower James Missouri aquifer to the northeast. Observation well data suggests groundwater movement from north to south in the Choteau-Tyndall and to the north in the Lower James Missouri-Scotland aquifer. The Choteau: Tyndall aquifer underlies 31,300 acres of Bon Homme County and contains an estimated 140,850 acre-feet of recoverable water in the county (Hedges, 1982). The aquifer is generally under confined conditions however, unconfined conditions exist locally.

The saturated thickness of the Choteau: Tyndall aquifer was estimated to be less than 50 feet in this area (Christensen, 1970). However, the completion report for a domestic well that was constructed for Sid Bierema, located less than 1,000 feet east of the well site proposed by this application, identifies sand from 50-225 feet below grade with a static water level of 108 feet below grade (Water Rights, 2012c). A DENR-Water Rights Program observation well (BH-76D) located less than one-half mile southeast of this proposed well site identifies sand and gravel from 38-174 feet below grade, clay from 174-204 feet below grade, and sand and gravel from 204-228 feet below grade (Water Rights, 2012a). The static water level of the observation well is around 100 feet below land surface.

Capacities of seven nearby irrigation wells that are completed into the Choteau: Tyndall aquifer range from 500-1,000 gpm and specific capacities of the wells range from under 7 (gpm)/ft. to over 43 (gpm)/ft. (Water Rights, 2012c). The aquifer transmissivity calculated from the reported specific capacities ranges of 9,855 – 65,205 gal/day/ft. ("Transmissivity From Specific Capacity"). An aquifer test conducted at a Tyndall municipal well that is completed into the Choteau: Tyndall aquifer indicated a transmissivity of 210,000 gal/day/ft. and a storage coefficient of 0.2 (Jorgensen, 1971).

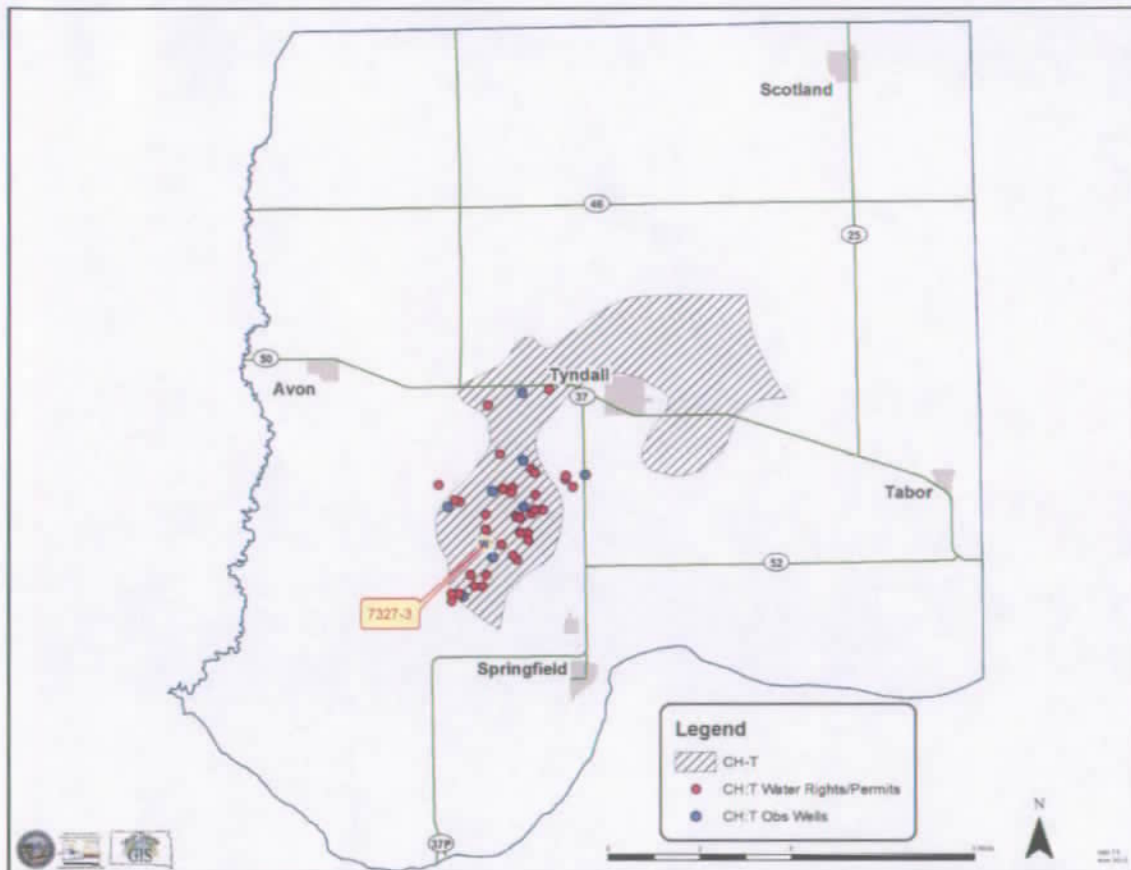


Figure 1. Bon Homme County, the Choteau: Tyndall aquifer (modified from Hedges and others, 1982), appropriations from the aquifer, DENR-Water Rights' Choteau: Tyndall observation wells and the location of the well site proposed by Application No. 7327-3

SDCL 46-2A-9

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

WATER AVAILABILITY:

This application proposes to appropriate 194 acre-feet annually from the Choteau: Tyndall aquifer. Although the actual water use if this application is approved will be less than 194 acre-feet/year. The probability of unappropriated water available from an aquifer can be evaluated by considering SDCL 46-6-3.1 which requires "No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source."

Recharge versus Withdrawals:**Recharge:**

Most of the recharge to the Choteau: Tyndall is from percolation of precipitation through the overlying till or alluvium (Jorgensen, 1971). The aquifer directly overlies the Niobrara aquifer in places and may be recharged from the bedrock aquifer. Recharge may also occur from Emanuel Creek where the outwash outcrops along the creek (T93N-R60W). The average annual recharge rate to the unconfined portion of the Choteau: Tyndall aquifer is estimated to be 3.2 inches/yr. (Hedges and others, 1985).

Withdrawals:

Natural discharge from the Choteau: Tyndall occurs through evapotranspiration and seepage to bedrock aquifers. The Choteau: Tyndall aquifer discharges to Emanuel Creek along the lower reaches of the creek and the spring discharge constitutes most of the base flow to the creek (Jorgensen, 1971).

There are 23 Water Rights appropriating water from the Choteau: Tyndall aquifer. In addition, the City of Tyndall holds Future Use No. 4839A-3 that reserves 410 acre-feet annually from the Choteau: Tyndall for future use. Except for two municipal use water rights for the City of Tyndall, all of the water rights/permits from the Choteau: Tyndall are for irrigation use. Tyndall is currently served by B-Y Rural Water System and the municipal wells are maintained for emergency use only. Historic Choteau: Tyndall irrigation data is shown in table 1.

Choteau: Tyndall Aquifer Irrigation Use			
Year	No. of Permits	Appropriation (Ac-Ft)	Pumpage reported (Ac-Ft)
1979	17	8079	983
1980	17	7966	1943
1981	22	10210	1418
1982	19	8576	1564.67
1983	19	9043	996.66
1984	23	10710	1012.13
1985	21	9551	1056.16
1986	21	9551	1184.2
1987	21	9393	1645.7
1988	21	9393	2545.85
1989	22	9470	2173.9
1990	19	7604	1570.5
1991	19	7154	1961.5
1992	19	7154	489.25
1993	19	7154	61.2
1994	19	7523	633.66
1995	19	7523	1104.18
1996	19	7672	1034.76
1997	17	7179	964
1998	18	7179	708.2
1999	18	7179	939.23
2000	18	7179	1235.83
2001	18	7179	919.74
2002	17	6759	1613.71
2003	16	6138	1495.99
2004	20	7288	1680.06
2005	20	7288	2006.84
2006	20	7240	1693.26
2007	21	7410	1931.36
2008	23	7824	2138.41
2009	23	7824	1023.99
2010	23	7824	559.56
Maximum	23	10710	2545.85
Minimum	16	6138	61.2
Average	19.625	7975.5	1321.516

Table 1. Historic irrigation from the Choteau: Tyndall aquifer

There is a reasonable probability that the average annual withdrawal from the Choteau: Tyndall aquifer does not exceed the average annual recharge to the aquifer and unappropriated water is available for this appropriation.

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 DENR-Water Rights Program monitors eight observation wells completed into the Choteau: Tyndall aquifer, with five of these wells located within approximately two miles of the well site proposed by this application (Water Rights, 2012a). Hydrographs for the Choteau: Tyndall observation wells in the vicinity of this application are shown in figures 2-6.

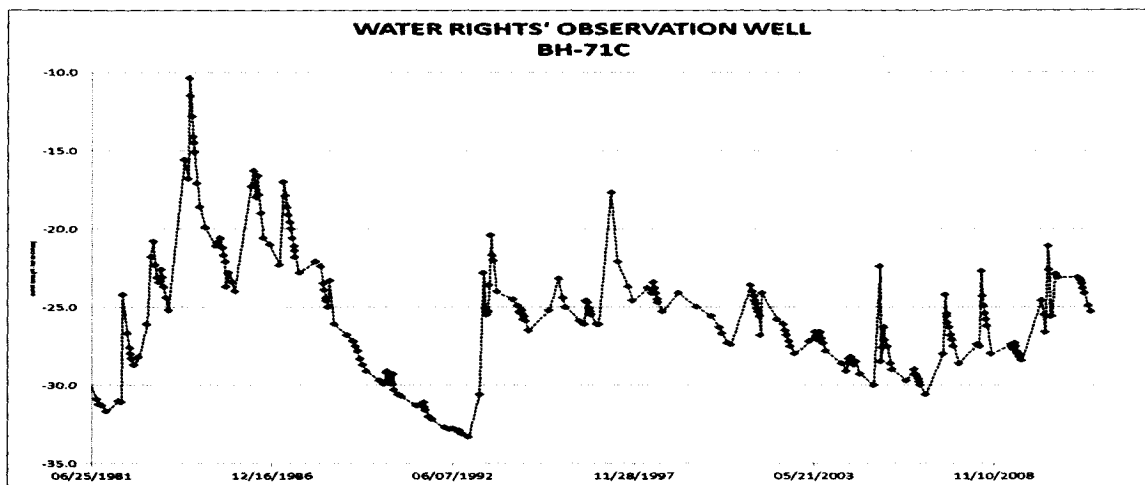


Figure 2. Hydrograph of DENR-Water Rights' Observation Well BH-71C which is located approximately 1.8 miles north of the well site proposed by Application No. 7327-3.

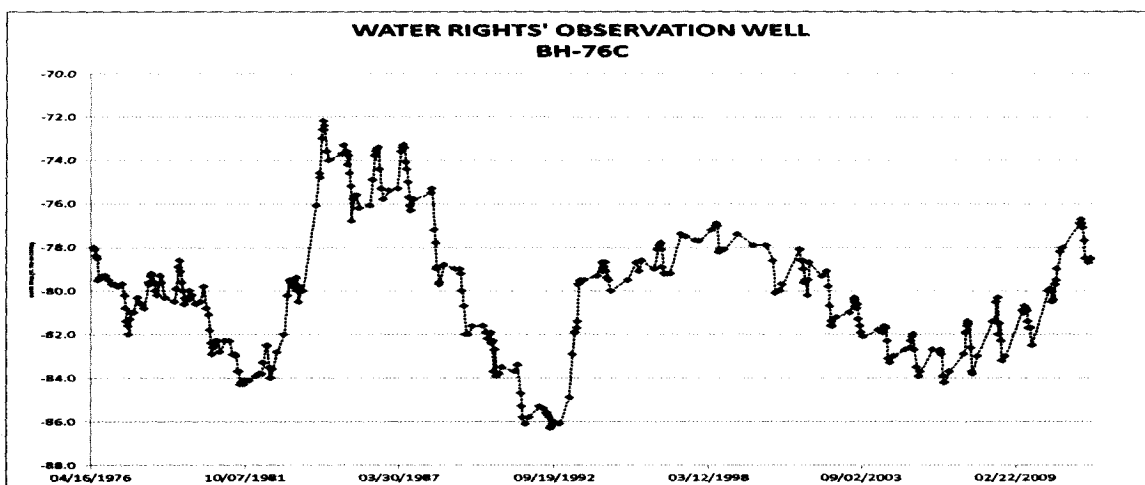


Figure 3. Hydrograph of DENR-Water Rights' Observation Well BH-76C which is located approximately 1.7 miles northeast of the well site proposed by Application No. 7327-3.

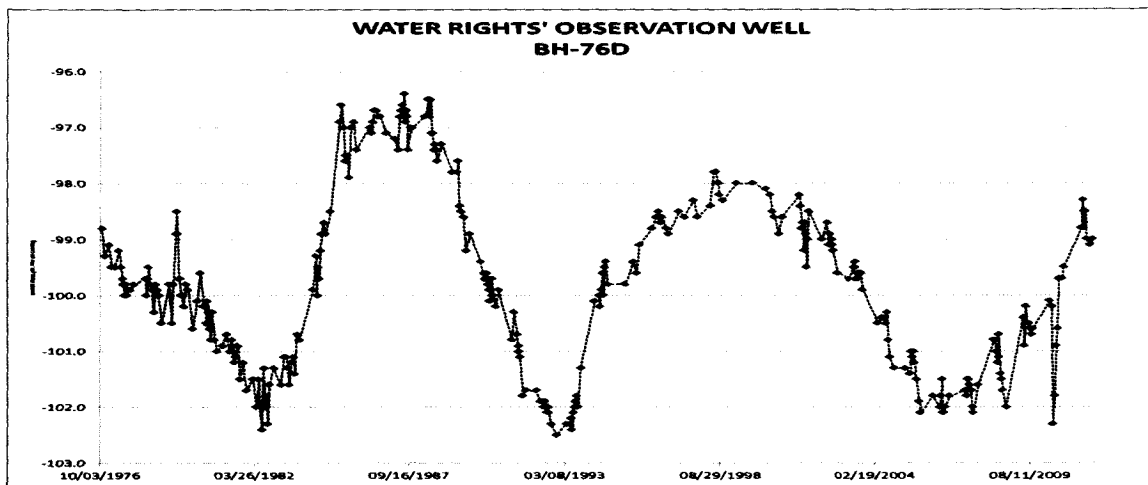


Figure 4. Hydrograph of DENR-Water Rights' Observation Well BH-76D which is located approximately 0.5 miles southeast of the well site proposed by Application No. 7327-3.

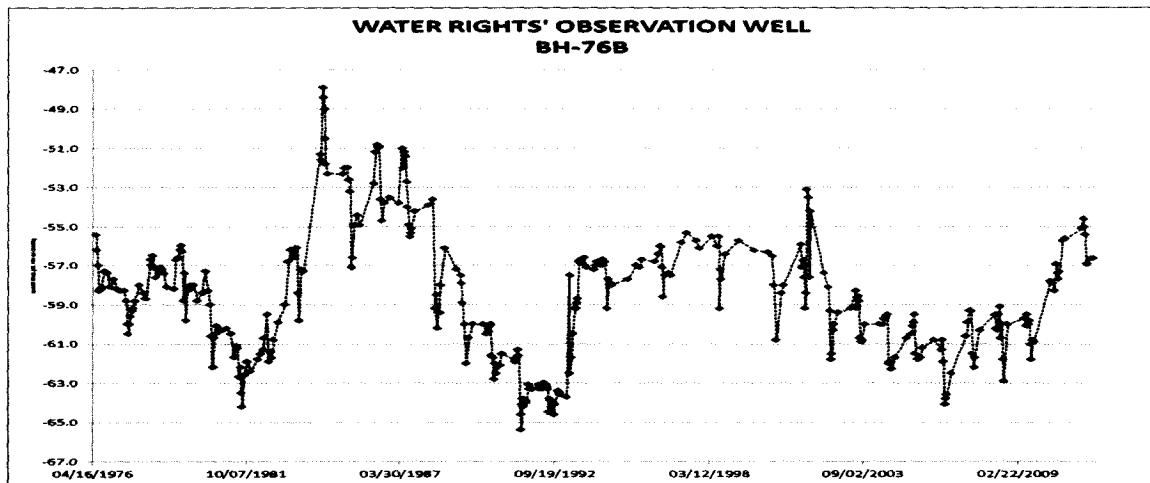


Figure 5. Hydrograph of DENR-Water Rights' Observation Well BH-76B which is located approximately 1.7 miles northwest of the well site proposed by Application No. 7327-3.

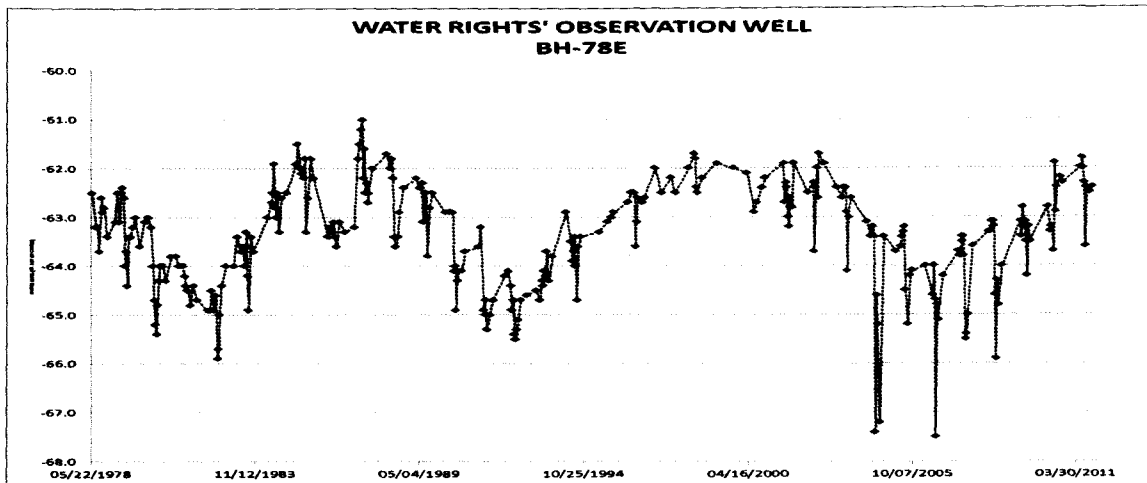


Figure 6. Hydrograph of DENR-Water Rights' Observation Well BH-76D which is located approximately 0.5 miles south of the well site proposed by Application No. 7327-3.

The observation well data show the aquifer readily recharges and clearly document the cyclic climate conditions with wet and dry periods. The hydrographs show that although the amount of water in storage in the Choteau: Tyndall aquifer varies with the climate, the amount of water in the aquifer is the same or greater now than it was when the records begin. The hydrographs document that there is unappropriated water available from the aquifer to support this appropriation.

EXISTING WATER RIGHTS:

As stated earlier, there are 23 existing water rights/permits appropriating water from the Choteau: Tyndall aquifer. Water Permit Application No. 4674-3 was received April 15, 1981, and was denied May 27, 1981 after the applicant requested the application be withdrawn from consideration due to unfavorable test hole results.

Water rights/permits that are located within approximately two miles of the well site proposed by this application are shown in table 2. In addition to the water rights/permits shown in the table, Future Use Permit No. 4839A-3 reserves 410 acre-feet annually from the Choteau: Tyndall aquifer from an area approximately 1.3 miles from the well site proposed by this application.

PERMIT NO	NAME	STATUS	USE	CFS	ACRES
3576-3	DONALD TJEERDSMA	LC	IRR	2	155
3581-3	PERCY TJEERDSMA	LC	IRR	1.78	126
3582A-3	DOUGLAS E & DARLA R VAN GERPEN	LC	IRR	1.78	125
3583B-3	PRESTON BOCHMAN	LC	IRR	2.07	145
3811-3	DONALD TJEERDSMA	LC	IRR	2	168
4839B-3	CITY OF TYNDALL	LC	MUN	1.06	NA
5286-3	VINCENT BOESE	LC	IRR	1.42	100
5424-3	LESLIE BOHLMANN	LC	IRR	2	160
5513-3	RICHARD HAJEK	LC	IRR	1.78	132
6413-3	PERCY TJEERDSMA	PE	IRR	1.78	160
6454-3	DANIEL SCHUURMANS	PE	IRR	1.71	120
6465-3	DAVID RUPPELT	LC	IRR	1.56	135
6496-3	MYRON BIEREMA	LC	IRR	1.78	136
6791-3	VIRGIL TJEERDSMA	PE	IRR	1.21	85
6902-3	DAVID RUPPELT	PE	IRR	1	70
6903-3	DAVID RUPPELT	PE	IRR	1.56	137

Table 2. Water Rights/Permits located within approximately two miles of the well site proposed by Application No. 7327-3.

The nearest existing appropriations to this well site, Water Right Nos. 3582A-3 and 6496-3, are supplied by wells located approximately one-half mile east and one-half mile north, respectively of the well site proposed by this application. The observation well data documents, that drawdown is not substantial very far from a production well. Observation well BH-76C is located within one-half mile of two irrigation wells, observation well BH-76B is within one-third of a mile of a high capacity irrigation well and BH-78E is within one-third of a mile of a high capacity irrigation well and the hydrographs for the wells (figures 3, 5 & 6 respectively) document that drawdown is not significant. Drawdown is not expected to be significant within one-half mile of a production well pumping the proposed 800 gallons per minute. There is a reasonable probability that drawdown would not adversely impair existing users.

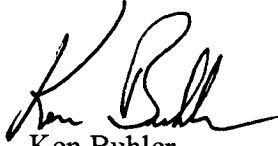
SDCL 46-5-6

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 does provide that the Water Management Board may allow a greater diversion if the method of irrigation so requires. Water Permit Application No. 7327-3 proposes to divert at a rate of 1.78 cfs to irrigate 97 acres, or the equivalent to 1.28 cfs per 70 acres. It is not unusual for rates to exceed one cfs per 70 acres in similar situations where a center pivot irrigation system does not make a full rotation.

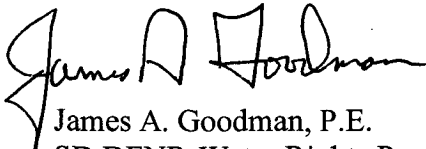
CONCLUSIONS:

1. This application proposes to appropriate up to 194 acre-feet annually for irrigation but the amount of water that actually will be used is expected to be considerably less.
2. There is a reasonable probability that unappropriated water is available from the Choteau: Tyndall aquifer to supply this proposed diversion.
3. There is a reasonable probability that the diversion requested by this application can be made without adversely effecting existing water rights.

4. This application is requesting a diversion rate that exceeds the statutory limit of one cfs per 70 acres.



Ken Buhler
SD DENR-Water Rights Program
Approved by



James A. Goodman, P.E.
SD DENR-Water Rights Program

REFERENCES:

Christensen, C.M., 1970, Major Ground-Water Aquifers in Bon Homme County, South Dakota: SD Geological Survey Water information Circular 4, 7 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., and 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, South Dakota DENR-Geological Survey, Vermillion, SD

Jorgensen, D.G., 1971, Geology and Water Resources of Bon Homme County, South Dakota, Part II: Water Resources: S.D. Geological Survey Bulletin 21, 61 p.

"Transmissivity from Specific Capacity." Aquifer Test Forum sponsored by HydroSOLVE, Inc. 14 Mar.2011< <http://www.aqtesolv.com/forum/transcap.asp>

Water Rights, 1980-2011, "Annual Irrigation Summary by Aquifer": SD DENR-Water Rights Program, Joe Foss Building, Pierre, SD

Water Rights, 2012a, Observation Well Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2012b, Water Right/Permit Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2012c, Well Completion Report Files, SD DENR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Affidavit of Publication

RECEIVED

APR 12 2012

WATER RIGHTS PROGRAM

State of South Dakota }
County of Bon Homme } SS

Rebecca Tycz Being first duly sworn says that the **Tyndall Tribune & Register** is a legal weekly newspaper for publication of legal and other official notices as required by Chapter 298 of the Session Laws of South Dakota, 1939; that it has bona fide paid circulation of more than two hundred copies weekly; that it is published in English language in the City of Tyndall, Bon Homme County, South Dakota, and has been admitted to the United States mail under second class mailing privilege for more than one year prior to the first publication of the notice herein mentioned, and that it is printed in an office maintained at the place of publication at Tyndall, South Dakota, and that deponent is the publisher in charge of the advertising department of said newspaper; that the advertisement headed

Notice of Application #7327-3
68e31.2-180 1/2 x 1

a printed copy of which is hereto attached, was printed and published in said newspaper for two successive weeks, upon the following dates:

<u>April 4</u>20 <u>12</u>	20.....
<u>April 11</u>20.....	20.....
.....20.....	20.....
.....20.....	20.....

That the full amount of the fee charged for the publication of said notice, \$45.54, inures to the benefit of the publisher of said newspaper, that no agreement or understanding for the division thereof has been made with any other person, and that no part has been agreed to be paid to any person whatsoever.

Rebecca Tycz
Subscribed and sworn to before me this
11th day of April 2012
Reggie Schuker
Notary Public, South Dakota

My commission expires: Oct 24, 2015

NOTICE OF APPLICATION

NO. 7327-3 to Appropriate Water

Notice is given that Myron Bierema, 30821 412th Avenue, Springfield, SD 57062 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Choteau: Tyndall Aquifer (230 feet deep) located in center of the NE1/4 Section 32 for irrigation of 97 acres located in the NE1/4 Section 32; all in T94N-R60W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7327-3 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 April 23, 2012.

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 petition 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 twice at an approximate cost of \$45.54

(April 4 & 11)



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

March 29, 2012

Tyndall Tribune & Register
PO Box 520
Tyndall SD 57066

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7327-3 to Appropriate Water to be published twice. Please publish the first notice on April 4, 2012 with the second publication 7 days later. 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, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Myron Bierema, 30821 412th Ave., Springfield SD 57062 (Ph # 605-369-5409).

Please send the Water Rights Program the first publication immediately. The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** 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

-----CUT HERE-----

No. 7327-3

TO: Eric Gronlund
Water Rights Program
Joe Foss Building
Pierre SD 57501-3181

Date _____

We are in receipt of your letter of March 29, 2012 enclosing Notice to Appropriate Water by Application No. 7327-3 which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



**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.

March 29, 2012

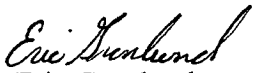
Myron Bierema
30821 412th Ave
Springfield SD 57062

Dear Mr. Bierema:

Water Permit Application No. 7327-3 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 Publisher of the Tyndall Tribune & Register printed at Tyndall SD (Ph # 605-589-3242). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendations of the Chief Engineer and reports on the applications 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 to authorize publication of your Notice and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks. 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 applications.

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 first Notice on April 4, 2012 with the second publication 7 days later. 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. 7327-3 to Appropriate Water

Notice is given that Myron Bierema, 30821 412th Ave, Springfield SD 57062 has filed an application for a water permit to appropriate 1.78 cubic feet of water per second (cfs) from one well to be completed into the Choteau-Tyndall Aquifer (230 feet deep) located in center of the NE ¼ Section 32 for irrigation of 97 acres located in the NE ¼ Section 32; all in T94N-R60W. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7327-3 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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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 twice 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

SEP 07 2012

Myron Bierema
30821 412th Ave
Springfield SD 57062

Dear Mr. Bierema:

Enclosed is Water Permit No. 7327-3 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.

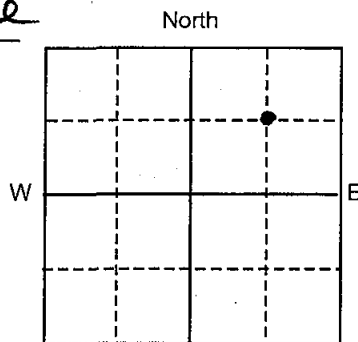
Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location NE 1/4 NE 1/4 Sec 32 Twp 94N Rg 60WCounty San AntonioPlease mark well
location with an "X"

Well Completion Date

10-25-12

1 Mile

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

PROPOSED USE:

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

METHOD OF DRILLING:

Reverse Rotary

CASING DATA:

If other describe ☐ Steel ☒ Plastic ☐ Other

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>1100</u> LB/FT	<u>16</u> IN	<u>0</u> FT	<u>160</u> FT	<u>28</u> IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
<u>Cement</u>	<u>55</u>	<u>0</u> Lb/gal	<u>0</u> Ft	<u>106</u> Ft
		Lb/gal	Ft	Ft

Describe grouting procedure

Pumped down w/ pressure grouter

SCREEN:

☒ Perforated pipe ☐ Manufactured
Diameter 16 Inches Length 60 Feet
Material PVC
Slot Size .085 Set From 1600 Feet to 220 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?Chlorine☐ No, Why Not?Lab to which water
quality sample sent for analysisWell Owner: Myron SiemerBusiness Name: 30821 412 Ave

Address:

City, State, Zip: Springfield, SD 57062

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
<i>see attached sheet</i>		

STATIC WATER LEVEL

106

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

128 Ft. After 2 Hrs. pumped 750 GPM137 Ft. After 4 Hrs. pumped 1000 GPM

If pump installed, pump rate:

600

GPM

REMARKS

This well was drilled under license # 444

and this

report is true and accurate.

Drilling firm:

Christensen Well + Injection

Signature of License Representative:

Cody W. Christensen

Signature of Well Owner or Equitable Property Holder:

Date:

RECEIVED

DEC 26 2012

WATER RIGHTS
PROGRAM

Center 1/4 Myron lies on

Christensen Well & Irrigation, Inc.

88005 Hwy. 57
Hartington, NE 68739
Office 402-254-6809

OWNER

Myron Bierma

ADDRESS

STATE

DATE 10-25-12

TEST HOLE ☐FARM WELL ☐IRRIGATION ☒

Quarter

NE

Section

32

Township

94-N

Range

60-W

County

Bartlesville

FT	FT	
0	3	Black topsoil
3	35	brown clay w/ pebbles
35	50	soft blue clay
50	60	blue clay w/ brown sand
60	100	med to coarse brown sand
100	120	med to coarse brown sand / fine gravel
120	140	med brown sand - clean
140	150	coarse brown sand / fine gravel
150	160	coarse green sand / fine gravel
160	170	med to fine green sand
170	190	med to coarse green sand
190	198	blue/green clay
198	223	med green sand + gravel
223		ROCKS

STATIC WATER LEVEL

106'

PUMPING WATER LEVEL

750 GPM @

128'

SCREEN LENGTH

SLOT SIZE

.085"

TOTAL DEPTH

220'

GPS:

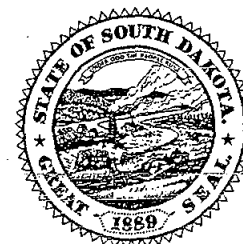
JUN 17 2013

WATER RIGHTS
PROGRAMNOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USEDate 6-13-13TO: Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181FROM: Myron Bierema
(name)30821 412 AVE
(address)Springfield, S.D. 57062
(city, state, zip)605-369-5409
(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. 7327-3 states that the water use system is to be constructed by6-6-13
(date), and water is to be put to beneficial use by 6-6-13
(date)The water use system was completed on 6-6-13
(date)Applying the water to beneficial use was completed on 6-6-13
(date)

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

Myron Bierema
(signature)



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

June 18, 2013

7327-3

Myron Bierema
30821 412th Ave
Springfield SD 57062

Dear Mr. Bierema:

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

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

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

Sincerely,

A handwritten signature in black ink that reads "Genny McMath". The signature is written in a cursive, flowing style.

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

Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 7327-3

I have this day, July 6, 2018, made a thorough examination of the water use system constructed by Myron Bierema, 30821 412th Ave., Springfield, SD 57062, holder of Permit No. 7327-3, bearing the priority of March 2, 2012 authorizing the diversion of 1.78 cu. ft. per second of the waters of groundwater (Choteau: Tyndall Aquifer) for irrigation purposes, in Bon Homme County.

Inspection contact: Myron Bierema, Owner

A. Works used to divert the water:

Well Information:

1) Well Drilling Firm: Christensen Well & Irrigation

2) No. of Wells 1

3) Depth(s) 223 feet

4) Well log is available Yes

Casing:

1) Diameter 16 inches

2) Length 160 feet

3) Type PVC

Screen:

1) Type PVC

2) Length 60 feet

3) Static water level 106 feet

Pump:

1) Make Goulds

2) Model 1B177

3) Capacity 800 GPM

Motor:

1) Make US Motor

2) Model No. BF54A

3) Horsepower rating 50 hp

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

1) Type Galvanized 2) Size 8 inches 3) Length 10 feet

C. Works used to apply water to beneficial use:

Center pivot:

1) Make T&L

2) Overall length 1,298 feet

3) Number of towers 8

4) End gun Yes

5) Capacity 800 GPM

Chemigation Equipment:

- 1) Does chemigate No

D. Compliance with Permit Requirements:

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

E. Condition and Location:

1. The system is in good condition with the point(s) of diversion located as follows: Well: 1,335 feet west 1,320 feet south from the northeast corner of Section 32-T94N-R60W (Latitude 42.91957, Longitude - 97.95609 – SW1/4NE1/4).
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 purposes. Water has been put to beneficial use to the maximum extent as follows: all in Section 32-T94N-R60W

<u>NW1/4NE1/4</u>	<u>33 acres</u>
<u>SW1/4NE1/4</u>	<u>34 acres</u>
<u>SE1/4NE1/4</u>	<u>6 acres</u>

comprising a total of 73 acres of land and the license should be issued for 1.78 cfs.

3. All structures, wells and lands on map Yes

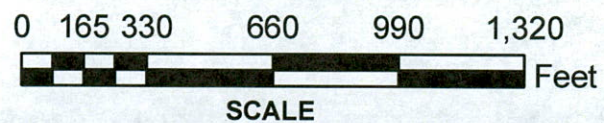
F. Comments or other permit(s) associated with the project: The owner stated that he may eventually want to continue rotating the pivot farther to the north and east onto the pasture ground in the SE1/4 of the NE1/4. That would add 20 acres to the amount of land irrigated in the SE1/4 of the NE1/4.

Keith DeJong

Keith DeJong
Water Rights Inspector
DENR, Water Rights Program

Date report completed: July 27, 2018

Water Right No. 7327-3



Keith DeJong
Keith DeJong, PE
Staff Engineer
July 27, 2018



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

SEP 26 2018

7327-3

Myron Bierema
30821 412th Ave
Springfield SD 57062

Dear Mr. Bierema:

Enclosed is Water License No. 7327-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

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

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

Sincerely,

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

enclosures

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 7327-3**

(1) Myron Bierema, 30821 412th Ave, Springfield SD 57062 made Application No. 7327-3, March 2, 2012 for a water permit to divert 1.78 cubic feet of water per second (cfs) from ground water, one well (Choteau Tyndall Aquifer), Bon Homme County, South Dakota for irrigation purposes. Permit No. 7327-3, with a priority date of March 2, 2012 was approved April 23, 2012 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before April 23, 2017 and for the application to beneficial use of said water on or before April 23, 2021.

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

- 1,335'W and 1,320'S of the NE corner of Section 32-T94N-R60W (approximate center of the NE ¼)
Latitude 42.91957, Longitude -97.95609

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

Section 32, T94N, R60W	NW ¼ NE ¼	33 acres
	SW ¼ NE ¼	34 acres
	SE ¼ NE ¼	6 acres
	Total	73 acres

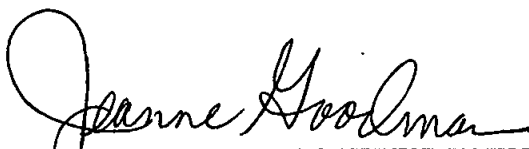
(4) Pursuant to South Dakota Water Law 46-5-30.1 Myron Bierema, 30821 412th Ave, Springfield SD 57062 the holder and/or owner of Water Right No. 7327-3 is issued a license to appropriate water, the right to use 1.78 cubic feet of water per second from ground water, one well (Choteau Tyndall Aquifer) with a priority date of March 2, 2012 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. 7327-3 and subject to the following qualifications:

- 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.
- The well authorized by Permit No. 7327-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with the Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28. *The well was drilled in October, 2012 by Christensen Well & Irrigation. A copy of the well completion report is on file with the Water Rights Program.*

continued

- 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. 7327-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 73 acres with an annual volume not to exceed 2 acre feet of water per acre per year. *The acreage cited above has been reduced to reflect the number of acres actually developed.*
- This Permit is approved subject to the irrigation water use questionnaire being submitted each year.



Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

SEP 26 2018

date

