

WATER PERMIT NO. 7501-3

Name of Applicant: **Paul Moriarty**

Address: **7380 Sunset Rd, Brookings SD 57006** Phone:

Amount of Water Claimed: **1.78 cfs** Total Acres: **152**

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

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

Type of Waste Disposal System:

Location: **2 miles south of Volga**

PRIORITY Date Received: **11-5-12** Application/License Fee: **\$ 1050**

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

Remarks:

Diversion Point: **approximate center of NE 1/4 Sec**
35-T110N-R51W

Land to be Irrigated: **NE 1/4 Sec 35-T110N-R51W**

Depth of Well: **312 feet deep**

Well Driller: **Steffl Drilling & Pump Co.**

Remarks:

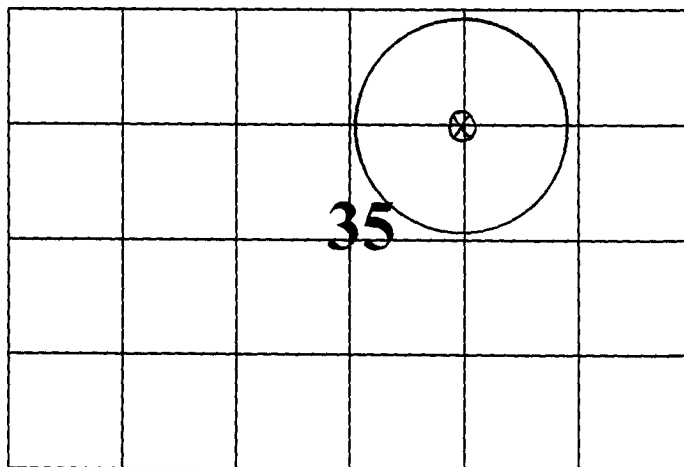
Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **11-6-12**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



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

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>7501-3</u> (office use only)	Hydrologic Unit <u>10170202</u>
	Basin <u>Sioux River</u>	
	Newspaper <u>Brookings Register PO Box 177</u> <u>57006</u>	
	<u>605-692-6271</u>	

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NOV - 5 2012
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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 Paul Moriarty
(check one) ☒ Owner ☐ Tenant/lessee ☐ Owner's Legal Agent Paul Moriarty
(name and complete address if different than above name)

Mailing Address 7380 Sunset Road Brookings SD 57006
(Address) (City) (State) (Zip Code)

Home Phone _____ Cell _____ Email _____

2. Amount of water claimed 1.78 *CFS or 800 **GPM ***AF Total Acreage 152
(*Cubic Feet per Second) (**Gallons per Minute) (***) Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply Well approximate center NE 1/4 Sec 35 T110N R51W

4. Location of point of diversion 1 well 1300' north side of the NE 1/4 of the NE 1/4 1300'
(example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W)
from the east side of the NE 1/4 of the NE 1/4 (center) County Brookings

5. County or counties where water will be used Brookings

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

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

Land Description	Acres	Land Description	Acres
NE 1/4 of the NE 1/4 Sec 35 110N 51W	38		
SE 1/4 of the NE 1/4 Sec 35 110N 51W	38		
NW 1/4 of the NE 1/4 Sec 35 110N 51W	38		
SW 1/4 of the NE 1/4 Sec 35 110N 51W	38		

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

I, Paul Moriarty, 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. 7501-3**

Date of first receipt of application November 5, 2012.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7501-3 to Paul Moriarty, 7380 Sunset Road, Brookings SD 57006 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. 7501-3 appropriates 1.78 cubic feet of water per second from one well to be completed into the Howard Aquifer (312 feet deep) located in the approximate center of the NE 1/4 Section 35 for irrigation of 152 acres located in the NE 1/4 Section 35; all in T110N-R51W.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – September 30.
3. The date from which applicant may claim right is November 5, 2012.
4. The date of approval of Permit No. 7501-3 is January 28, 2013.
5. One-fifth of the construction is to be completed on or before July 28, 2015.
6. All construction is to be completed on or before January 28, 2018.
7. Water is to be put to beneficial use on or before January 28, 2022.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

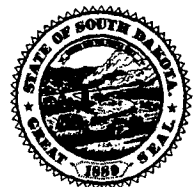
QUALIFICATIONS

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 7501-3 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: Garland Erbele
Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

FEB 09 2013
date



Supplemental Information

(type or print)

1. Well Information (check one or both as applicable) ☐ Drilling new well(s) ☐ Using existing well(s)

a) If new wells, how many 1 Have test holes been drilled ☒ Yes ☐ No Drilled by Steff
(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 312 Depth to Top of Water Bearing Material 292 Depth to Water from Surface 20ft

d) Distance to nearest existing domestic well:

On applicant's property 0

On property owned by others 2600

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

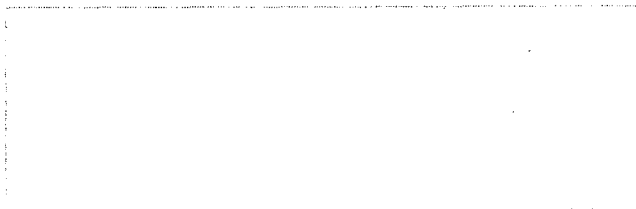
a) Surface Dimensions Depth

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)

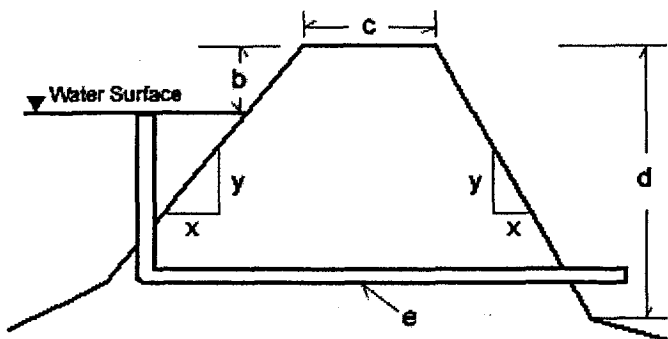
Upstream

Downstream

h) Surface Area of Impoundment

i) Storage Acre Feet

j) Drainage Area Above Dam Acres





PPLS: 35_110N_51W

Data use subject to license.

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www.delorme.com

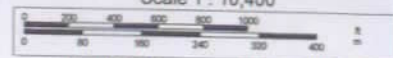
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Scale 1 : 10,400



1" = 866.7 ft

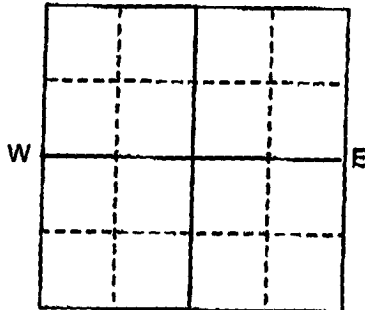
Data Zoom 14-3

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location 1/4 se 1/4 Sec 35 Twp 110n Rg 51wCounty Brookings

North

Please mark well
location with an "X"

Well Completion Date

October 10, 2012

1 Mile

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

PROPOSED USE:

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

METHOD OF DRILLING:

mud rotary

CASING DATA:

☐ Steel ☐ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	IN	0.0 FT	312.0 FT	6.00 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
quick grout	21	Lb/gal	0.0 Ft	312.0 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure _____

SCREEN:

☐ Perforated pipe ☐ Manufactured

Diameter _____ Inches Length _____ Feet

Material _____

Slot Size _____ Set From _____ Feet to _____ 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? _____

☐ No, Why Not? _____
Lab to which water
quality sample sent for analysis _____Well Owner: Paul MoriartyBusiness Name: T Hole #2 center 15' e of pivot / page 2Address: 7380 Sunset RoadCity, State, Zip: Brookings SD 57006

WELL LOG:

		DEPTH	
FORMATION		FROM	TO
clay	blue	215	217
sand	blue 10slt	217	236
clay	blue M	236	254
sand	took little water	254	263
sand/clay	blue M	263	269
clay	blue M	269	271
sand	took no water	271	276
clay	blue M	276	279
sand		279	284

STATIC WATER LEVEL

FEET

If flowing: closed in pressure _____

PSI

GPM flow _____ through _____

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____

GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe: _____
☐ Bailed
☐ Other

Pumping Level Below Land Surface

_____ Ft. After _____ Hrs. pumped

GPM

_____ Ft. After _____ Hrs. pumped

GPM

If pump installed, pump rate: _____

GPM

REMARKS

clay	blue	S	284	291
sand	(took nice water)		291	305
clay	wht/grn/blk/tan	M	305	306
sand			306	312
clay	multi gummy		312	320

This well was drilled under license # 463 and this report is true and accurate.Drilling firm: Steffl Drilling & Pump Inc

Signature of License Representative: _____

Signature of Well Owner or Equitable Property Holder: _____

Date: _____

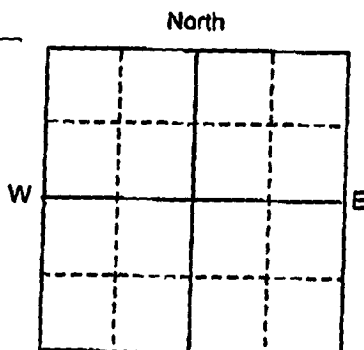
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SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location 1/4 se 1/4 Sec 35 Twp 110n Rg 51wCounty BrookingsPlease mark well
location with an "X"

Well Completion Date

October 10, 2012

1 Mile

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

PROPOSED USE:

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

METHOD OF DRILLING:

mud rotary

CASING DATA:

☐ Steel ☐ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	IN	0.0 FT	312.0 FT	6.00 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
quick grout	21	Lb/gal	0.0 Ft	312.0 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure _____

SCREEN:

☐ Perforated pipe ☐ Manufactured

Diameter _____ Inches Length _____ Feet

Material _____

Slot Size _____ Set From _____ Feet to _____ 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? _____

☐ No, Why Not? _____
Lab to which water
quality sample sent for analysis _____Well Owner: Paul MoriartyBusiness Name: T Hole #2 center 15' e of pivotAddress: 7380 Sunset RoadCity, State, Zip: Brookings SD 57006

WELL LOG:

			DEPTH	
FORMATION			FROM	TO
lm/sdy	black	M	0	1
clay/sdy	tan	M	1	5
sand	blue	fine	5	18
clay/sd strks	blue	M	18	38
clay	blue	m/gummy	38	47
clay	yellow	m/gummy	47	115
clay	blue	m/gummy	115	135
clay	brown	gummy	135	154
clay	gray	M	154	173

STATIC WATER LEVEL

FEET

If flowing: closed in pressure _____

PSI

GPM flow _____

through _____

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____

GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe: _____
☐ Bailed
☐ Other

Pumping Level Below Land Surface

Ft. After _____

Hrs. pumped _____

GPM

Ft. After _____

Hrs. pumped _____

GPM

If pump installed, pump rate: _____

GPM

REMARKS

clay	tan	H	173	193
sand	tan	12slt	193	195
clay	tan	M	195	211
sand	tan	12slt	211	215

continued on page 2

This well was drilled under license # 463 and this report is true and accurate.Drilling firm: Steffl Drilling & Pump Inc

Signature of License Representative: _____

Signature of Well Owner or Equitable Property Holder: _____

Date: _____

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RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 11/5, 20 12

RECEIVED OF Paul Moriarty PO Box 705 Brookings SD 57006

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

Fee for Application for Permit No. <u>7501-3</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>7501-3</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. **05678**

By

Julia Erdle
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. 7501-3, Paul Moriarty**

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. 7501-3, Paul Moriarty, 7380 Sunset Rd, Brookings SD 57006.

The Chief Engineer is recommending APPROVAL of Application No. 7501-3 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. 7501-3 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.

Garland Erbele, Chief Engineer

January 3, 2013

NOTE: The water quality of the Howard Aquifer may be marginal to unsuitable for irrigation due to slightly saline conditions and the presence of calcium, sulfate and boron requiring specific irrigation methods to be implemented. I encourage you to consult with a qualified soils scientist to formulate an irrigation management plan which will maintain the suitability of the soils for plant growth and avoid damage to the soil structure due to the water quality.

REPORT TO THE CHIEF ENGINEER
ON
WATER PERMIT APPLICATION NO. 7501-3
PAUL MORIARTY
DECEMBER 28, 2012

Water Permit Application No. 7501-3 proposes to appropriate up to 304 acre-feet per year (ac-ft/yr) at a maximum diversion rate of 1.78 cubic feet of water per second (cfs) from one well to be completed into the Howard aquifer. The well is expected to be approximately 312 feet deep and is to be located in the approximate center of the NE¼ of Section 35, T110N-R51W. This permit application proposes to irrigate 152 acres located in the NE¼ of Section 35, T110N-R51W in Brookings County.

AQUIFER: Howard aquifer (HO)

GEOLOGY AND AQUIFER CHARACTERISTICS:

The Howard aquifer is a glacial outwash consisting of sand and gravel that is confined under hundreds of feet of till (Hamilton, 1989). The aquifer lies in the eastern portions of Kingsbury and Miner Counties, western portions of Brookings and Moody Counties, throughout Lake County, and northern parts of Minnehaha County (Hamilton, 1989; Hansen, 1986; Koch and McGarvie, 1988; Lindgren and Niehus, 1992). The estimated areal extent and volume of water in storage of the Howard aquifer in these counties is shown in Table 1. The aquifer appears to extend slightly into northern McCook County, southern Hamlin County, and Minnesota. The Howard aquifer is hydraulically connected to several local glacial aquifers, Niobrara, and Sioux Quartzite, but these connections primarily occur in the southern portion of the aquifer (Hansen, 1986; Koch and McGarvie, 1988; Lindgren and Niehus, 1992).

Table 1: Quantified areal extent and volume of water in storage of the Howard aquifer

County	Areal extent (sq mi)	Volume of water in storage (ac-ft)	Source
Brookings & Kingsbury	835	3,000,000	Hamilton, 1989
Lake & Moody	675	3,500,000	Hansen, 1986
Minnehaha	15	55,000	Lindgren & Niehus, 1992
Miner	165	1,530,000	Koch & McGarvie, 1988

In Brookings County, much of the Howard aquifer is composed of two or more units separated by "poorly permeable till" that can locally become sandy and provide a hydraulic connection between the sand units (Hamilton, 1989). The average aquifer thickness is 25 feet, but can be up to 135 feet. Depth to the top of the aquifer ranges from 140 to 438 feet below ground surface and the static water level ranges from 40 to 420 feet below ground surface. The yield of the aquifer could be up to 1,000 gallons per minute (gpm), but locally is often much less due to the high amount of silt and fine sand in the aquifer. Also, the water is considered marginal to unsuitable for irrigation due to slightly saline conditions and presence of calcium, sulfate, and boron. In the area of the proposed well site, groundwater in the Howard aquifer moves eastward and southward (Hamilton, 1989).

A test hole log submitted with this application, dated October 10, 2012, documents sand and sandy clay below the sandy loam at ground surface to 38 feet below ground surface, layers of clay from 38 to 193 feet below ground surface, alternating thin layers of sand and clay from 193 to 291 feet below ground surface, and layers of sand from 291 to 312 feet below ground surface, then a thick layer clay. The static water level is at 20 feet below ground surface. The lithologic log of nearby observation well BG-2000A documented a similar general stratification ("Lithologic Logs Database"). From test hole logs submitted with the application and the applications of the three nearest water rights/permits, the aquifer materials in this area range from 20 to 50 feet thick and the proposed well would be completed into the deepest aquifer materials of these water rights/permits (Water Rights, 2012b).

SDCL 46-2A-9

Pursuant to SDCL 46-2A-9, a permit to appropriate water may be issued only if there is a reasonable probability that there is unappropriated water available for the applicant's proposed use, that the 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 existing rights from the aquifer and pertinent to this application.

WATER AVAILABILITY:

This application proposes to appropriate 304 ac-ft/yr from the Howard aquifer. If this application is approved, the actual water use will likely be less than the appropriation. 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 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."

HYDROLOGIC BUDGET:

Recharge:

Recharge to the Howard aquifer occurs due to slow leakage of precipitation through hundreds of feet of clayey till and leakage from the Niobrara in southeastern Miner County (Hamilton, 1989; Koch and McGarvie, 1988). An average annual recharge rate has not been quantified for the aquifer. Hamilton (1989) estimated, based on observation well data, that recharge due to leakage from precipitation in Brookings and Kingsbury Counties may be a little as 0.01 inches per year (in/yr). Hedges and others (1985) concluded that for management and development programs, the recharge rate to confined aquifers can be estimated to be between 0.15 and 0.60 in/yr.

Discharge:

Discharge from the Howard aquifer occurs due to leakage to the Niobrara in southwest to central Lake County, Sioux Quartzite in southern Lake and Moody Counties and northern Minnehaha County, and well withdrawals (Lindgren and Niehus, 1996; Hansen, 1986). Currently, a total of 20 water rights/permits authorize withdrawal and one future use permit reserves groundwater from the Howard aquifer. These are shown in Table 2. The cities of Colman, Howard, Lake Preston, and Winfred Water District have connected to rural water systems and therefore the

associated water rights/permits are no longer expected to withdraw from the aquifer (Water Rights, 2012b).

There are many well completion reports on file with the SD DENR-Water Rights Program for domestic wells that appear to be completed into the Howard aquifer (Water Rights, 2012c). The annual withdrawal due to domestic use is not significant to the hydrologic budget of the aquifer. Consider also that many of these domestic wells are no longer in use due to users connecting to local rural water systems.

Table 2: Water rights/permits/future use permit from the Howard aquifer (Water Rights, 2012b)

PERMIT NO.	NAME	STATUS	TYPE	CFS	ACRES	AC-FT/YR
6194-3	Meadow Creek Golf Course	LC	IRR	0.67	84	
6316-3	Howard Athletic Club Inc	PE	IRR	0.089	30	
6420-3	Madison County Club Inc	LC	IRR	0.67	50	
6677-3	Dand & Jerry's Greenhouse	LC	IRR	0.12	15	
7046-3	Marvin Post	PE	IRR	1.56	160	
1604-3	City of Madison	LC	MUN	1.22		
6511-3	City of Madison	LC	MUN	0.86		387
6512-3	City of Madison	FU	MUN			387
5465-3	City of Lake Preston	LC	MUN	0.56		
1599-3	City of Howard	LC	MUN	1.1		
5143A-3	City of Howard	LC	MUN	0.22		
578-3	City of Howard	LC	MUN	0.16		
1958-3	Winfred Water District	LC	MUN	0.1		
1061-3	City of Colman	LC	MUN	0.22		
244-3	City of Colman	LC	MUN	0.22		
4162-3	Town of Canova	LC	MUN	0.66		
4813-3	Rutland School Dist 39-4	LC	MUN	0.033	0.75	
5465A-3	Brandon Karban	LC	DOM	0.11		
5789-3	Ramsdell's Fertilizer & Propane Inc	LC	COM	0.18		
5955-3	SD Soybean Processors	LC	IND	0.444		
7079-3	Richard Vendrig	PE	COM	0.444		
LC = Water Right, PE = Water Permit, FU = Future Use Permit IRR = Irrigation, MUN = Municipal, DOM = Domestic, COM = Commercial, IND = Industrial						

The amount of water than can be expected to be withdrawn by the non-irrigation use water rights/permits at the current appropriation amount can be estimated by assuming: 1) water rights/permits limited by an annual volume will pump the entire volume appropriated annually, 2) water rights/permits limited only by diversion rate will pump at the maximum permitted diversion rate at 60 percent of the time, and 3) future use permits can be fully developed. Therefore, at the current appropriation amount, the total annual withdrawal from the Howard aquifer by non-irrigation use is expected to be at maximum 2,120 ac-ft/yr (Water Rights, 2012b).

Figure 1 shows the Howard aquifer's historic irrigation water right/permit data. The development of the aquifer for irrigation use is relatively small and fluctuates. The maximum pumpage reported was in 2008 for 176 ac-ft/yr. (Water Rights, 1979-2012).

Water Balance:

The annual withdrawal from the Howard aquifer is estimated to be at maximum 2,300 ac-ft/yr, but the actual annual pumpage will often be much less. Using maximum potential annual withdrawal creates the most conservative estimate. To balance the hydrologic budget, recharge

must equal withdrawal. At the maximum potential annual withdrawal, plus the maximum withdrawal proposed by this application, recharge must equal 0.004 in/yr to balance this hydrologic budget. This required recharge rate is extremely small; smaller than the minimum expected recharge rate provided by Hamilton (1989) and much smaller than the suggested recharge rate range provided by Hedges and others (1985). The potential maximum withdrawal accounts for 0.03 percent of the estimated volume of water in the aquifer. This is not to suggest that all the water within the Howard aquifer is available for this proposed appropriation, but to demonstrate that in general the Howard aquifer is a resource that is unexploited. Therefore, there is a reasonable probability that unappropriated water is available from the Howard aquifer for the proposed appropriation of 304 ac-ft/yr.

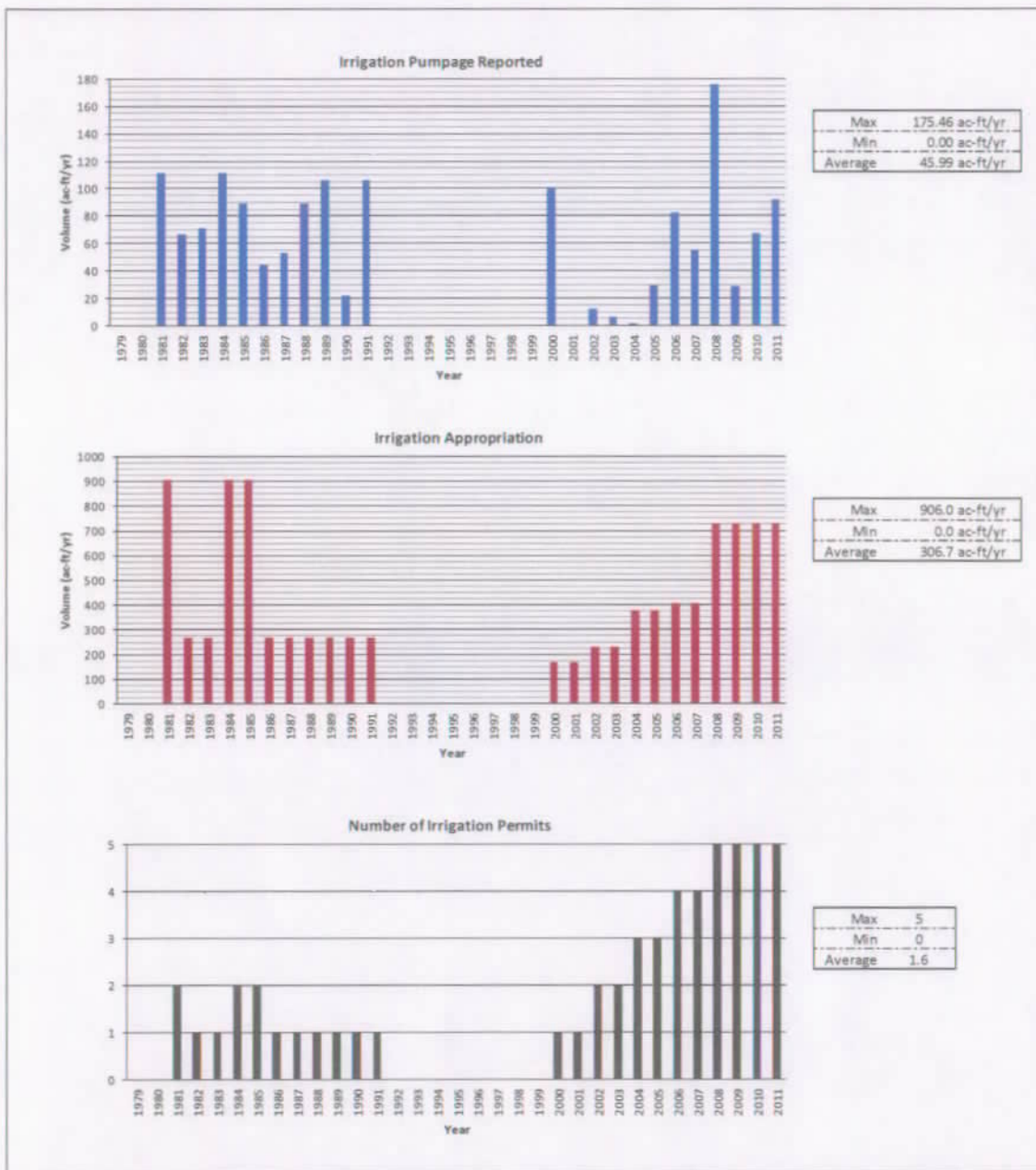


Figure 1: Historic irrigation water use from the Howard aquifer (Water Rights, 1979-2012)

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 of the aquifer.”

The DENR-Water Rights Program monitors seven observation wells completed into the Howard aquifer, with one of these observation wells located in Brookings County. The nearest of these wells, BG-2000A, is located approximately a third of a mile southeast of the proposed well site. The hydrograph of this observation well is shown in Figure 2. Because this well is relatively new, containing approximately 12 years of data, the hydrograph of the next nearest observation well, LK-81A, is also included and shown in Figure 3. This well is located approximately 13 miles south-southwest of the proposed well site. To more clearly depict the effects of pumping on the aquifer, the hydrograph of observation well LK-84A is shown in Figure 4. The well is located within two miles of several wells, including those authorized to the City of Madison. (Water Rights, 2012a).

The observation well data documents cyclic conditions of water levels, recharging during wet years and declining during dry years, indicating that the aquifer readily recharges despite Hamilton’s (1989) contention that there is little annual recharge to this aquifer. It should be noted that the hydrograph in Figure 2 shows a general decline in water levels over the period of record. However, when relating this hydrograph to the hydrographs in Figures 3 and 4 that have longer periods of record, the data in Figure 2 is actually preceded by a period of high water levels in the aquifer. Therefore, the hydrograph in Figure 2 does not indicate that withdrawal has consistently been greater than recharge, but that water levels are only going through a natural low and are expected to eventually naturally increase, continuing the cyclic conditions of water levels.

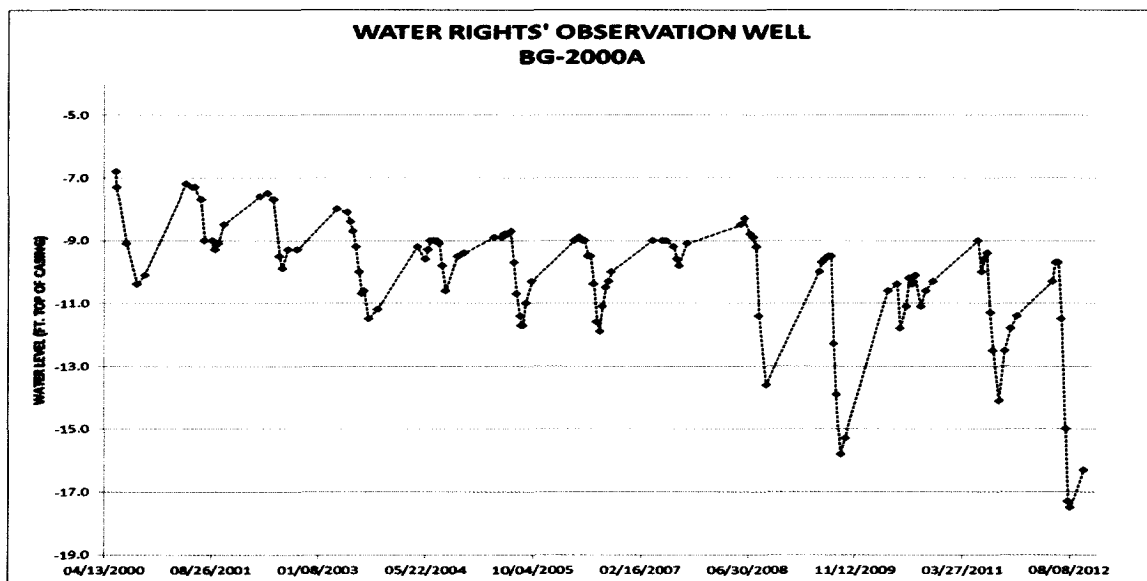


Figure 2: Hydrograph for DENR-Water Rights' observation well BG-2000A (Water Rights, 2012a)

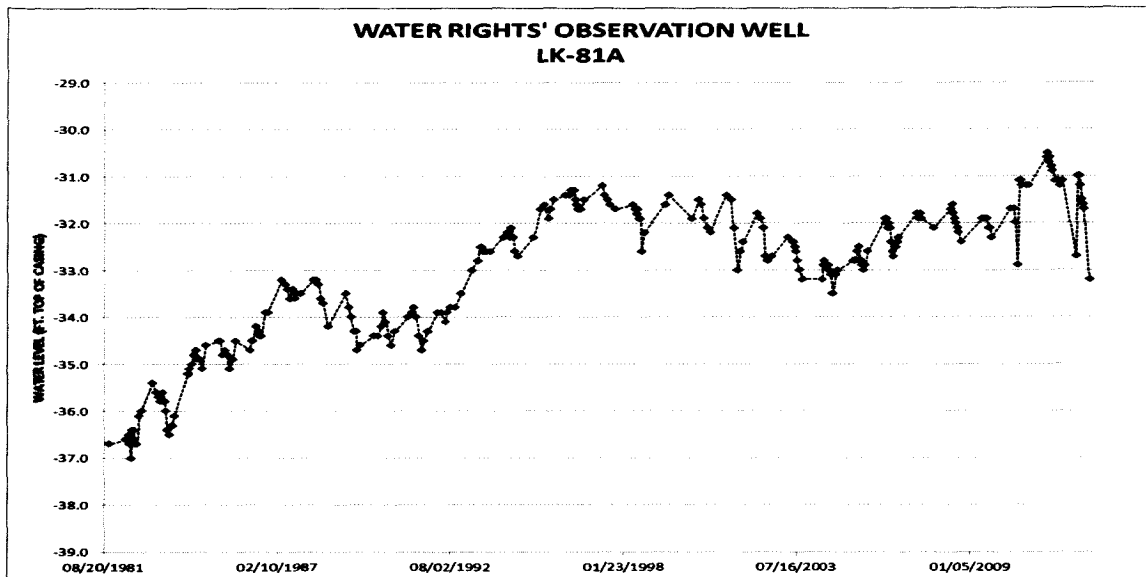


Figure 3: Hydrograph for DENR-Water Rights' observation well LK-81A (Water Rights, 2012a)

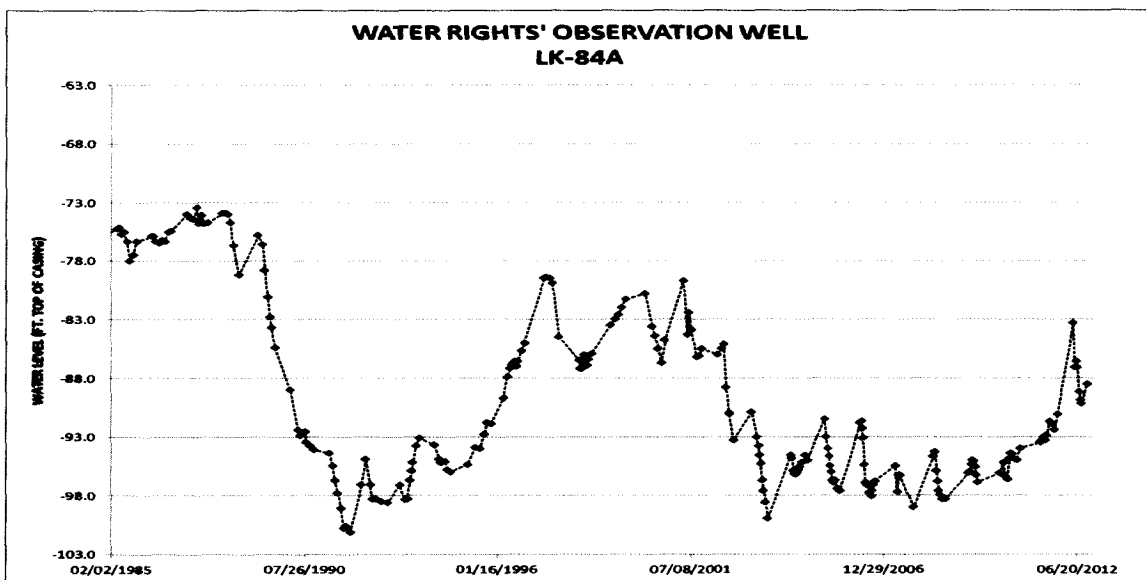


Figure 4: Hydrograph for DENR-Water Rights' observation well LK-84A (Water Rights, 2012a)

The hydrographs show the effects of nearby pumping on the aquifer. Observation well data indicates that, at the current level of development, temporal well withdrawal is masked by climatic conditions, indicating that recharge to and natural discharge from the aquifer greatly exceeds well withdrawal. Therefore, there is a reasonable probability that unappropriated water is available from this area of the Howard aquifer to support the proposed appropriation of 304 ac-ft/yr.

EXISTING WATER RIGHTS:

Three water right/permits appropriating from the Howard Aquifer are located within approximately two and a half miles of the proposed well site. These are Water Right/Permit Nos. 5955-3, 6194-3, and 7046-3 (Water Rights, 2012b). There are several well completion reports on

record with the SD DENR-Water Rights Program for domestic wells within two and a half miles of the proposed well site that appear be completed into the Howard aquifer (Water Rights, 2012c). Because the Howard aquifer is under confined conditions, some drawdown due to pumping is likely. First recognize that from the well completion report submitted with this application there is approximately 173 feet of artesian head pressure in the aquifer at this location.

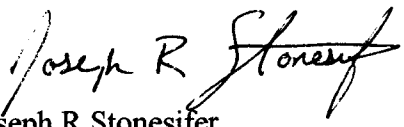
As previously discussed, the hydrographs for observation wells completed into the Howard aquifer document the effects of pumping. However, these are minimal relative to climatic conditions, even in observation well LK-84A located near several municipal wells. Over the period of record, water levels in these observation wells fluctuated at maximum 28 feet (Water Rights, 2012a). This amount of fluctuation is a probable worst case scenario for this aquifer.

A well test was not submitted with this application. From the well test completed for the test hole log submitted with the application for Water Permit 7046-3, located approximately two miles northwest of the proposed well site, the specific capacity of this well was approximately 4.9 gallons per minute per foot. Assuming a storativity of 0.001, the transmissivity of the aquifer in this area equals approximately 9,750 gallons per day per foot ("Transmissivity from Specific Capacity"). Assuming the proposed well diverts water at the proposed rate of 1.78 cfs for 185 days, the estimated drawdown equals approximately 16 feet at a distance of two miles from the proposed well site ("Theis Equation Calculator"). This estimate of distance-drawdown is based on the maximum pumpage proposed on the application, creating the most conservative estimate. Actual diversion rate and pumpage will likely be less than that proposed, and therefore, drawdown will likely be less.

Considering that 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, a nearby adequate well defined by ARSD 74:02:20(7), which states that the pump intake must be set 20 feet below the top of the aquifer or, if the aquifer is less than 20 feet thick, as near to the bottom of the aquifer as is practical, is not expected to be adversely or unlawfully impaired. Therefore, there is a reasonable probability that any well interference from the proposed appropriation will not adversely or unlawfully impair existing users.

CONCLUSIONS:

1. The application proposes to appropriate 304 ac-ft/yr for irrigation.
2. There is a reasonable probability that unappropriated water is available from the Howard aquifer to supply the proposed appropriation.
3. There is a reasonable probability that this proposed well will not adversely or unlawfully impair existing users


Joseph R Stonesifer
SD DENR-Water Rights Program

Approved by



Ken Buhler
SD DENR-Water Rights Program

REFERENCES:

- Hamilton, L.J. 1989. Water Resources of Brookings and Kingsbury Counties, South Dakota, Water-Resources Investigations Report 88-4185, USGS, Huron, SD.
- Hansen, D.S. 1986. Water Resources of Lake and Moody Counties, South Dakota, Water-Resources Investigations Report 84-4209, USGS, Huron, SD.
- 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.
- Koch, N.C. and McGarvie, S.D. Water Resources of Miner County, South Dakota, Water-Resources Investigations Report 86-4035, USGS, Huron, SD.
- Lindgren, R.J. and Niehus, C.A. Water Resources of Minnehaha County, South Dakota, Water Resources Investigations Report 91-4101, USGS, Huron, SD.
- "Lithologic Logs Database." South Dakota Department of Environment & Natural Resources Geological Survey. 28 December 2012
- "Theis Equation Calculator." I-calcul8 Calculators and Tools. 28 December 2012
< <http://www.icalcul8.com/theis.php>>
- "Transmissivity from Specific Capacity." Aquifer Test Forum sponsored by HydroSOLVE, Inc. 28 December 2012 < <http://www.aqtesolv.com/forum/transcap.asp>>
- Water Rights. 1979-2012. "Annual Irrigation Summary by Aquifer": SD DENR-Water Rights Program, Joe Foss Bldg., 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. Water Well Completion Reports, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

RECEIVED

Affidavit of Publication

JAN 24 2013

10/

State of South Dakota

WATER RIGHTS
PROGRAM

Exhibit "A"

ss

County of Brookings

Chaylee Duis of said county, first duly sworn, on oath, says: That she is the office clerk of THE BROOKINGS REGISTER, a daily newspaper, printed and published in the City of Brookings, in said County of Brookings, and State of South Dakota; that she has full and personal knowledge of the facts herein stated; that said newspaper is a legal newspaper and has a bona fide circulation of at least two hundred copies of each issue daily; that said newspaper has been published within the said County of Brookings and State of South Dakota, for more than one year prior to the first publication of Exhibit "A," hereto attached and herein mentioned, and was and is printed that the

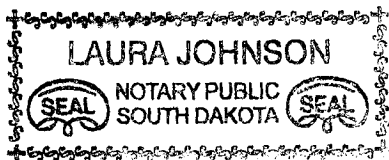
Leg#909 Notice on Application #7501-3 - Moriarty

same was published, is hereto attached marked Exhibit said newspaper for _____ 1 times, to-wit:

January 16, 2013

said Exhibit "A" inures to the sole benefit for the publishers of 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 person whomsoever; that the fees charged for the publication thereof are:

twenty-two dollars and sixty-nine cents \$22.69



Laura Johnson

17th day of

January

2013

Chaylee Duis

Notary Public in and for the County of Brookings, South Dakota.
My Commission expires August 3, 2017.

Legal 909, 1x, 1/16
NOTICE OF APPLICATION NO. 7501-3 to
Appropriate Water
Notice is given that Paul Moriarty, 7380 Sunset Rd., Brookings SD 57006 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 Howard Aquifer (312 feet deep) located in the approximate center of the NE 1/4 Section 35 for irrigation of 152 acres located in the NE 1/4 Section 35; all in T110N-R51W. Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7501-3 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 January 28, 2013. The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources. Published once at the total approximate cost of \$22.69.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

denr.sd.gov

January 4, 2013

Brookings Register
PO Box 177
Brookings SD 57006

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7501-3 to Appropriate Water. Please publish the notice once on January 16, 2013. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notice is to be published and arrange for payment. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Paul Moriarty, 7380 Sunset Rd., Brookings SD 57006 (Ph # 605-693-4883).

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

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

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

denr.sd.gov

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

January 4, 2013

Paul Moriarty
7380 Sunset Rd
Brookings SD 57006

Dear Mr. Moriarty:

Water Permit Application No. 7501-3 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 Brookings Register printed at Brookings SD (Ph # 605-692-6271). 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.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

FEB 08 2013

Paul Moriarty
7380 Sunset Rd
Brookings SD 57006

Dear Mr. Friesen:

Enclosed is Water Permit No. 7501-3 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

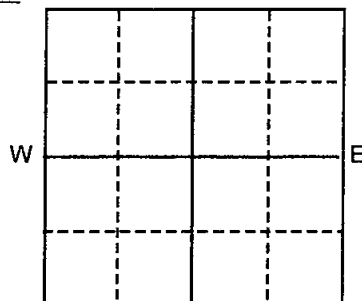
SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location NE ¼ NE ¼ Sec 35 Twp 110 Rg 51

County Brookings

North

Please mark well
location with an "X"

Well Completion Date

May 17, 2013

1 Mile

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

PROPOSED USE:

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

METHOD OF DRILLING:

mud rotary

CASING DATA:

☐ Steel ☒ Plastic ☐ Other
If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	12.00 IN	2.0 FT	292.0 FT	17.50 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Quick Grout	84	Lb/gal	0.0 Ft	285.0 Ft
Red Flint	40	Lb/gal	285.0 Ft	312.0 Ft

Describe grouting procedure

SCREEN:

☐ Perforated pipe ☒ Manufactured
Diameter 12.00 Inches Length 20.0 Feet

Material Stainless Steel

Slot Size 40 Set From 292.0 Feet to 312.0 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?☐ No, Why Not?Lab to which water
quality sample sent for analysis

Well Owner: Paul Moriarty Prod Well #1

Business Name: Pg 1

Address: 7380 Sunset Rd

City, State, Zip: Brookings SD 57006

WELL LOG:

FORMATION			DEPTH	
			FROM	TO
Loam/Sandy	Blk	M	0	1
Clay/Sandy	Tan	M	1	5
Sand	Blu	F	5	18
Clay/Sd Strks	Blu	M	18	38
Clay	Blu	M/Gummy	38	47
Clay	Ylw	M/Gummy	47	115
Clay	Blu	M/Gummy	115	135
Clay	Brn	Gummy	135	154
Clay	Gry	M	154	173

STATIC WATER LEVEL 17.6 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: submersible☐ Bailed☐ Other

Pumping Level Below Land Surface

245.2 Ft. After 6.0 Hrs. pumped 575.0 GPM

Ft. After Hrs. pumped GPM

If pump installed, pump rate: GPM

REMARKS

Clay	Tan	H	173	193	44 17 36.0N / 96 54 47.2W
Sand	Tan	12slt	193	195	Elev 1634
Clay	Tan	M	195	211	
Sand	Tan	12slt	211	215	

Continued on Page 2

This well was drilled under license # 463 and this
report is true and accurate.

Drilling firm: Steffi Drilling & Pump Inc / Kris VanHueveln

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

Date:

RECEIVED

SEP 12 2013

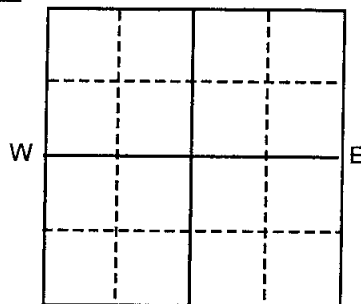
WATER RIGHTS
PROGRAM

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location NE ¼ NE ¼ Sec 35 Twp 110 Rg 51County Brookings

North

Please mark well
location with an "X"

Well Completion Date

May 17, 2013

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

PROPOSED USE:

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

METHOD OF DRILLING:

mud rotary

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
		Lb/gal	Ft	Ft
		Lb/gal	Ft	Ft

Describe grouting procedure _____

SCREEN:

☐ Perforated pipe ☐ Manufactured

Diameter _____ Inches Length _____ Feet

Material _____

Slot Size _____ Set From _____ Feet to _____ 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? _____

☒ No, Why Not? irrigation
 Lab to which water quality sample sent for analysis _____
Well Owner: Paul Moriarty Prod Well #1

Business Name: _____ Pg 2

Address: 7380 Sunset RdCity, State, Zip: Brookings SD 57006

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Clay	215	217
San Blu 10slt	217	236
Clay Blu M	236	254
Sand took little water	254	263
Sand/Clay Blu M	263	269
Clay Blu M	269	271
Sand took no water	271	276
Clay Blu M	276	279
Sand	279	284

STATIC WATER LEVEL

FEET

If flowing: closed in pressure _____

PSI

GPM flow _____ through _____

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced flow rate _____ GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe: _____☐ Bailed☐ Other

Pumping Level Below Land Surface

_____ Ft. After _____ Hrs. pumped _____ GPM

_____ Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

Clay Blu S 284 291 44 17 36.0N/96 54 47.2W
 Sand took nice water 291 305 Elev 1634
 Clay wht/gm/blk/tan M 305 306
 Sand 306 312
 Clay Multi Gummy 312 320

This well was drilled under license # 463 and this report is true and accurate.Drilling firm: Steffl Drilling & Pump Inc / Kris VanHueveln

Signature of License Representative: _____

Signature of Well Owner or Equitable Property Holder: _____

Date: _____

RECEIVED

SEP 12 2013

WATER RIGHTS
PROGRAM



7501-3
DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

January 25, 2019

NOTICE

TO: PAUL MORIARTY, 7380 SUNSET RD, BROOKINGS, SD 57006
FROM: Ron Duvall, Natural Resources Engineer
for Jeanne Goodman, Chief Engineer
Water Rights Program

SUBJECT: Reporting Requirement for 2018 Irrigation Questionnaire(s)

Our records indicate your 2018 Irrigation Questionnaire(s) has not been submitted for Permit No(s) 7501-3. The request for the Questionnaire was dated October 30, 2018. The Water Management Board has directed that owners of water permits who have not submitted the 2018 Irrigation Questionnaire(s) be given notice of permit violation and a hearing to be held by the Board. The hearing is to determine what action is to be taken for violation of Water Permit No(s) 7501-3 qualification:

"This permit is approved subject to the Irrigation Water Use Questionnaire being submitted each year."

The hearing will be held at **Wednesday, March 6, 2019 at 10:30 am (Central Time)** in the Floyd Matthew Training Center, Joe Foss Building, 523 E Capitol Avenue, Pierre, SD and will be conducted pursuant to SDCL 46-1-12, 46-1-14, 46-2-9, 46-2-11 and 46-2-17. These are contested case hearings pursuant to Chapter 1-26. According to SDCL 46-1-12, the Board may suspend a permit for a period of up to one year for the first violation of a permit qualification or up to three years for a second violation, or cancel a permit for a third violation. Following the hearing, the Water Management Board can:

1. Suspend or cancel Permit No(s) 7501-3 in accordance with applicable provisions of SDCL 46-1-12;
2. Postpone any action; or
3. Take no action.

The hearing is an adversary proceeding. The permit owner has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

If the questionnaire(s) is (are) received in this office before the **March 6, 2019** hearing you will no longer be in violation of your permit and your name will be removed from the Board agenda. Enclosed are additional questionnaire(s) for your use. If you have questions or need assistance, please contact Genny McMath at (605) 773-3352 or email at genny.mcmath@state.sd.us. If you prefer, you can complete the questionnaire online at the following link: <http://denr.sd.gov/iq.aspx>

NOTE: Please contact the Water Rights Program, Joe Foss Building, 523 E Capitol, Pierre, SD (605-773-3352) to assure access to the meeting room for the handicapped or to obtain an interpreter for the hearing impaired.

7501-3



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

February 6, 2019

7501-3

Paul Moriarty
7380 Sunset Rd
Brookings SD 57006

Dear Sir:

I am writing to acknowledge receipt of your 2018 irrigation questionnaire.

You may disregard the January 25, 2019, "Notice" concerning reporting requirements for Water Permit No. 7501-3. The information was received in our office prior to the Water Management Board meeting and your name has been deleted from the agenda.

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. 7501-3

I have this day, May 26, 2021, made a thorough examination of the water use system constructed by Paul Moriarty, 7380 Sunset Rd, Brookings, SD 57006 of Permit No. 7501-3, bearing the priority of November 5, 2012 authorizing the diversion of 1.78 cu. ft. per second of the waters of the Howard Aquifer for irrigation purposes, in Brookings County.

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: Steffl Drilling & Pump Inc
- 2) No. of Wells 1
- 3) Depth(s) 312 feet
- 4) Well log is available Y

Casing:

- 1) Diameter 12 inches
- 2) Length 292 feet
- 3) Type Plastic

Screen:

- 1) Type Stainless steel
- 2) Length 20 feet
- 3) Static water level 17.6 feet

Pump:

- 1) Make NA
- 2) Model Submersible
- 3) Size NA
- 4) Capacity 700 GPM

B. Works used to transport water to place of use: Well is at the pivot

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 yes
- 5) Capacity 700 GPM (Source: Farmers Impl/Irrigation)

Chemigation Equipment: None

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 of the 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:
From the NE corner of Sec 35 T110N-R51W 1310 ft S & 1320 ft W, Lat 44.29336 Long -96.91325
(NE ¼ NE ¼ Sec 35)
2. The works are capable of diverting and conveying to the place of use 1.56 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 in Sec 35-T110N-R51W

NW1/4 NE 1/4 - 33 ac
NE 1/4 NE 1/4 - 33 ac
SE 1/4 NE 1/4 - 33 ac
SW 1/4 NE 1/4 - 33ac

comprising a total of 132 acres of land and the license should be issued for 1.56 cfs (well & center pivot capacity)

3. All structures, wells and lands on map Y

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

The irrigated acreage was determined by the use of FSA maps and the ArcMAPS software. The Permit was originally issued for 1.78 cfs (800 gpm) but the pivot system is nozzled for 1.56 cfs (700 gpm).



Darrell W DeBoer
Water Rights Inspector
DANR, Water Rights Program

Date report completed: June 9, 2021



0 0.1 0.2 0.4 0.6 0.8 Miles



Darrell DeBoer
Water Right Inspector
DANR-Water Rights Program



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

7501-3

JUN 11 2021

Paul Moriarty
7380 Sunset Rd
Brookings SD 57006

Dear Mr. Moriarty:

Enclosed is Water License No. 7501-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

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

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

Sincerely,

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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 7501-3

(1) Paul Moriarty, 7380 Sunset Rd., Brookings SD 57006 made Application No. 7501-3, November 5, 2012 for a water permit to divert 1.78 cubic feet of water per second from ground water, one well (Howard Aquifer), Brookings County, South Dakota for irrigation purposes. Permit No. 7501-3, with a priority date of November 5, 2012 was approved January 28, 2013 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before January 28, 2018 and for the application to beneficial use of water on or before January 28, 2022.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the water supply system and is entitled to divert 1.56 cubic feet of water per second for beneficial use. The location of the diversion point is as follows:

- 1,310' S and 1,320' W of the NE corner of Section 35, T110N, R51W (approx. center of the quarter)
Latitude 44.29336, Longitude -96.91325

(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:

T110N, R51W Section 35	NW ¼ NE ¼	33 acres
	NE ¼ NE ¼	33 acres
	SE ¼ NE ¼	33 acres
	SW ¼ NE ¼	33 acres
	Total	132 acres

(4) Pursuant to South Dakota Water Law 46-5-30.1 Paul Moriarty, 7380 Sunset Rd., Brookings SD 57006 the holder and/or owner of Water Right No. 7501-3 is issued a license to appropriate water, the right to use 1.56 cubic feet of water per second from ground water, one well (Howard Aquifer) with a priority date of November 5, 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. 7501-3 and subject to the following qualifications:

- The well approved under this water right will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this water right shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
- The well authorized by Permit No. 7501-3 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 May, 2013 by Steffl Drilling & Pump Inc. A copy of the well completion report is on file with the Water Rights Program.***

Water License No. 7501-3

Paul Moriarty

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- This Water Right is approved subject to the irrigation water use questionnaire being submitted each year.

Eric Gronlund

Eric Gronlund, Chief Engineer

Water Rights Program

Department of Agriculture and Natural Resources

JUN 11 2021

date

