

WATER PERMIT NO. 1789-1

Name of Applicant: Sturgis Water Dept.

Address: 1025 1st St, Sturgis SD 57785

Phone: 605 347-4425

Amount of Water Claimed: 450 gpm (1.0 cfs)

Total Acres: NA

Source of Water Supply: groundwater (one well)

Water to be used for: municipal

County: Meade

Type of Waste Disposal System:

Location:

PRIORITY Date Received: 3-6-03

Application/License Fee: \$375

Corrected Application Received: 3-11-03

Period of Annual Use: January 1 – December 31

Remarks:

Diversion Point: NE ¼ SW ¼ Sec 9-T5N-R5E

Land to be Irrigated: NA

Depth of Well:

Well Driller :

Remarks:

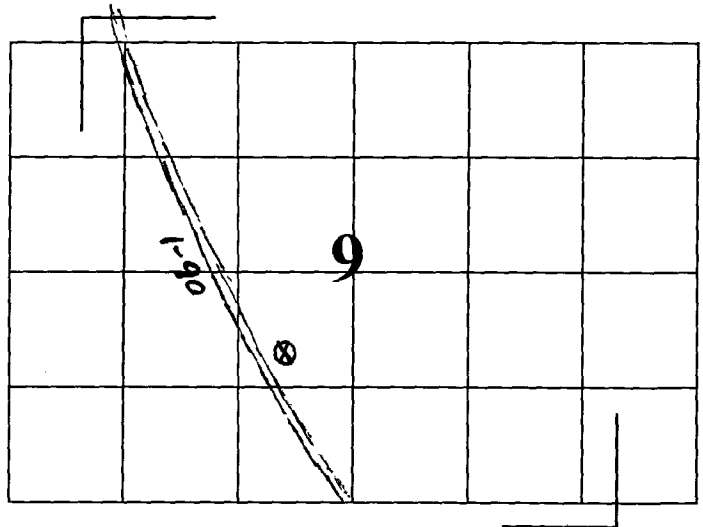
Type of Map: plat

Prepared by: Robert W Kaufman, PE

Reviewed and the Number Assigned on: 3-11-03

By: Karen Schlaak

Notice of Hearing - date to intervene: _____



SOUTH DAKOTA
WATER PERMIT NO. 1789-1

Date of first receipt of application March 11, 2003.

The Water Management Board approved Water Permit No. 1789-1 on May 7, 2003 for Sturgis Water Department, 1025 First Street, Sturgis SD 57785 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. 1789-1 appropriates 1.0 cubic feet of water per second (450 gallons per minute) from one well (Madison Formation) located in the NE ¼ SW ¼ Section 9-T5N-R5E.
2. The water appropriated shall be used for the purpose of municipal use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date from which applicant may claim right is March 11, 2003.
5. One-fifth of the construction is to be completed on or before November 7, 2005.
6. All construction is to be completed on or before May 7, 2008.
7. Water is to be put to beneficial use on or before May 7, 2012.
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. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 1789-1 is issued for a twenty year term. Pursuant to SDCL 46-2A-21, the twenty year term may be deleted at any time during the twenty year period or following its expiration. If the twenty year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 1789-1 may also be cancelled for nonconstruction, forfeiture, abandonment or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1, and ARSD 74:02:01:37.
2. 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.
3. The well authorized by Permit No. 1789-1 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) from the producing formation to the surface pursuant to Section 74:02:04:28.
4. The Sturgis Water Department shall report to the Chief Engineer annually the amount of water withdrawn from the Madison Aquifer.

WATER MANAGEMENT BOARD

By: Garland Erbele

Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

JUN 13 2003

date



FORM 2: Application for uses other than irrigation
(type or print)

originally rec.
3/6/03

RECEIVED

MAR 11 2003

WATER RIGHTS
PROGRAM

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>1789-1</u>	(office use only) Hydrologic Unit <u>10/20202</u>
	Basin <u>Belle Fourche R</u>	
	Newspaper <u>Meade Co. Times-Tribune, Sturgis</u>	

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

- | | | | |
|---|---|--|--|
| ☒ Municipal | ☐ Suburban Housing | ☐ Recreational | ☐ Institutional |
| ☐ Rural Water System | ☐ Commercial | ☐ Fish & Wildlife | ☐ Geothermal Heat |
| ☐ Domestic (over 18 gpm) | ☐ Industrial | ☐ Other | |

Type of Application:
(check one)

- ☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation
☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____
☐ Amendment/Correction to Permit No. _____

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

- Name of Applicant Sturgis Water Dept. Phone (605) 347-4425
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address 1025 First Street Sturgis State SD 57785
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed 1.0 *CFS or 450 **GPM ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Madison Formation
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Meade
1 well in NE 1/4 SW 1/4, Section 9, TWP 5N R 5E
- County or counties where water will be used Meade
- Annual period during which water is to be used all year Jan 1-Dec 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)
Drill new well into Madison Formation

STATE OF SOUTH DAKOTA)

County of Meade)

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, Dale Morman, 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 Dale Morman

Subscribed and sworn to before me this 4th day of March 20 03

Zinda McJannet
Notary Public signature

(type or print in ink)

1. Well Information - Proposed Construction *Per test drilling December 2002*

- a) Drill Hole Diameter _____ Depth _____
- b) Casing Type _____ Diameter _____ 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 _____ 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 _____

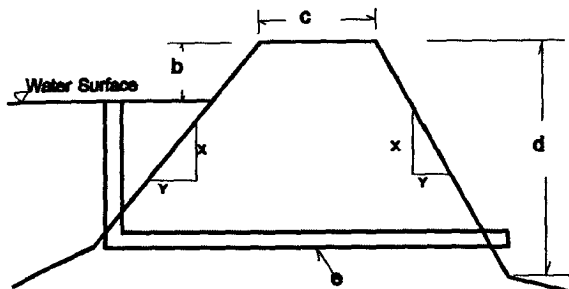
3. Dugout Information

- 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

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date MARCH 5, 2003

RECEIVED OF City of Sturgis, 1147 Sherman St., Sturgis SD 57785

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

Fee for Application for Permit No. <u>1729-1</u> to Appropriate Water, to construct and to put water to beneficial use	325	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>1729-1</u>	50	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	375.00

No.

000077

By

Darland Elbe

Chief Engineer

gms

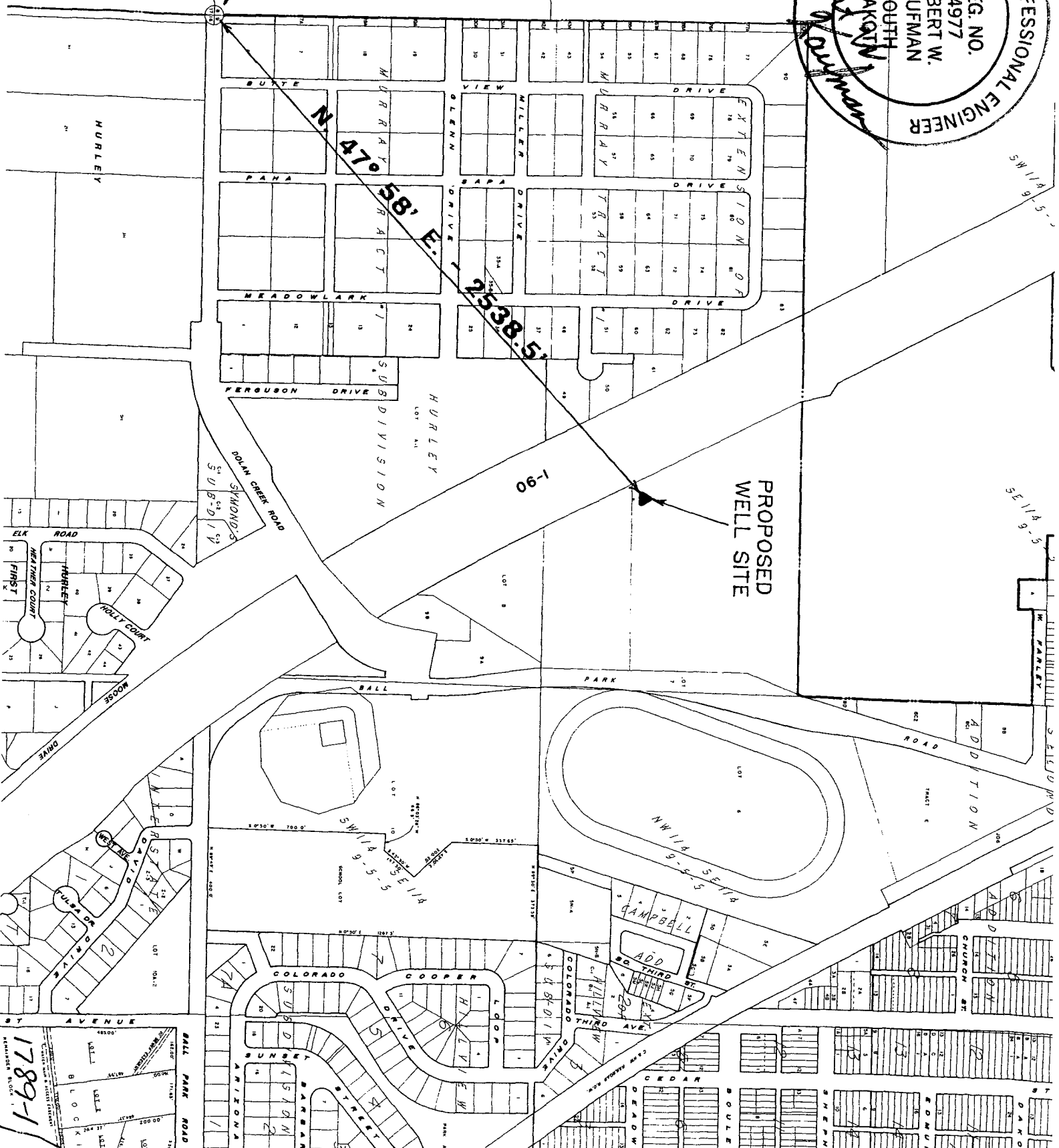
5-9-44

South Dakota
Robert L. Lamm

SE 1/4
SE 5-5
SE 1/4

Southwest
Corner SECTION 9
T.5N, R.5E., B.H.M.
Meade Co.,
South Dakota

ME 1/4-5-5
ME 1/4-5-5



1789-1

REMEMBER: NO. 1000

LOCUST

MAIN

PACIFIC

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March 10, 2003

Ken Buehler

RECEIVED

MAR 11 2003

WATER RIGHTS
PROGRAM

Hi Ken,

I am enclosing another copy of the form for sealing a test well conducted by Weston Engineering for the Sturgis Water Dept. The first one was sent about the 11th of February, but Frank from Weston said you didn't receive that copy.

If you have need any other information please contact me.

Eldon Christians

SOUTH DAKOTA WELL AND TEST HOLE PLUGGING REPORT

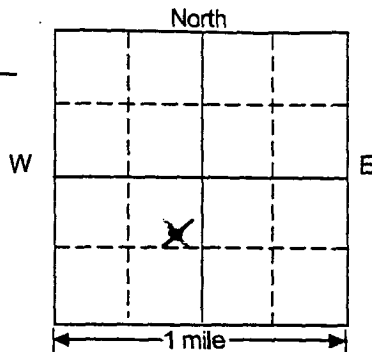
11-02

Location NE 1/4 SW 1/4 Sec 9 Twp 5N Rg 5E

County

Meade

Please mark well location with an "X"



Plugging Completion Date Jan. 8, 2003

Well Owner:

Name: City of Sturgis

Address: 1029 1st Street

City, State, Zip: Sturgis, SD 57785

Comments:

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MAR 11 2003

WATER RIGHTS PROGRAM

CHECK APPROPRIATE BOX

EXISTING WELL ☐

TEST HOLE ☒

Well depth _____

Casing material _____

Casing size(s) _____

Casing condition _____

Hole depth 1043

Hole size 7 7/8"

Surface casing 26' 8 5/8" 32#
Cemented w/ 8 sks Class C cement

Describe plugging procedure: Hole bridged off @ 540'. Ream 540' - 875'. Pump 20 sks class C cement. Pull up to 775' and pump 212 sacks of BH Plugging grout. Pull up to 55' and pump 32 sacks of class C cement to bring to surface.

Describe grout or plugging material: Class C cement and BH plugging grout with 30% solids.

Type of non-slip plug: _____

This well or test hole was plugged under license # 604 and this report is true and accurate.

Drilling firm: Weston Engineering, Inc.

Signature of Licensed Representative: [Signature]

Signature of Well Owner: [Signature]

Date: 3-11-03

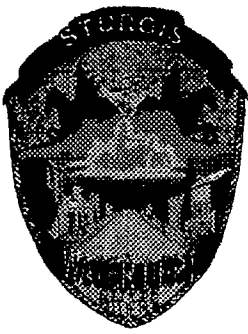
**STURGIS WELL NO. 8
LITHOLOGIC DESCRIPTIONS**

Depth (Feet)	Principal Lithology	Description	Comments
0 - 60	Sandstone, Siltstone, and Limestone	Moderate brown, fine-grained, friable sandstone with pale green mottling; moderate brown siltstone; pale green siltstone; and yellow, massive limestone.	Spudded into the Spearfish Formation.
60 - 90	Sandstone, Siltstone, Chert, and Limestone	Moderate brown, fine-grained, friable sandstone with pale green mottling; moderate brown siltstone; pale green siltstone; yellowish, massive limestone; and minor gray green chert.	
90 - 130		No Samples	
130 - 150	Sandstone, Gypsum, and Shale	Moderate brown, fine-grained, friable sandstone with pale green mottling; white gypsum; light green shale; and texturally mature quartz.	
150 - 180	Sandstone, Gypsum, and Shale	Moderate brown, fine-grained, friable sandstone with pale green mottling; minor white gypsum; light green shale; and texturally mature quartz.	
180 - 210	Sandstone	Moderate brown, fine-grained, friable sandstone with extensive pale green mottling.	
210 - 240	Limestone and Sandstone	Light olive gray to white, massive limestone and minor moderate brown, fine-grained, friable sandstone with extensive pale green mottling.	Minnekahta Limestone at 226 feet.
240 - 400	Limestone, Sandstone, Gypsum, and Shale	Light olive gray to white, massive limestone; pale olive, fine-grained, massive, quartz-rich sandstone; dusky red shale; minor moderate brown, fine-grained, friable sandstone with extensive pale green mottling; and minor white gypsum.	
400 - 430	Limestone, Sandstone, and Shale	Light olive gray to white, massive, limestone; pale olive, fine-grained, massive, quartz rich sandstone; dusky red shale; minor moderate brown, fine-grained, friable sandstone with extensive pale green mottling; and minor white to tan, fine-grained, friable, massive quartz sandstone.	
430 - 605	Sandstone, Limestone, and Shale	Abundant white to tan, fine-grained, friable, quartz sandstone; light olive gray to white, massive limestone; pale olive, fine-grained, massive, quartz-rich sandstone; dusky red shale; and decreasing amounts of moderate brown, fine-grained, friable sandstone with extensive pale green mottling.	Minnelusa Formation at 432 feet.

Depth (Feet)	Principal Lithology	Description	Comments
605 - 635	Sandstone, Limestone, and Shale	Abundant white to tan, fine-grain, friable, quartz sandstone; light olive gray to white, massive limestone; brown gray, massive, soft limestone; pale olive, fine-grain, massive, quartz rich sandstone; dusky red shale; and decreasing amounts of moderate brown, fine-grain, friable sandstone with extensive pale green mottling.	
635 - 845	Sandstone, Limestone, Siltstone, and Shale	Abundant white to tan, fine-grain, friable, quartz sandstone; light olive gray to white, massive limestone; brown gray, massive, soft limestone; light gray siltstone; pale olive, fine-grain, massive, quartz rich sandstone; dusky red shale; and decreasing amounts of moderate brown, fine-grain, friable, poorly bedded sandstone with extensive pale green mottling.	
845 - 1,029	Limestone, Sandstone, Siltstone, and Shale	Abundant white to very light yellow limestone; and decreasing amounts of the following with depth: white to tan, fine-grained, friable, quartz sandstone; light olive gray to white, massive limestone; brown gray, soft limestone; light gray siltstone; pale olive, fine-grained, massive, quartz rich sandstone; dusky red shale; and moderate brown, fine-grained, friable sandstone with extensive pale green mottling.	Madison Limestone at 860 feet. Loss of drilling fluid at a rate of 15 gpm below 860 feet. Void from 1,031 to 1,041 feet.

Note: All formation tops were determined from a Gamma Log performed by Goodwell Inc., on December 13, 2002.

Note: For all logs, reported colors were determined using the GSA Rock Color Chart on wet samples.



Sturgis Water Department

1025 First Street
Sturgis, South Dakota, 57785

Phone: (605) 347-4425
Fax: (605) 347-9187

Dedicated to Water Quality and Customer Service

December 4, 2002

RECEIVED

DEC 06 2002

WATER RIGHTS
PROGRAM

Dept. of Environment and Natural Resources
Joe Foss Building
523 East Capitol Avenue
Pierre, SD, 57501

Dear Sir or Madam:

The City of Sturgis Water Department is in the progress of drilling a new municipal well. It is planned to drill a well into the Madison Formation. Because of the uncertainty of water production in the Sturgis area, Weston Engineering has been hired to drill a test well to determine if the proposed well location is feasible. The location is just East of the interstate ROW on the Southwest corner of the Methodist Church Lot.

The Sturgis Water Department hereby requests permission to drill a test well prior to the approval of an actual well.

Sincerely,

Eldon Christians
Water Superintendent



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

December 10, 2002

Eldon Christians, Water Superintendent
Sturgis Water Department
1025 First Street
Sturgis, SD 57785

Dear Mr. Christians:

As requested, pursuant to South Dakota Well Construction Standard 74:02:04:21, the Sturgis Water Department is authorized to construct a test well prior to approval of a water permit. The test well is to be completed into the Madison aquifer. The test well must be constructed by a licensed well driller in accordance with the SD Well Construction Standards. Any test holes that are abandoned must be plugged pursuant to the SD Well Construction Standards.

Very truly yours,

JAMES A. GOODMAN, P.E.
Natural Resources Engineer
for GARLAND ERBELE, Chief Engineer
Water Rights Program
(605) 773-3352



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

March 6, 2003

Sturgis Water Dept.
Dale Morman
1025 1st St
Sturgis SD 57785

Dear Mr. Morman:

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

- Please complete Item No. 4 of the application, stating the quarter-quarter, section, township and range location of the point of diversion.
- A map or aerial photo showing the location of the well in relation to a government section corner or quarter corner by direction and distance is required. The map must be signed by one of the following: Registered Land Surveyor, Registered Professional Engineer or by any other government employee who normally prepares maps as a part of his assigned duties (i.e. local NRCS office).

If you have any questions, please contact me.

Sincerely,

Karen Schlaak
Water Rights Program
605 773-3352

enclosure

March 10, 2003

Karen Schlaak
Water Rights Program

RECEIVED

MAR 11 2003

WATER RIGHTS
PROGRAM

Hi Karen,

Please find enclosed the completed form Application for a Permit to Appropriate Water for municipal use. I hope the required items have been addressed. This well is funded under a CDBG Project to replace a well which was high in arsenic. We are ready to go to bid for the drilling of the new well as soon as we receive notice that we have a permit to do so. Anything your office can do to expedite the process would be greatly appreciated.

Sincerely,

A handwritten signature in cursive script, appearing to read "Eldon Christians", followed by a horizontal line.

Eldon Christians

Water Rights Program - DENR
Conversation File Documentation

NAME OF PERSON OR FILE: Application No. 1789-1, Sturgis Water Department,
Heartland Resorts, LLC

ADDRESS: COUNTY: Meade

DATE: March 12, 2003 TELEPHONE: 347-4425

RE: Call Discussion with Eldon Christians

COMMENTS:

Mr. Christians stated that this is a new well. The existing well which is high in arsenic will be maintained and used as a back-up water source for the municipal system.

The city would like to move forward on this new well as soon as possible. We went through the timing of being able to get a water permit in place. This was longer than they wanted to wait to send out for bids to construct the well. Mr. Christians will likely send in a request to construct a test well.

NAME: *Eric Handberg*



Sturgis Water Department

1025 First Street
Sturgis, South Dakota, 57785

Phone: (605) 347-4425
Fax: (605) 347- 9187

Dedicated to Water Quality and Customer Service

Jim Goodman
Water Rights Program
Dept. of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

March 12, 2003

Dear Jim:

The Sturgis Water Department is hereby requesting authorization to construct a test well in the Madison Formation. The application to construct the well has been submitted your office and is pending approval by your agency.

This project is funded by a CDBG Grant and we will only constructing the well and running test flows to determine the flow characteristics so we can draw plans for completion of pump house and determine pump, motor, and pipe sizing so the final phase can be bid.

If you have any questions, please contact me.

Sincerely,

Eldon Christians

Water Superintendent

3/17/03 I TOLD
E. CHRISTIANS
12/10/02 LETTER
IS GOOD FOR THIS
"TEST WELL"
KB

REPORT ON WATER PERMIT APPLICATION NO. 1789-1
STURGIS WATER DEPT
MARCH 26, 2003

Water Permit Application No. 1789-1 proposes to appropriate 1.0 cubic feet of water per second (450 gpm) from one well completed into the Madison aquifer, located in the NE¼ SW¼ Sec.9, T5N-R5E. The water is for municipal use.

Water Source: Madison aquifer (MDSN)

Geology and Aquifer Characteristics:

The Madison (Pahasapa) Limestone is a massive limestone and dolomite that underlies much of the Western United States. The Madison Limestone is estimated to be about 500 feet thick in this area (Carter and Redden, 1999a, and Carter and Redden, 1999b). The top portion of the Madison Limestone contains randomly distributed zones of secondary porosity and permeability formed by weathering of exposed surfaces, groundwater solution and fracturing, and is considered the Madison aquifer. The Madison is generally considered an excellent aquifer both in terms of quality and quantity, especially near the outcrop (recharge area). The aquifer underlies approximately 30,000 square miles of western South Dakota and contains at least 640 million acre-feet of recoverable water in storage in the State (Allen and others, 1984). The well site proposed by this permit is located approximately two miles northeast of the Madison outcrop (recharge area) (Strobel and others, 1999). The top of the Madison Limestone is expected to be approximately 890 feet below grade at this site (Carter and Redden, 1999a). The test hole log submitted with this application identifies the Madison top at 860 feet below grade.

Recharge to the Madison aquifer occurs through streamflow losses and direct infiltration of precipitation at the outcrop area. Recharge for the entire Madison aquifer in South Dakota has been estimated to range from 140,000 to 400,000 acre-feet per year (Woodward Clyde, 1981). Average annual recharge from 1931-1998 is estimated to be approximately 137,000 ac-ft/yr (Carter and others, 2001a).

The Water Rights Program monitors 26 observation wells completed into the Madison aquifer in the Black Hills area (Water Rights, 2003b). This well site is located within five miles of three Water Rights' Observations Wells completed into the Madison aquifer. Observation Well MD-86A is located approximately 0.9 miles south-southeast of this site, Observation Well LA-90A is located approximately three miles northwest of this site, and Observation Well LA-96D is located approximately 4.8 miles southwest of this well site. Hydrographs for the wells show the aquifer's response to climatic conditions and clearly demonstrate the system is recharged, (see figures 1-3).

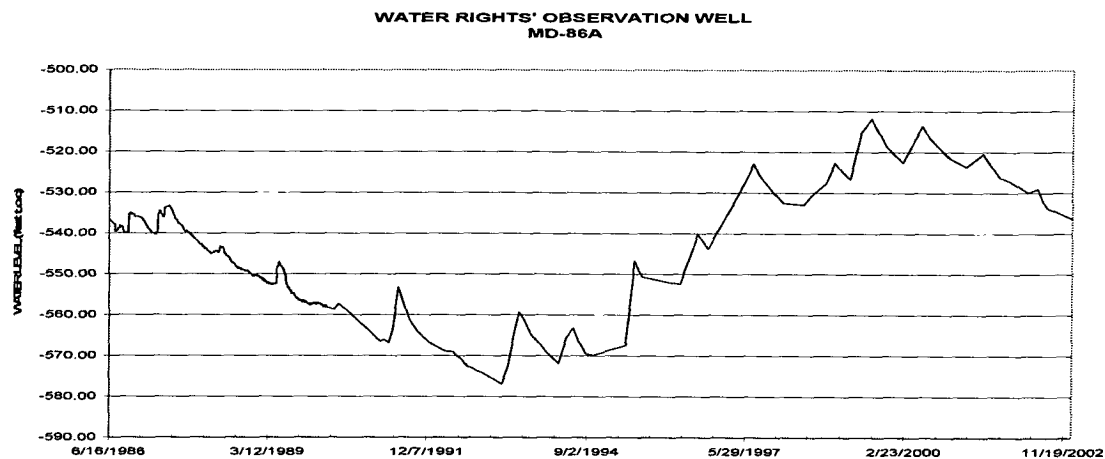


Figure 1. Hydrograph of Madison aquifer observation well approximately 0.9 miles south-southeast of 1789-1

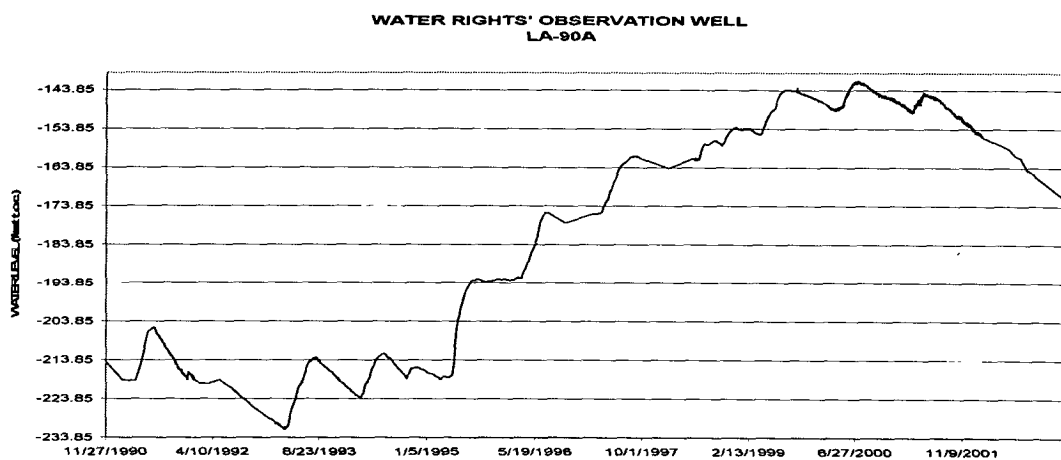


Figure 2. Hydrograph of Madison aquifer observation well approximately three miles northwest of 1789-1

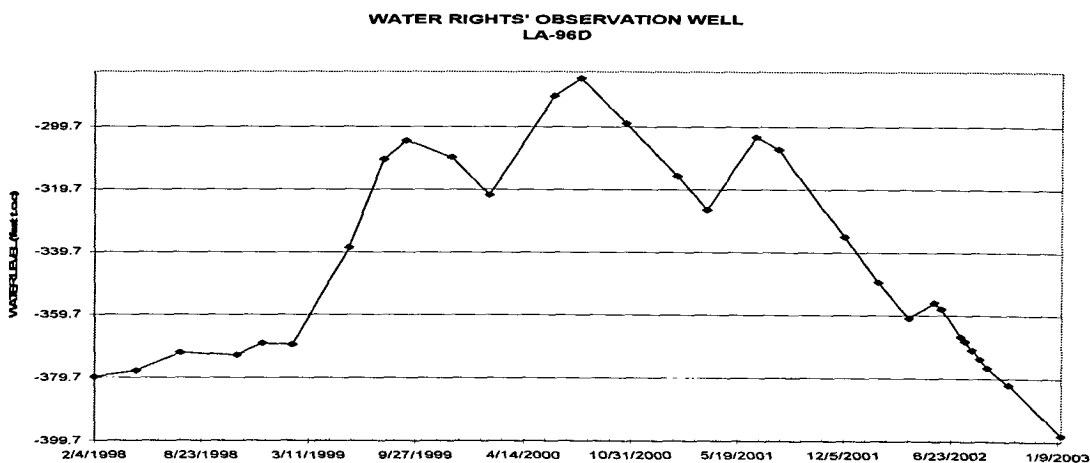


Figure 3. Hydrograph of Madison aquifer observation well approximately 4.8 miles southwest of 1789-1

Records from the observation wells indicated the potentiometric surface of the Madison aquifer has fluctuated over 113 feet in LA-96D, 89 feet in LA-90A, and over 65 feet in MD-86A for the periods of record. These fluctuations are in response to seasonal and climatic variations, showing the lowest water levels occurred in 1993 and the highest water levels occurred in 1999 or 2000. Long-term water level declines are not apparent from any of the Water Rights' Madison aquifer observation wells. Observation well data suggest that at the existing level of development, natural influences dominate the water levels of the aquifer and the effects of pumping as yet are not obvious.

The high cost of Madison wells, except very near the outcrop, and the availability of groundwater from shallower aquifers, has limited domestic development and generally restricted usage from the Madison to those uses which require water rights. There are a total of 124 permits/rights which appropriate water from the Madison aquifer in South Dakota. In addition, there are two Future Use Permits (1833-2 Weston Heights Home Owners, and 2086-2 The City of Rapid City), that reserve water from the Madison aquifer. The majority of the water rights/permits from the aquifer are from Butte (17), Lawrence (24), Meade (25), Pennington (34) and Fall River (11) Counties. The Madison supplies water for irrigation, geothermal, industrial, and commercial use. However, by far the major use of the aquifer is for common distribution systems (suburban housing development and municipal use). The cities of Spearfish, Belle Fourche, Sturgis, Rapid City, Box Elder, and Edgemont all depend on water from the Madison aquifer.

If the worst case assumptions are made that (1) permits/rights with an annual withdrawal limitation (ac-ft/yr) will use the maximum allowable; and (2) permits/rights that are limited by a diversion rate only, will use 60% of the maximum allowable (considered reasonable for water distribution systems); the total water use from the Madison would be less than 50,000 acre-feet per year. The actual amount of water used from the Madison is considerably less than this estimate. Withdrawals from wells completed into the Madison aquifer were estimated to be 10,990.2 acre-feet annually from 1987-1996 (Carter and others, 2001b). Comparison of the estimated annual recharge to the Madison with the water use estimated from the aquifer indicates unappropriated water is available from the Madison aquifer.

Affects on Existing Rights:

There are 22 Water Rights/Permits appropriating groundwater within approximately two and one half miles of this proposed well site (Water Rights, 2003c). They are listed in table one.

PERMIT_NO	LAST_NAME	AQUIFER	CFS
683-2	MURRAY WATER COMPANY	OPCH	0.08
780-1	STURGIS WATER DEPARTMENT	MNLS	0.66
441A-1	STURGIS WATER DEPARTMENT	MDSN	0.89
441B-1	STURGIS WATER DEPARTMENT	MDSN	0.51
1062-1	STURGIS MUN UTILITY BOARD	MNLS	0.06
1175-1	PINE CONE EST COMM ASSOC	INKR	0.15
1287-1	CITY OF STURGIS	MDSN	0.89
1318-1	GERALD M. BALDWIN	MNLS	0.04
1349-1	WARREN W. MANN	MNLS	0.10
1351-1	MOLLY B'S TRUCKSTOP	MNLS	0.08
1473-1	FT. MEADE VA MEDICAL CTR	DDWD	0.15
1502-1	USDI BUREAU OF LAND MGMT	INKR	0.02
1541-1	AUTOMATIC VENDORS, INC	MNKT	0.04
1558-1	LEO BESTGEN	MNLS	0.05
1561-1	BELIEVER'S FELLOWSHIP	SNDC	0.01
1684-1	MIKE RINGER	MDSN	0.02
1705-1	STURGIS WATER DEPARTMENT	MNLS	0.78
1709-1	MURRAY WATER COMPANY	MNLS & MDSN	0.33
1716-1	WM & BEVERLY LORE	MNLS	0.04
1722-1	WILDERNESS OUTPOST/RESORT	MNLS	0.17
1754-1	PINE CONE ESTATES COMM.	MNLS	0.16
1763-1	STURGIS MUN UTILITY BOARD	MNLS	0.83

Table 1. Groundwater appropriations within approximately two and one half miles of the well proposed by 1789-1

The appropriations from aquifers shallower than the Madison aquifer (i.e. Inyan Kara aquifer, Sundance aquifer, Minnekahta aquifer, Opeche aquifer, and Minnelusa aquifer) are not expected to be affected by this proposed appropriation since the lower Minnelusa aquifer is a confining bed that isolates the Madison hydraulically from shallower aquifers. The one well (1473-1 Ft. Meade Medical Center) that is in the Deadwood aquifer, which is lower than the Madison, is not expected to be impacted by this appropriation because of confining beds between the Madison aquifer and the Deadwood.

The nearest appropriation from the Madison aquifer, 1709-1 Murray Water Company, is located approximately 2000 feet west of this proposed well site (Water Rights, 2003c). Since the Madison is under artesian conditions in this area, well interference is possible considering the diversion rate proposed by this application and proximity to the Murray Water Company well #2. At this time, it is not practical to attempt to quantify the specific affect this well may have on the Murray well since aquifer characteristics have not been determined for this area, and the aquifer characteristics of the Madison can vary considerably within a short distance.

An example of the variability of the hydraulic characteristics of the Madison aquifer is documented in the Rapid City area. Two constant discharge aquifer tests were conducted within approximately one and one-half miles in Rapid City in 1990. City well #6 was pumped continuously for four days at a rate of 680 gallons per minute (gpm). The resultant drawdown in the production well was 426.4 feet. Approximately 3,000 feet from the

production well, the maximum drawdown in an observation well was reportedly 1.5 feet. In a second test, City well #5, pumped for seven days at 1,700 gpm, resulted in maximum drawdown of 212.8 feet in the production well. Maximum drawdown in an observation well 11,700 feet from the production well was 1.4 feet. The hydraulic properties of the Madison aquifer calculated from these aquifer tests were $T = 1,600 \text{ ft}^2/\text{d}$ to $40,000 \text{ ft}^2/\text{d}$ and $S = 1 \times 10^{-4}$ to 2×10^{-3} (Greene, 1993). In addition, Greene concluded that the transmissivity of the Madison is not equal in all directions (anisotropic); therefore the drawdown cone will extend farther in one direction than another.

Although the impact of this appropriation cannot be quantified precisely, it is still possible to address whether this appropriation can be made without adversely affecting the Murray Water Company well or any other existing water rights, including domestic wells.

Water Management Board rules 74:02:04 and 74:02:05, which were promulgated pursuant to SDCL 46-6-6.1, provide for the regulation of large capacity wells to the degree necessary to maintain an adequate depth of water for a prior appropriator in wells that have the ability to produce water **independent of artesian**. Simply put, the pump placement in a prior appropriator's well is not necessarily protected.

Water Permit No. 1709-1 authorizes a diversion rate of 40 gallons per minute from Murray Water Co. Well No. 2 for suburban housing development use and commercial use at a campground. The Well Completion Report submitted for the well indicates the well had a static water level in 1990 of 325 feet below grade. The top of the Madison aquifer is assumed to be approximately 900 feet below grade in the Murray Water Co. Well No. 2 (Carter and Redden, 1999a). Therefore there is approximately 575 feet of head pressure in this well. Murray Water Company bears the responsibility of lowering the pump inlet in its Well No. 2 to the top of the aquifer if necessary. Increased lift would decrease the pump discharge; or require a larger pump or a different type of a pump to maintain the same output.

An increase in operating expenses that may result from interference between wells is not necessarily an adverse impact. The Water Management Board considered a similar situation in the matter of Water Permit Application 2313-2, Coca-Cola Bottling Company of the Black Hills (Water Rights, 1995). The Board adopted findings of fact and conclusions of law, which if applied here, basically would say that the Murray Water Co. has voluntarily constructed their well No.2 in such a way as to expose itself to an increased cost or decreased production as a result of any draw down by other legitimate users. If the increased cost or decreased production is considered an adverse impact, it could be in conflict with SDCL 46-1-4, which requires South Dakota's water resources to be put to beneficial use to the fullest extent of which they are capable.

Although there are a limited number of domestic wells completed into the Madison aquifer in this area, (Water Rights, 2003_a), the potential affect of this appropriation on domestic wells must be considered. An "Adversely impacted domestic well" is defined by ARSD 74:02:04:20(7), as a well that was constructed to allow the pump intake to be set at least 20 feet below the top of the aquifer, in which the water level of the aquifer has declined to a

level that the pump will no longer deliver sufficient water for the well owner's needs. It is likely that even if a domestic well completed into the Madison aquifer in this area experienced interference, it would still be capable of delivering sufficient water with a pump inlet placed near the top of the aquifer. Therefore adverse impact to domestic wells is not probable.

TERM LIMITATION:

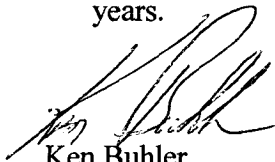
SDCL 46-2A-20 requires that "... no water permit for construction of works to withdraw water from the Madison formation in Butte, Fall River, Custer, Lawrence, Meade and Pennington counties may be issued for a term of more than twenty years, unless the water management board determines, based upon the evidence presented at the hearing that:

- (1) Sufficient information is available to determine whether any significant adverse hydrologic effects on the supply of water in the Madison formation would result if the proposed withdrawal were approved; and
- (2) The information, whether provided by the applicant or by other means, show that there is a reasonable probability that issuance of the proposed permit would not have a significant adverse effect on nearby Madison formation wells and springs."

Evidence is not available to justify issuing this permit without a term limitation of 20 years.

Conclusions:

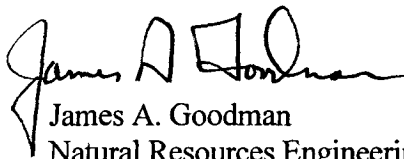
1. The Madison aquifer is a viable aquifer in this area.
2. This diversion will not adversely impair existing water rights.
3. Information is not available to justify issuing this permit without a term limitation of 20 years.



Ken Buhler

Natural Resources Engineering Specialist

Approved by



James A. Goodman

Natural Resources Engineering Director

References:

Allen, J.C., Iles, D.L., and Petres, A.K., Analysis of Groundwater and Streamflow Data Western Dakotas Region of South Dakota, Task 3 and 4: Groundwater Resource Inventory: SD DENR-Geological Survey U.S. Army Corps of Engineers Contract DAWC 45-82-C-0151,

- Carter, J.M., Redden, J.A., 1999a, Altitude of the Top of the Madison Limestone in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-D, 2 sheets, scale 1:100,000
- Carter, J.M., Redden, J.A., 1999b, Altitude of the Top of the Deadwood Formation in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-E, 2 sheets, scale 1:100,000
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- Carter, J.M., Driscoll, D.G., Hamade, G.R., and Jarrell, G.J., 2001b, Hydrologic Budgets for the Madison and Minnelusa Aquifers, Black Hills of South Dakota and Wyoming, Water Years 1987-1996, Water-Resources Investigations Report 01-4119, U.S. Department of the Interior, U.S. Geological Survey, Rapid City, SD
- Strobel, M.L., Jarrell, G.J., Sawyer, J.F., Schleicher, J.R., and Fahrenbach, M.D., 1999, Distribution of Hydrogeologic Units in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-743, 3 sheets, scale 1:100,000
- Water Rights Program, 1995, "Water Right File 2313-2", South Dakota DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Water Rights Program, 2003a, "Domestic Well Log Files", South Dakota DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Water Rights Program, 2003b, "Unpublished Observation Well Records", South Dakota DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Water Rights Program, 2003c, "Water Permit/Right Files", South Dakota DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Woodward Clyde Consultants, 1981, Well Field Hydrology Technical Report, for the ETSI Coal Slurry Pipeline Project, U.S. Dept. of the Interior, Bureau of Land Management



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
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PIERRE, SOUTH DAKOTA 57501-3182
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**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 1789-1, Sturgis Water Department**

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. 1789-1, Sturgis Water Department, c/o Eldon Christians, Water Superintendent, 1025 First Street, Sturgis SD 57785.

The Chief Engineer is recommending APPROVAL of Application No. 1789-1 for a 20 year term pursuant to SDCL 46-1-14 and 46-2A-20 because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, 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. In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 1789-1 is issued for a twenty year term. Pursuant to SDCL 46-2A-21, the twenty year term may be deleted at any time during the twenty year period or following its expiration. If the twenty year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 1789-1 may also be cancelled for nonconstruction, forfeiture, abandonment or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1, and ARSD 74:02:01:37.
2. 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.
3. The well authorized by Permit No. 1789-1 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) from the producing formation to the surface pursuant to Section 74:02:04:28.
4. The Sturgis Water Department shall report to the Chief Engineer annually the amount of water withdrawn from the Madison Aquifer

See report on application for additional information.

Garland Erbele, Chief Engineer
March 31, 2003



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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April 1, 2003

Meade Co. Times-Tribune
PO Box 129
Sturgis SD 57785-0129

ATTENTION: Legal Public Notice

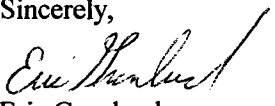
Enclosed is a Notice of Hearing on Application No. 1789-1 to Appropriate Water to be published twice. Please publish the first notice on April 8, 2003 with the second publication 7 days later.

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 Sturgis Water Department, % Eldon Christians, Water Superintendent, 1025 First Street, Sturgis SD 57785 (Ph # 605-347-4425).

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. 1789-1

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

Date _____

We are in receipt of your letter of April 1, 2003 enclosing Notice of Hearing to Appropriate Water by Application No. 1789-1 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
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PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

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

April 1, 2003

Sturgis Water Department
% Eldon Christians Water Superintendent
1025 1st St.
Sturgis SD 57785

Dear Mr. Christians:

Water Permit Application No. 1789-1 for municipal use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Meade County Times-Tribune printed at Sturgis, SD (Ph # 605-347-2503). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and a 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 to authorize publication of your Notice of Hearing 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 with the last publication to occur twenty days before the board meeting. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

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

Instruction to Newspaper - Publish first Notice on April 8, 2003 with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 1789-1 to Appropriate Water

Notice is given that Sturgis Water Department, 1025 1st St, Sturgis SD 57785 has filed an application for a water permit to appropriate 1.0 cubic feet of water per second (450 gallons per minute) from one well (Madison Formation) located in the NE ¼ SW ¼ Section 9-T5N-R5E. The water is for municipal use.

Pursuant to SDCL 46-2A-2, the Chief Engineer is recommending APPROVAL of Application No. 1789-1 for a 20 year term pursuant to SDCL 46-1-14 and 46-2A-20 because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, 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.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to 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 28, 2003. 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.

The Water Management Board will consider this application at 11:30 A.M. May 7, 2003 in the Matthew Training Center, Foss Building, 523 E Capitol Ave, Pierre SD. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The May 7, 2003 hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by April 28, 2003.

Any hearing may be an adversarial proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by April 28, 2003, at the above Water Rights Program address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26 and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
 County of Meade) SS

I, Faith Gilbertson

certify that the attached printed Notice was taken

from the Meade County Times-Tribune

printed and published in Meade County
 County of Meade and

state of South Dakota. The notice was published

in the newspaper on the following two dates:

April 9 2003

April 16 2003

Cost of Printing 54.89

Pamela Buhler
 (Signature)

SD. Notary Public
 (Title)

April 18, 2003
 (Date Signed)

Water application

NOTICE OF APPLICATION
NO. 1789-1 to Appropriate Water

Notice is given that Sturgis Water Department, 1025 1st St, Sturgis SD 57785 has filed an application for a water permit to appropriate 1.0 cubic feet of water per second (450 gallons per minute) from one well (Madison Formation) located in the NE 1/4 SW 1/4 Section 9-T5N-R5E. The water is for municipal use.

Pursuant to SDCL 46-2A-2, the Chief Engineer is recommending APPROVAL of Application No. 1789-1 for a 20 year term pursuant to SDCL 46-1-14 and 46-2A-20 because 1) although evidence is not available to justify issuing this permit without a 20 year term limitation, 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.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to 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 28, 2003. 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.

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This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26 and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

Publ April 9 and 16, 2003
 Meade County Times-Tribune

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APR 21 2003

WATER RIGHTS
PROGRAM



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
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PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

April 1, 2003

Ray E. Murray, President
Murray Water Company
2551 Dolan Creek Rd
Sturgis SD 57785

Dear Mr. Murray:

Enclosed is a copy of the recommendation, report and notice of hearing for water right permit applications filed by the Sturgis Water Department. The notices are to be published in the Meade Co. Times-Tribune on April 8 and 15, 2003. The notice schedules a May 7th hearing before the Water Management Board. Petitions to intervene must be submitted by April 28, 2003 in accordance with the procedure set forth in the notice.

If you have any questions on the application, please feel free to contact Ken Buhler or myself at (605) 773-3352.

Sincerely,


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

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

JUN 13 2003

Sturgis Water Department
% Eldon Christians Water Superintendent
1025 1st Street
Sturgis SD 57785

Dear Mr. Christians:

Enclosed is Water Permit No. 1789-1 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

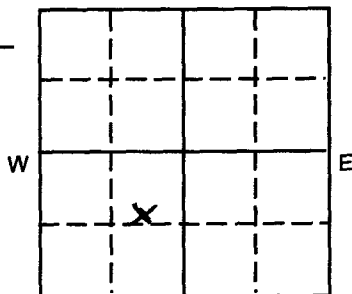
SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 9 Twp 5N Rg 5ECounty MeadeMeade

North

Please mark well location with an "X"



Well Completion Date

7-24-03

Distance to nearest potential pollution source (Septic tank, abandoned well, feed lot, etc.)

? Unknown ft. from (Identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Rotary - Mud

CASING DATA:

☒ Steel ☐ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
0.219 LB/FT	16" IN	0 FT	31 FT	20 IN
40 1/2 LB/FT	10 3/4 IN	0 FT	891 FT	14 1/4 IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
class C	530	1448 Lb/gal	891 Ft	0 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure

Pressure grout

SCREEN:

☐ Perforated pipe ☐ Manufactured

Diameter _____ Inches Length _____ Feet

Material _____

Slot Size _____ Set From _____ Feet to _____ Feet

Other information

9 7/8" open hole 891' - 1056'

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 tablets☐ No, Why Not?

Lab sample sent to for water quality analysis

Sampled by City of Sturgis

By Midcontinent Testing
Lab results enclosedWell Owner: City of SturgisBusiness Name: 1029 1st StreetAddress: Sturgis, SD 57785

City, State, Zip: _____

WELL LOG:

DEPTH

FORMATION

FROM

TO

SEE ATTACHEDSTATIC WATER LEVEL 363 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

403 Ft. After 48 Hrs. pumped 900 GPM

Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

RECEIVED

OCT 16 2003

WATER RIGHTS PROGRAM

This well was drilled under license # 604

And this report is true and accurate.

Drilling firm: Weston Engineering, Inc.

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

Date: 9/23/03

10-10-03

STURGIS WELL NO. 7
LITHOLOGIC DESCRIPTIONS

Depth (Feet)	Principal Lithology	Description	Comments
0 - 60	Sandstone, Siltstone, and Limestone	Moderate brown, fine-grained, friable sandstone with pale green mottling; moderate brown siltstone; pale green siltstone; and yellow, massive limestone.	Spudded into the Spearfish Formation.
60 - 90	Sandstone, Siltstone, Chert, and Limestone	Moderate brown, fine-grained, friable sandstone with pale green mottling; moderate brown siltstone; pale green siltstone; yellowish, massive limestone; and minor gray green chert.	
90 - 130		No Samples	
130 - 150	Sandstone, Gypsum, and Shale	Moderate brown, fine-grained, friable sandstone with pale green mottling; white gypsum; light green shale; and texturally mature quartz.	
150 - 180	Sandstone, Gypsum, and Shale	Moderate brown, fine-grained, friable sandstone with pale green mottling; minor white gypsum; light green shale; and texturally mature quartz.	
180 - 210	Sandstone	Moderate brown, fine-grained, friable sandstone with extensive pale green mottling.	
210 - 240	Limestone and Sandstone	Light olive gray to white, massive limestone and minor moderate brown, fine-grained, friable sandstone with extensive pale green mottling.	Minnekahta Limestone at 226 feet.
240 - 400	Limestone, Sandstone, Gypsum, and Shale	Light olive gray to white, massive limestone; pale olive, fine-grained, massive, quartz-rich sandstone; dusky red shale; minor moderate brown, fine-grained, friable sandstone with extensive pale green mottling; and minor white gypsum.	
400 - 430	Limestone, Sandstone, and Shale	Light olive gray to white, massive, limestone; pale olive, fine-grained, massive, quartz rich sandstone; dusky red shale; minor moderate brown, fine-grained, friable sandstone with extensive pale green mottling; and minor white to tan, fine-grained, friable, massive quartz sandstone.	
430 - 605	Sandstone, Limestone, and Shale	Abundant white to tan, fine-grained, friable, quartz sandstone; light olive gray to white, massive limestone; pale olive, fine-grained, massive, quartz-rich sandstone; dusky red shale; and decreasing amounts of moderate brown, fine-grained, friable sandstone with extensive pale green mottling.	Minnelusa Formation at 432 feet.

Depth (Feet)	Principal Lithology	Description	Comments
605 - 635	Sandstone, Limestone, and Shale	Abundant white to tan, fine-grain, friable, quartz sandstone; light olive gray to white, massive limestone; brown gray, massive, soft limestone; pale olive, fine-grain, massive, quartz rich sandstone; dusky red shale; and decreasing amounts of moderate brown, fine-grain, friable sandstone with extensive pale green mottling.	
635 - 845	Sandstone, Limestone, Siltstone, and Shale	Abundant white to tan, fine-grain, friable, quartz sandstone; light olive gray to white, massive limestone; brown gray, massive, soft limestone; light gray siltstone; pale olive, fine-grain, massive, quartz rich sandstone; dusky red shale; and decreasing amounts of moderate brown, fine-grain, friable, poorly bedded sandstone with extensive pale green	
845 - 1,041	Limestone, Sandstone, Siltstone, and Shale	Abundant white to very light yellow limestone; and decreasing amounts of the following with depth: white to tan, fine-grained, friable, quartz sandstone; light olive gray to white, massive limestone; brown gray, soft limestone; light gray siltstone; pale olive, fine-grained, massive, quartz rich sandstone; dusky red shale; and moderate brown, fine-grained, friable sandstone with extensive pale green mottling.	Madison Limestone at 860 feet. Loss of drilling fluid at a rate of 15 gpm below 860 feet. Void from 1,031 to 1,041 feet.

September 1, 2003

RE: Sturgis No. 7 Testing and Drawdown Predictions

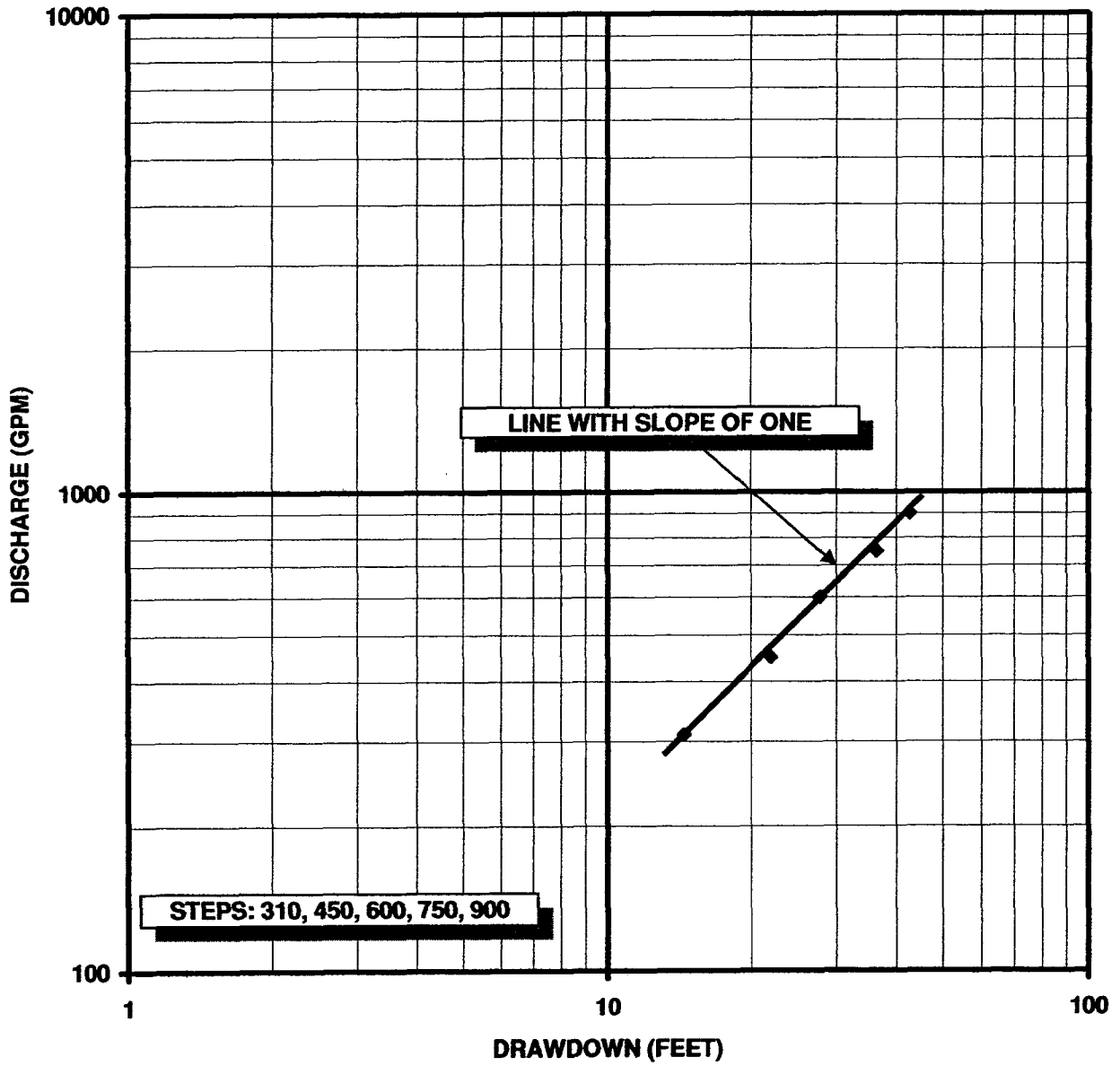
Frank,

From the constant-rate test plot, I calculated an effective transmissivity of 450,000 gallons per day per foot. That was fudging a bit to actually reduce the transmissivity because of the flat drawdown curve. Using this transmissivity and assuming the aquifer is confined, the Jacob equation predicts a drawdown of approximately 7 feet. Of course, this underestimates the drawdown since we have step-test data that proves this. The lowest specific capacity we observed during the step-test was 20.5 gallons per minute per foot of drawdown (gpm/ft). Applying the specific capacity of 20.5 gpm/ft and the production rate of 1,000 gpm, the predicted drawdown would be approximately 50 feet. This would seem reasonable given the data we have collected. I would however, urge the City of Sturgis to collect both static water level and pumping water level data on a routine basis to watch for signs of a negative hydraulic boundary. Looks like another great WESTON well!

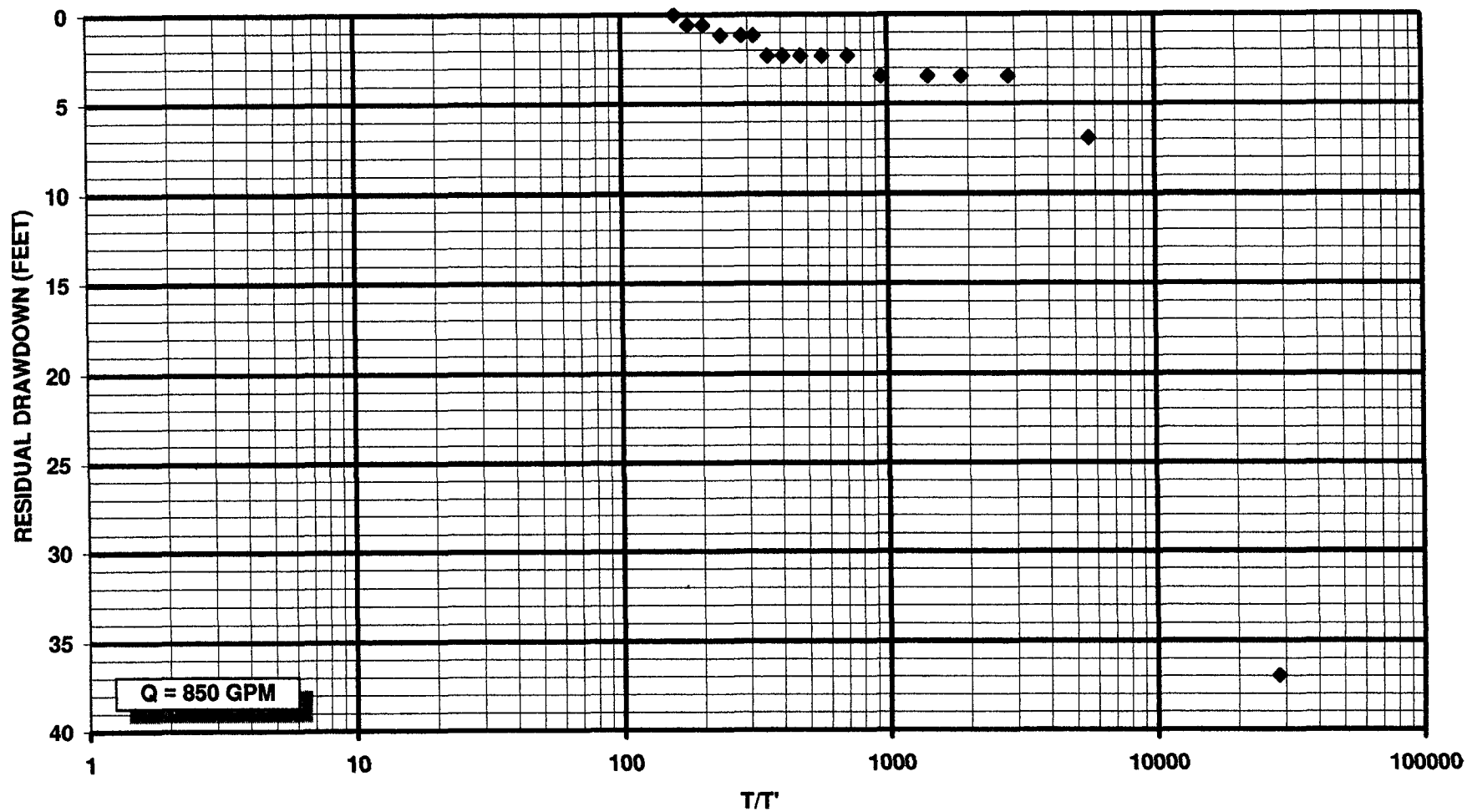
Ben.

*FRANK COY AND BEN JORDAN ARE
EMPLOYEES OF WESTON ENGINEERING
KB*

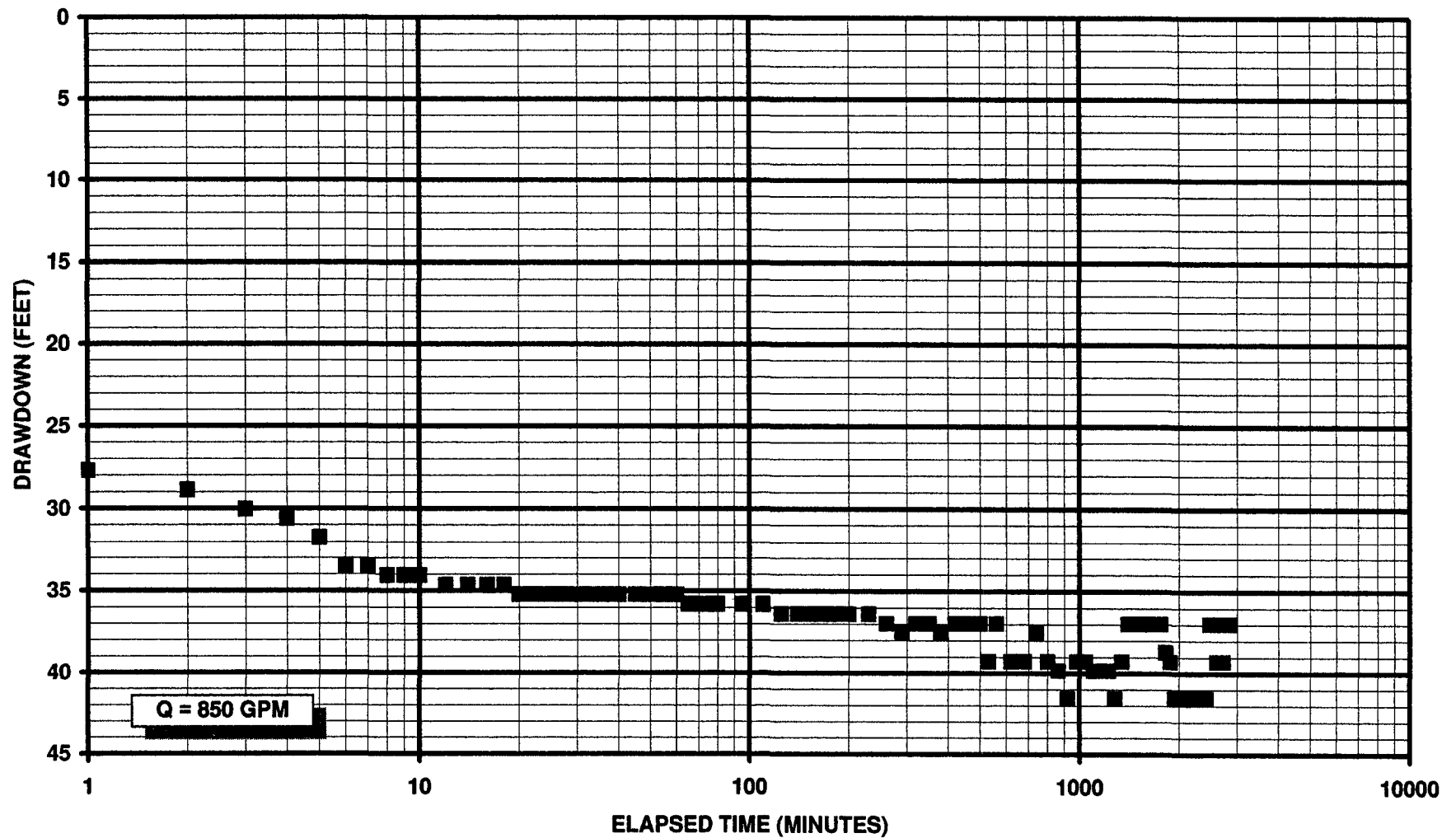
STURGIS NO. 7 STEP-TEST SUMMARY
AUGUST 20, 2002



STURGIS NO. 7
CONSTANT-RATE TEST RECOVERY
AUGUST 23, 2003



**STURGIS NO. 7 CONSTANT-RATE TEST
AUGUST 20, 2003**





MIDCONTINENT
TESTING LABORATORIES, INC.

SAMPLE NAME: WELL #7
DESCRIPTION: EPA #0321
SAMPLE DATE: 08/25/03
SAMPLE TIME:
SAMPLED BY: DALE OLSON

ELDON CHRISTIANS
STURGIS WATER COMPANY
1025 1ST ST.
STURGIS, SD 57785

ACCOUNT NUMBER: 8392
LAB NUMBER: 20030826950
DATE RECEIVED: 08/26/03
TIME RECEIVED: 12:35 PM
REPORT DATE: 09/12/03

<u>PHYSICAL PROPERTIES</u>	<u>VALUE</u>	<u>METALS mg/l</u>	<u>DISSOLVED</u>	<u>TOTAL</u>
Conductivity, umhos/cm	468.	Aluminum	.	.
Hardness	.	Antimony	.	<.001
PH	.	Arsenic	.	<.005
Solids, Dissolved, mg/l	.	Barium	.	0.063
Solids, Suspended, mg/l	.	Beryllium	.	<.001
Turbidity, NTU	.	Boron	.	.
		Cadmium	.	<.001
<u>INORGANIC & NONMETALLIC</u>	<u>VALUE</u>	Calcium	.	.
Acidity	.	Chromium	.	0.004
Alkalinity	.	Cobalt	.	.
Bicarbonate	.	Copper	.	.
Carbonate, mg/l	.	Gold	.	.
Chloride, mg/l	.	Iron	.	.
Cyanide, Total, mg/l	.	Lead	.	.
Cyanide, WAD, mg/l	.	Lithium	.	.
Cyanide, Free, mg/l	.	Magnesium	.	.
Fluoride, mg/l	0.222	Manganese	.	.
Nitrogen, Ammonia, mg/l	.	Mercury	.	<.0002
Nitrogen, Nitrate, mg/l	0.483	Molybdenum	.	.
Nitrogen, Nitrite, mg/l	.	Nickel	.	<.005
Sulfate, mg/l	56.2	Potassium	.	.
		Selenium	.	<.005
		Silicon	.	.
		Silver	.	.
		Sodium	7.86	.
		Strontium	.	.
		Vanadium	.	.
		Zinc	.	.
<u>SPECIAL TESTS</u>	<u>VALUE</u>			
THALLIUM (mg/l)	<.001			

2381 South Plaza Drive
P.O. Box 3388
Rapid City, SD 57709
Ph 605/348-0111
www.TheChemistryLab.com

APPROVED BY:

Steve Rigan

DATE:

Sept. 12, 2003



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

denr.sd.gov

September 28, 2009

Eric Tibbetts
Sturgis Water Department
1040 2nd Street, Suite #1
Sturgis, SD 57785

Dear Mr. Tibbetts:

On September 22, 2009, I conducted a licensing inspection for the Sturgis Water Department, Water Permit No. 1789-1. Water Permit No. 1789-1 authorizes the diversion of 1.0 cfs (450 gpm) of water for municipal use from one well for the City of Sturgis with a priority date of March 11, 2003.

At the inspection, I met with Dale Olson who showed me the location of the well in the NE ¼ SW ¼ Section 9-T5N-R5E (Well #7) and I was also informed the well usually operates at 1.34 cfs (600 gpm) which is above the permitted rate of diversion for this permit. Mr. Olson also explained that the Water Department is planning to install a larger pump into this well which might be able to produce 1,200-1,500 gpm.

Because of this additional water, the Sturgis Water Department will need to obtain an additional water permit which is included with this letter. The new permit will "only" be needed for the additional water above the 1.0 cfs (450 gpm) which is already permitted by Water Permit No. 1789-1.

Upon approval of the new permit, Water Permit No. 1789-1 will be incorporated into the new permit with each maintaining their original dates.

If you have any questions regarding the inspection or the permitting process, please feel free to contact me or Eric Gronlund at (605) 773-3352.

Sincerely:

Mike DeFea
Natural Resources Project Engineer
DENR, Water Rights Program

enclosure:

Permit No. 1789-1
Belle Fourche River - Water District

Report of Examination of Works and/or Application of Water to Beneficial Use

TO: Chief Engineer, Water Rights Program, DENR, Foss Bldg., Pierre, SD 57501

I have this day, **September 22, 2009**, made a thorough examination of the water use system constructed by **Sturgis Water Company** of **1040 2nd St. Suite 102, Sturgis, SD 57785** holder of Permit No. **1789-1**, bearing the priority of **March 11, 2003** authorizing the diversion of **1.0** cu. ft. per second and/or **724** acre-feet of water annually from the **Madison Formation** for **Municipal** purposes, in **Meade** County.

Inspection contact & relationship **Dale Olson**
to permit holder, if applicable:

A. Works used to divert the water:

Well Information:

- 1) Well Drilling Firm: **Weston Engineering Inc.**
- 2) No. of Wells **1**
- 3) Depth(s) **1,040** feet
- 4) Well log is available **Y**

Casing:

- 1) Diameter **16** inches
- 2) Length **890** feet
- 3) Type **Steel**

Screen:

- 1) Type **Open Hole**
- 2) Length **165** feet
- 3) Static water level **363** feet

Pump:

- 1) Make **Hitachi**
- 2) Model **Unknown**
- 3) Size **200 hp**
- 4) Capacity **750** GPM

B. Compliance with Permit Requirements:

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

The system is in Good condition with the point(s) of diversion located as follows:

Well #7: Approximately 1,680 feet north and 1,885 feet east of the SW corner of Section 9-T5N-R5E
(N 44.40648, W -103.52203) (NE ¼ SW ¼)

The works are capable of diverting and conveying to the place of use 1.0 cu. ft. per second of water and/or 724 acre-feet of water annually to be used for Municipal use.

The license should be issued for 1.0 cfs and/or 724 acre-feet of storage.

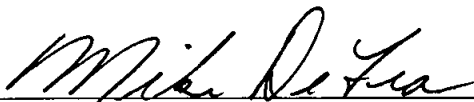
All structures, wells and lands on map Y

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

Water Permit No. 1789-1 authorizes the diversion 1.0 cfs (724 acre-feet annually) from one well (Well #7) for municipal use. At the time of the licensing inspection for Water Permit No. 1789-1, the well authorized by this permit was capable of producing 1.67 cfs. The City of Sturgis was informed they would need to apply for another permit for the diversion of this additional water.

The City of Sturgis did apply for an additional 1.44 cfs (280 acre-feet annually) of water from Well #7 and Permit No. 1910-1 was approved on May 24, 2010. The City informed the DENR, Water Rights program the reason the application was for 1.44 cfs instead of just the 0.67 cfs which was the amount of water exceeding the rate of flow authorized by Permit No. 1789-1 was because they have plans to install a "booster pump". Installation of the "booster" would increase the diversion rate from the well to approximately 2.44 cfs which would be the combined diversion rate authorized by both Permit No. 1789-1 and Permit No. 1910-1 when installed. The City has until May 24, 2019 to put the total 1.44 cfs to beneficial use.

I am recommending Licensing of Water Permit No. 1789-1 for 1.0 cfs (724 acre-feet) and Water Permit No. 1910-1 will need to be inspected at a later date to verify the total rate of flow the well can produce. At that time, these permits should be incorporated while each retaining their priority dates.


Mike DeFea
Natural Resources Engineer II
DENR, Water Rights Program

Date report completed: April 25, 2014

Water Permit No. 1789-1

Sturgis Water Company
1040 2nd St. Suite #1
Sturgis, SD 57785



Mike DeFea

Mike DeFea
Natural Resources Engineer
DENR, Water Rights Program
April 25, 2014

0 425 850 1,700 2,550 3,400 Feet



South Dakota
Department of Environment
& Natural Resources
Protecting SD's Tomorrow... Today



**DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES**

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



MAY 16 2014

1789-1

Dale Olson, Water Superintendent
Sturgis Water Department
1040 2nd St Suite 103
Sturgis SD 57785

Dear Mr. Olson:

Enclosed is Water License No. 1789-1. 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 the owner of an existing well, such as the well authorized by Water Right No. 1789-1, 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

Note: Sturgis Water Department also holds Water Permit No. 1910-1 for the same well authorized under No. 1789-1. As soon as an inspection can be conducted to verify the total withdrawal rate from the well, Nos. 1789-1 and 1910-1 will be incorporated together authorizing the total developed diversion rate from Well No. 7.

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 1789-1

(1) The Sturgis Water Department, 1040 2nd St, Suite 103, Sturgis SD 57785 made Application No. 1789-1, March 11, 2003 for a water permit to divert 1.00 cubic feet of water per second from ground water (one well, Madison Formation), Meade County, South Dakota for municipal purposes. Permit No. 1789-1, with a priority date of March 11, 2003 was approved May 7, 2003 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before May 7, 2008 and for the application to beneficial use of said water on or before May 7, 2012.

(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 1.00 cubic feet of water per second (724 acre feet annually) for beneficial use.

The location of the diversion point is 1,680 feet north and 1,885 feet east of the SW corner of Section 9, T5N, R5E (NE ¼ SW ¼).

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

(4) Pursuant to South Dakota Water Law 46-5-30.1 the Sturgis Water Department, 1040 2nd St, Suite 103, Sturgis SD 57785 the holder and/or owner of Water Right No. 1789-1 is issued a license to appropriate water, the right to use 1.00 cubic feet of water per second from ground water (one well, Madison Formation) with a priority date of March 11, 2003 from the location specified in (2) of this license for municipal purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 1789-1 and subject to the following qualifications:

- In accordance with SDCL 46-1-14 and 46-2A-20, Permit No. 1789-1 is issued for a 20-year term. Pursuant to SDCL 46-2A-21, the 20-year term may be deleted at any time during the 20-year period or following its expiration. If the 20-year term is not deleted at the end of the term, the permit may either be cancelled or amended with a new term limitation of up to twenty years. Permit No. 1789-1 may also be cancelled for non-construction, forfeiture, abandonment, or three permit violations pursuant to SDCL 46-1-12, 46-5-37, 46-5-37.1 and ARSD 74:02:01:37.
- 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. 1789-1 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. *Well completed in July, 2003 by Weston Engineering. A copy of the log is on file with the Water Rights Program.*

Page 2

Water License No. 1789-1

- The Sturgis Water Department shall report to the Chief Engineer annually the amount of water withdrawn from the Madison Aquifer.

Jeanne Goodman

Jeanne Goodman, Chief Engineer

Water Rights Program

Department of Environment and Natural Resources

MAY 16 2014

date



1789-1



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

OCT 19 2015

1789-1
1910-1

Sturgis Water Company
1040 Harley Davidson Way Ste 103
Sturgis SD 57785

Dear Sir:

Enclosed is Water License No. 1910-1. 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 the owner of an existing well, such as the well authorized by Water Right No. 1910-1, 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,

A handwritten signature in black ink, reading "Jeanne Goodman". The signature is fluid and cursive, with the first name "Jeanne" being more prominent than the last name "Goodman".

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

enclosures

Note: Upon licensing, the applicable portions of Water Right No. 1789-1 were incorporated into Water License No. 1910-1.