



WATER-RIGHT DOCKET

Wind Cave National Park

Docket No: 4

MINNELUSA WELL - HQ, PERMIT NO. 2667-2

State Water Rights Documentation

08-30-2011: Water permit for Wind Cave



<Eric.Gronlund@state.sd.us>

To <Jeff_Hughes@nps.gov>

08/30/2011 10:28 AM EST

cc

bcc

Subject water permit for Wind Cave

Jeff – here is a pdf of the permit issued for Wind Cave.

Eric Gronlund
Water Rights Program, DENR
605 773-3352
eric.gronlund@state.sd.us



Sbizhub 42111083010230.pdf

**SOUTH DAKOTA
WATER PERMIT NO. 2667-2**

Date of first receipt of application April 11, 2011.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2667-2 to Wind Cave National Park, c/o Steven Schrempp, 26611 US Hwy 385, Hot Spring SD 57747 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. 2667-2 appropriated 0.11 cubic feet of water per second from one well completed into the Minnelusa Aquifer (400 feet deep) located in SE 1/4 SE 1/4 Section 6-T6S-R6E.
2. The water appropriated shall be used at Wind Cave National Park 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 of approval of Permit No. 2667-2 is July 11, 2011.
5. The date from which applicant may claim right is April 11, 2011.
6. Water is to be put to beneficial use on or before July 11, 2020.
7. 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. Wind Cave National Park shall report to the Chief Engineer annually the amount of water withdrawn from the Minnelusa Aquifer.

WATER MANAGEMENT BOARD

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

AUG 30 2011
date





Steve Schrempp/WICA/NPS
06/30/2011 03:31 PM MDT

To Jeff Hughes/FTCOLLINS/NPS@NPS
cc
bcc
Subject Public Notice Week 2



Notice2.pdf

Steven D Schrempp, P.E.
Facility Manager
Wind Cave National Park
605-745-1140

Records

Custer County Chronicle • June 29, 2011 • Page 9

NOTICE OF APPLICATION

NO. 2667-2 TO APPROPRIATE WATER

Notice is given that Wind Cave National Park, c/o Steven D. Schremp, 26611 US Hwy 385, Hot Springs SD 57747, has filed an application for a water permit to appropriate 0.11 cubic feet of water per second from one well completed into the Minnelusa Aquifer (400 feet deep) located in SE 1/4 SE 1/4 Section 6-T6S-R6E for use at Wind Cave National Park.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2667-2 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, Fass 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 July 11, 2011.

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. Pimer, Secretary, Department of Environment and Natural Resources.

Published twice at the total approximate cost of \$39.51.

6/22, 6/29

Public Notices

Custer County Chronicle • June 22, 2011 • Page 7

and specifications there-
vered by the bidder
(the bidder
ment of all Addenda.
omit bids according to
ay be cause for bids to be
d.
be completed by August

Custer, SD reserves the

aring at the public school
for the fiscal year July 1,
CIAL EDUCATION

10,000.00
25.00
25.00
2,000.00

4,000.00
16,050.00

3,500.00
9,750.00
2,000.00

Finance Officer
Laurie Woodward
Published once at an approximate cost
of \$12.05. Represents 1.000002nd of the total
budget. 6/22

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Published twice at the total approximate cost of 6/22, 6/29

NOTICE OF MEETING AND ELECTION PROPOSED WIND RIDGE ROAD DISTRICT

A Meeting and Election will be held on Tuesday July 5th 2011, to determine if the proposed Wind Ridge Road District shall be formed. If the district is formed by this election, nomination and election of a board of trustees will take place at the meeting.

Landowners within the proposed district who are also registered voters within the district are eligible to vote in this election.

The meeting and election will begin at 10:00 am Mountain Standard time and continue until all present have voted.

The meeting will be held at 12832 Wind Ridge Road, Custer SD 57730.

The area to be included in the proposed district is:

N 1/2 SE 1/4 NW 1/4 Section 23 T6S R5E, S 1/2 SE 1/4 NW 1/4 Section 23 T6S R5E, W 1/2 SW 1/4 NE 1/4 Section 23 T6S R5E, E 1/2 SW 1/4 NE 1/4 Section 23 T6S R5E, NW 1/4 SE 1/4 Section 23 T6S R5E, SE 1/4 NE 1/4 Section 23 T6S R5E.

Holsworth, Dan
Travel Reimbursement - Pierre \$62.77
Holsworth, Debora
Utility Easement 33 N 1st St \$1,100.00
Kramer, Linda
Reimburse Office Supplies \$26.97
Miller Construction
Street Repairs \$1,510.87
Mt. Rushmore Telephone Co.
Monthly Statement \$167.96
Midcontinent Testing Lab, Inc.
Water \$520.50
Lab Testing
Office Depot
Office Supplies \$5.92
Olson Auto
LE Auto Repairs \$653.11
Payroll
BOT, LE, FO, Admin, Cleaning \$3,205.48
EFTPS
941 Deposit \$824.45
Red River Services
Yard Waste Roll Off \$110.00
Red River Services
Monthly Garbage Services \$2,478.08
SD Department of Revenue
Malt Beverage Licenses (State Portion) \$262.50
SD Retirement
Payroll Retirement Funds \$767.40
Southern Hills Publishing
May Publications \$307.39
Sturgis, City Of
Jetting Sewer Lines - Completion \$908.72
US Bank
Copier Lease #18 \$196.93
TOTAL \$16,109.44

LAW ENFORCEMENT: Daggett requested that the recap report of his logs be presented on a monthly basis to the board. The board did not see a problem with this. Local updates provided. A quick discussion on juvenile curfews took place. The curfew ordinance requires an 11pm curfew which will be strictly enforced. Due to a recent law enforcement pursuit chase, several vehicles from other towns/counties were damaged. Daggett requested the board to approve the use of Hermosa's second LE vehicle to assist where needed until other vehicles can be repaired. Motion made and seconded to approve this request. Unanimous. Daggett requested the use of the Town Office's current fax line, or the installation of a separate dedicated phone line, be installed in the downstairs office. The board was in favor of using the fax line for now, and having Daggett get an estimate from Mt. Rushmore Telephone Co. on the cost of the dedicated line. An update on the feral cat trapping was provided.

PLANNING COMMISSION & APPLICATIONS: The Board reviewed the P&Z Minutes from Tuesday, April 26th, and Tuesday, May 10th. P&Z Authority for Approval list was discussed, but has not yet been finalized.

NEW BUSINESS: The dirt pile at 301 Mc Derman St. has not yet been removed, or permitted through the county. Custer County Planner, Mr. Green, advised the town last October that this floodplain development permit was denied and he had advised the owner that the dirt needed to be removed. Motion made and seconded to send an email to Mr. Green to request him to take abatement action on this item as soon as possible, as it is affecting drainage in this area, and the stagnant water trapped around this pile is allowing unwanted mosquito breeding. Unanimous.

Harris reiterated the annual pet registration deadline is June 15th. Motion made and seconded to approve Harris to issue fines, as per ordinance, to known residents who have not yet registered their pets by this deadline, and send courtesy notices to renters that may not know about this requirement due to landlord utility billing. Kramer, Holsworth, and Flug voted aye. Ramsey voted nay. Motion carried.

OLD BUSINESS: An invoice from Marvin Bishop was submitted for re-establishment.

votes.
ADJOURN: Motion made and second-
ed to adjourn the meeting at 3:25PM MST.
Unanimous.
ATTEST:

Shanna Harris
Finance Officer

Dan Holsworth
Town Board President
Published once at the approximate cost
of \$78.01. Represents 1/10001st of the total
budget. 6/22

TOWN OF PRINGLE

PROCEEDINGS JUNE 14, 2011

The regular meeting of the Board of Trustees of the Town of Pringle was held at the community center June 14, 2011, at 7 p.m. Meeting was called to order by chairperson, Anderson, with clerk, treasurer, trustees and concerned citizens.

Minutes were approved as read.
On motion by Maddox and seconded by Anderson, the following bills were allowed:
Sander Sanitation Serv. Inc. \$1,064.14
So. Hills Pub. Inc. 31.34
B.H. Elec. Coop. Inc. 236.89
Pringle Fire Dept. 219.03

Receipts:
Custer County \$1,802.34
State of SD 1,155.90
State of SD 971.90
State of SD 1,004.95
First Western Ins. 451.00
Faulk & Foster Real Est. 25.00
Water 474.50
Beer License 150.00

On motion by Maddox and seconded by Anderson to approve Beer License for Zeimet's Country Store.

Citizens relayed their concerns about the Sand Plant and what their plans are. Motion by Maddox and seconded by Anderson to have a lawyer draw up papers for zoning on Sand Plant and no building permits allowed until accomplished.

Citizens were also concerned about barking dogs, abandoned trailers, and junk automobiles.

Being no other business, meeting adjourned.

David E. Morgan
Clerk
Published once at an approximate cost
of \$16.41. 6/22

CUSTER SCHOOL DISTRICT BOARD OF EDUCATION

REGULAR MEETING - JUNE 13, 2011 SCHOOL ADMINISTRATION OFFICE

(Please note: Unless stated otherwise, motions were carried by seven.)

The Custer School District #16-1 Board of Education met on Monday, June 13, 2011, in regular session at the School Administration Office. Board members present were Eric Lewis, Kevin Strand, Larry Vickers, Tim Wicks and Walker Witt. Board members Jon Dahlstrom and Anne Sandvig participated in the meeting through telephonic conference. Administrators present were Superintendent Tim Creal, Business Manager Lisa Fluck, and Custer Elementary Principal Carol Veit. Also in attendance was the school attorney, Tracy Kelley. Vice President Witt called the meeting to order at 6:30 p.m.

AMENDMENTS TO THE AGENDA
Motion by Strand, second by Lewis, to approve the agenda as presented.

ACKNOWLEDGEMENTS
Vice President Witt extended congratulations to Taylor Kuhn, Rachel Petik, Katie Starr and Kayla Halbmaier who played in the State Class "A" Golf Tournament.



<Eric.Gronlund@state.sd.us>

To <Jeff_Hughes@nps.gov>

cc

bcc

06/14/2011 02:53 PM EST

Subject Water Permit Application for Wind Cave National Park

Jeff

The attached information is being sent in today's mail (Tuesday) to Mr. Schremp at Wind Cave.

Eric Gronlund
Water Rights Program, DENR
605 773-3352
eric.gronlund@state.sd.us



2667-2.pdf



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
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.

June 14, 2011

Wind Cave National Park
Steven D Schrempp
26611 US Hwy 385
Hot Springs SD 57747

Dear Mr. Schrempp:

Water Permit Application No. 2667-2 for institutional use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Custer County Chronicle printed at Custer SD (Ph # 605-673-2217). 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 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 and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

A handwritten signature in cursive script that reads "Eric Gronlund".

Eric Gronlund
Natural Resources Engineer
(605) 773-3352
eric.gronlund@state.sd.us

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 June 22, 2011 with the second publication 7 days later. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 2667-2 to Appropriate Water

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Published twice at the total approximate cost of _____.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2667-2, Wind Cave National Park**

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. 2667-2, Wind Cave National Park, c/o Steven D. Schrempp, 26611 US Highway 385, Hot Springs SD 57747.

The Chief Engineer is recommending APPROVAL of Application No. 2667-2 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. Wind Cave National Park shall report to the Chief Engineer annually the amount of water withdrawn from the Minnelusa Aquifer.

See report on application for additional information.

Garland Erbele, Chief Engineer
June 13, 2011

WATER PERMIT APPLICATION NO. 2667-2
WIND CAVE NATIONAL PARK
MAY 17, 2011

Water Permit Application No. 2667-2 proposes to appropriate 0.11 cubic feet of water per second from an existing well completed into the Minnelusa aquifer (400 feet deep). The well is located in the SE¼ SE¼ Section 16 T6S-R6E, Custer County. The water is to be used at Wind Cave National Park.

AQUIFER: Minnelusa (MNSL)

GEOLOGY AND AQUIFER CHARACTERISTICS:

The Minnelusa Formation consists of sandstone, limestone and minor shale (Redden and DeWitt, 2008), approximately 800 feet thick in this area (Carter and Redden, 1999a; Carter and Redden, 1999b). This well site is located on the outcrop (recharge area) of the Minnelusa Formation. Review of the areal geology indicates that only a small portion of the Minnelusa has been eroded away at this site and all but a small amount of the Minnelusa is present at this site (Redden and DeWitt, 2008). The porous portions of the Minnelusa Formation form the Minnelusa aquifer. Well sorted sand lenses have porosity's approaching 25%, but generally the sands have porosity's of 10%. The average porosity of the Minnelusa is estimated to be 10% and the effective porosity is assumed to be 5% (Rahn, 1979). The Minnelusa Formation underlies virtually all of western South Dakota and the Minnelusa aquifer contains over 755 million acre-feet of recoverable water in storage (Allen and others, 1985). The Minnelusa aquifer underlies approximately 740,480 acres of Custer County and contains an estimated 25,916,800 acre-feet of recoverable water in storage in the county (Allen and others, 1985). Ground water movement in the aquifer in this area is probably from west to east (Strobel, and others, 2000). The water quality of the aquifer is generally good near the outcrop but deteriorates considerably with distance from the recharge area. Estimates from regional studies of the aquifer indicate the aquifer transmissivity may range from 0.86 to 12,000 ft²/d, and the storage coefficient ranges from 0.003 to 5.0 x10⁻⁹ (Driscoll, and others, 2002). The aquifer is under unconfined conditions at this site and the static water level for the well that is to be used for this appropriation was reported to be 190 feet below ground surface on February 17, 2010.

Although the aquifer is unconfined at the well site proposed by this application, the Minnelusa is generally confined by the overlying Opeche Shale and the lower portion of the formation serves as an aquitard isolating the Minnelusa aquifer from the underlying Madison aquifer.

SDCL 46-2A-9

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

WATER AVAILABILITY:

Water Balance:

The availability of unappropriated water from an aquifer can be evaluated by considering SDCL 46-6-3.1. This statute requires that an application to appropriate groundwater can not be approved if, according to the best information reasonably available, it is probable that the

quantity of water withdrawn annually from a groundwater source will exceed the quantity of average estimated annual recharge.

Recharge to the Minnelusa aquifer is primarily from infiltration of precipitation on the outcrop and stream flow losses. Average annual recharge in the Black Hills area from 1931-1998 was estimated to be approximately 112,000 acre-feet per year (Carter and others, 2001a).

There are a total of 199 appropriations from the Minnelusa aquifer in South Dakota, including one future use permit, which reserves 1,364 ac-ft/yr (Water Rights, 2010b). Future Use Permit No. 902-2 was approved in 1967, for the South Dakota Cement Plant. In 2001 the cement plant was sold from the South Dakota State Cement Plant Commission to GCC Dacotah, Inc. While the other water rights that were held by the State Cement Plant were transferred from the Commission to GCC Dacotah, Inc., Future Use Permit No. 902-2 has not been transferred. It is not clear if GCC Dacotah, Inc. fits the criteria established by SDCL-46-5-38 for an entity that is entitled to a future use reservation.

Maximum well withdrawals from the Minnelusa aquifer, assuming (1) that 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); would be approximately 25,000 acre-feet per year. Withdrawals from wells (domestic and appropriative) completed into the Minnelusa aquifer in the Black Hills area were estimated to be 8,140 acre-feet annually from 1987-1996 (Carter and others, 2001b).

Comparison of annual recharge estimates and estimated annual well withdrawals show that well withdrawals from the Minnelusa are only a fraction of estimated average annual recharge. Therefore, based on a simple water budget, it is clear that unappropriated water is available for this appropriation. A water budget is not intended to suggest that all of the water that is in storage in the Minnelusa aquifer or that all of the recharge is available for this appropriation, merely to demonstrate that in general the aquifer is an immense resource that is relatively untapped.

Localized Hydrologic Budget:

Carter and others (2001b) developed a hydrologic budget for the Madison and Minnelusa aquifers combined, for a subarea that includes the well site proposed by this application. The hydrologic budget for this subarea balanced from 1987-1996, by estimating that water enters the subarea through streamflow recharge, precipitation recharge and groundwater inflow from the north and west. Water was assumed to exit this subarea through artesian spring discharge, well withdrawals and groundwater outflow to subareas to the east and northeast (Carter and others, 2001b). The estimates for this area are shown in table 1.

Stream-flow recharge	Precipitation recharge	Minnelusa ground-water inflow	Madison ground-water inflow	Minnelusa ground-water outflow	Madison ground-water outflow	Artesian spring-flow	Well withdrawals
2.3 cfs	1.3 cfs	5.2 cfs	1.8 cfs	0.6 cfs	0.3 cfs	9.6 cfs	0.1 cfs

Table 1. Hydrologic budget for the subarea that includes the well site proposed by Application No. 2667-2 for Water Years 1987-1996. Modified from (Carter and others, 2001b).

Obviously, if a new hydrologic budget is to balance for this subarea (i.e. a new condition of dynamic equilibrium), with an increase of well withdrawals, either groundwater outflow must decrease, groundwater inflow from other subareas must increase, or artesian springflow must decrease. It can be assumed that with a very subtle change in the hydraulic gradient at either an inflow zone or an outflow zone, a new dynamic equilibrium would be established in this area with virtually immeasurable impacts to the amount of water in storage or artesian springflow.

Observation Well Data:

The best information available to evaluate development as it relates to recharge, is historical records and data from observation wells. The difference between withdrawal from an aquifer and recharge is reflected by the water level of the aquifer. If the water level of an aquifer continues to decline, it may suggest that withdrawals exceed recharge. The Water Rights Program monitors 23 observation wells completed into the Minnelusa aquifer in the Black Hills area (Water Rights, 2011a). Water Rights' Observation Well CU-91B is located approximately two and one-half miles south-southeast of the well site proposed by this application. The hydrograph for the well (figure 1) shows that over the period of record, withdrawals from the area have not exceeded recharge.

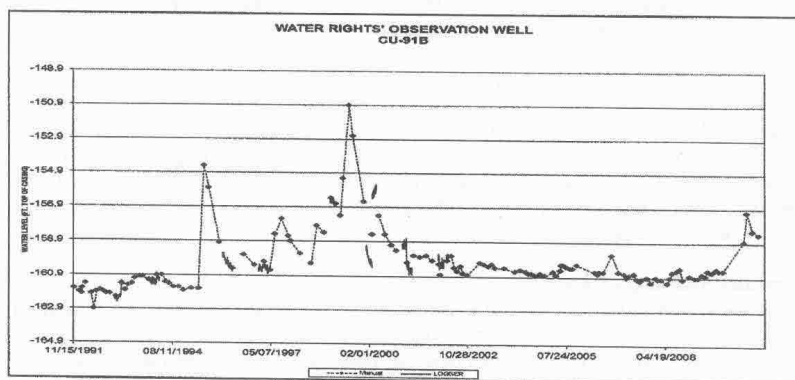


Figure 1. Hydrograph of an observation well completed into the Minnelusa aquifer approximately two and one-half miles south-southeast of the well site proposed by this application.

AFFECTS ON EXISTING RIGHTS:

There are a number of domestic wells completed into the Minnelusa aquifer in this area (Water Rights, 2011c). All of the domestic wells that are on file with the DENR-Water Rights Program are far enough from the well that is to be used to supply this appropriation that well interference should not be adverse. Water rights/permits completed into aquifers other than the Minnelusa are not expected to be affected by withdrawals from the

Minnelusa. The nearest existing appropriation from the Minnelusa aquifer: Water Right No. 2113-2, Leo Hagenson; is located approximately 4.5 miles south of the well this application proposes to use.

Since the Minnelusa aquifer is under unconfined conditions at this well site, the drawdown cone resulting from pumping this well is not expected be significant very far from the well. The distances between this proposed well and existing water rights is sufficient for the diversion rate proposed to minimize well interference. Existing rights are not expected to be unlawfully impaired if this application is approved.

CONCLUSIONS:

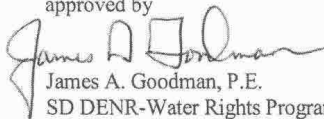
1. The Minnelusa is a viable aquifer in this area
2. The Minnelusa aquifer is under unconfined conditions at this well site.
3. There is a reasonable probability that unappropriated water is available for this appropriation.
4. Existing water rights are not expected to be unlawfully impaired if this application is approved.



Ken Bühler

SD DENR-Water Rights Program

approved by



James A. Goodman, P.E.

SD DENR-Water Rights Program

REFERENCES:

- Allen, J.C., Iles, D.L., and Petres, A.K., 1984, Analysis of Groundwater and Streamflow Data Western Dakotas Region of South Dakota, Tasks. 3A.B.C. and 4A.B.: Groundwater Resource Inventory: South Dakota Department of Water and Natural Resources,
- Carter, J.M., Driscoll, D.G., and Hamade, G.R., 2001a, Estimated Recharge to the Madison and Minnelusa Aquifers in the Black Hills Area, South Dakota and Wyoming, Water Years 1931-98: U.S. Geological Survey Water-Resources Investigations Report 00-4278, 66 p
- 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: U.S. Geological Survey, Rapid City, SD Water-Resources Investigations Report 01-4119, 53 p
- Carter, J.M., and 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., and Redden, J.A., 1999b, Altitude of the Top of the Minnelusa Formation in the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-744-C, 2 sheets, scale 1:100,000
- Driscoll, D.G., Carter, J.M., Williamson, J.E., and Putnam, L.D., 2002, Hydrology of the Black Hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Report 02-4094, 150 p.
- Rahn, P.H., 1979, Ground Water Resources of Western South Dakota: U.S. Army Corps of Engineers, SDSM&T Project #2533
- Redden, J.A., DeWitt, E., 2008, Maps showing geology, structure, and geophysics of the central Black Hills, South Dakota: U.S. Geological Survey Scientific Investigations Map 2777, 44-p. pamphlet, 2 sheets.
- 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
- Strobel, M.L., Galloway, J.M., Hamade, G.R., Jarrell, G.J., 2000, Potentiometric Surface of the Minnelusa Aquifer in the Black hills Area, South Dakota: U.S. Geological Survey Hydrologic Investigations Atlas HA-745-C, 2 sheets, scale 1:100,000
- Water Rights Program, 2011a, Observation Well Files, DENR-Water Rights Program, Joe Foss Building, Pierre, SD 57501
- Water Rights Program, 2011b, Water Permit/Right Files, DENR-Water Rights Program, Joe Foss Building, Pierre, SD 57501
- Water Rights Program, 2011c, Well Completion Report Files, DENR-Water Rights Program, Joe Foss Building, Pierre, SD 57501



Steve Schrempp /WICA/NPS
04/07/2011 02:48 PM MDT

To: Jeff Hughes/FTCOLLINS/NPS@NPS
cc
bcc
Subject: Wind Cave NP permit application - well 3 

Jeff,

Here is a copy of the permit application that I submitted to the SD DENR. Per SD statute, i have removed my seal from this electronic copy of the map. If you want a sealed copy, I can send you a hard copy.
Thanks for your help on this.



Minnelusa Right 4-7-2011.pdf

Steven D Schrempp, P.E.
Facility Manager
Wind Cave National Park
605-745-1140

SD FORM - 1505LD V3

FORM 2: Application for uses other than irrigation

(type or print)

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	(office use only) No. _____ Hydrologic Unit _____
	Basin _____
	Newspaper _____

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.)

1. Name of Applicant Wind Cave National Park Phone 605-745-4600
 (check one) ☒ Owner ☐ Tenant/lessee
 Mailing Address 26611 US Highway 385 Hot Springs SD 57747
 (Address) (City) (State) (Zip Code)
2. Amount of water claimed 50 **GPM ***AF
 (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable
3. Source of water supply Minnelusa aquifer
4. Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Custer
1 well in SE1/4 SE1/4 Section 6-T6S-R6E
5. County or counties where water will be used Custer
6. Annual period during which water is to be used January 1 through December 31
7. 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)
 Well will serve as a back up water source for original well #1 constructed in 1956. When float located in storage tank approximately three miles west of well calls for water, well will automatically start and refill the tank. Well pumps will alternate with each call for water. Storage tanks hold approximately 600,000 gallons. One pump cycle is approximately 35,000 gallons.

STATE OF SOUTH DAKOTA)
County of Custer Fall River SS

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

I, Steven D Schremp, 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 Steven D SchrempSubscribed and sworn to before me this 7 day of April 20 11Notary Public signature Christine Van Eate Deputy Court Clerk

Form 2A

(Complete applicable portions only)

Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction See test well completion report attached

- a) Drill Hole Diameter 8.75" Depth 400 ft
- b) Casing Type steel Diameter 7" Thickness
- c) Screen Type steel Diameter 7" Thickness
- d) Gravel Pack Length of Gravel Pack
- e) Depth to Top of Water Bearing Material 230'
- f) Depth to Water (ground surface to water level) 190'
- g) Distance to nearest existing domestic well:
- On applicant's property 20' On property owned by others > 1 mile

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) 6 acres of evaporative lagoons
- b) System Capacity (gallons) 11,000,000.00 Year Constructed 2007
- c) Connected to the City of Sanitary System

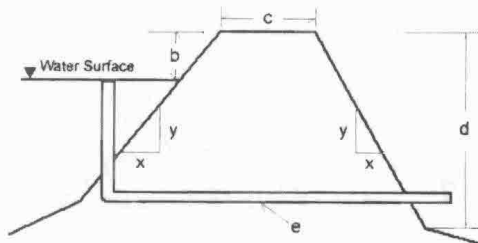
3. Dugout Information

- 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

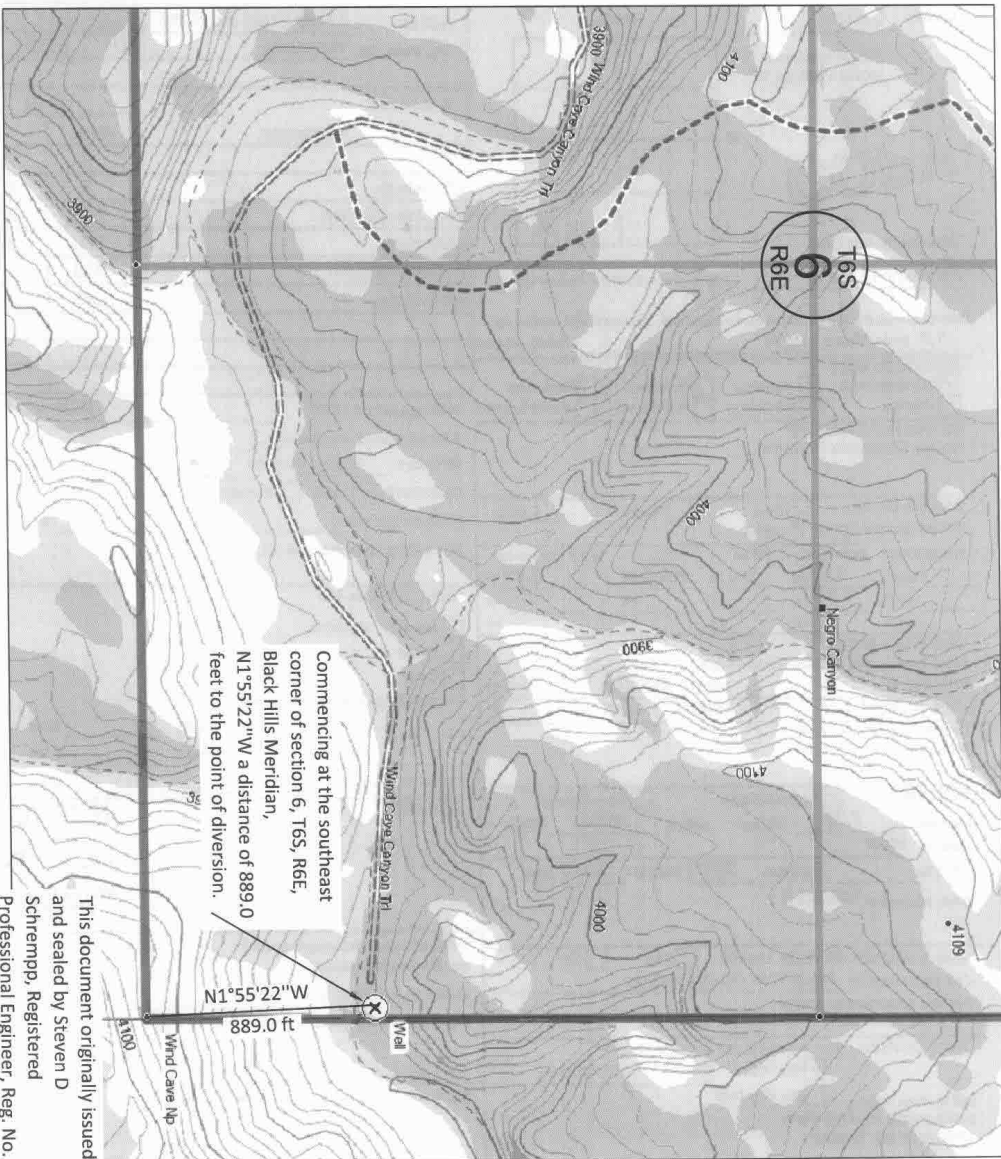


EXHIBIT A

NOT TO SCALE



This document originally issued and sealed by Steven D Schremp, Registered Professional Engineer, Reg. No. 6822 on 4/4/2011. This media should not be considered a certified document.

SD Form - 1621LD V1

SOUTH DAKOTA WATER WELL COMPLETION REPORT

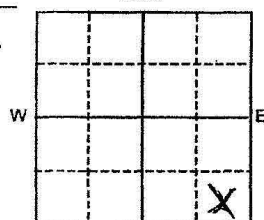
11-02

Location SE ¼ SE ¼ Sec 6 Twp 6E Rg 6S

County Custer

North

Please mark well location with an "X"



Well Completion Date

February 17, 2010

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?
1.0 mile from septic (Identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Rotary Downhole Hammer

CASING DATA:

☒ Steel ☐ Plastic ☐ Other
 If other describe 400 ft 7" steel

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	7.00 IN	0.0 FT	400.0 FT	8.75 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Portland II	60	Lb/gal	200.0 Ft	0.0 Ft
w/8% bentoni		Lb/gal	Ft	Ft

Describe grouting procedure through 1" trimmie pipe

SCREEN:

☒ Perforated pipe ☐ Manufactured
 Diameter 7.00 Inches Length 100.0 Feet
 Material Steel
 Slot Size Set From 360.0 Feet to 300.0 Feet
 Other information 260-220 ft
WAS A PACKER OR SEAL USED? ☒ Yes ☐ No

If so, what material? Neoprene double packer

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? w/chlorine solution☐ No, Why Not?Lab to which water quality sample sent for analysis
MidContinent Testing

Well Owner: Wind Cave National Park

Business Name: c/o Mt. Rushmore National Memorial

Address: 24290 Doan Mt. Road

City, State, Zip: Keystone SD 57751

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Drift	0	3
Minnelusa	3	230
Fracture 20 gpm	230	240
Minnelusa	240	330
Fracture 50gpm	330	340
Minnelusa	340	400

STATIC WATER LEVEL 190.0 FEET

If flowing: closed in pressure PSI

GPM flow 50.0 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

RECEIVED

JUL 27 2010

WATER RIGHTS PROGRAM

This well was drilled under license # 324 and this report is true and accurate.

Drilling firm: Alexander Drilling Inc.

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

Date:

7-25-10



<Eric.Gronlund@state.s
d.us>

08/29/2008 04:18 PM
EST

To: <Steve_Schrempp@nps.gov>
cc: <Jeff_Hughes@nps.gov>
Subject: FW: Wind cave well deepening and meeting

Mr. Schrempp:

The record for the well(s) authorized by WR No. 419-2 is anything but clear. The Water Rights Program coded the water source as the Madison Aquifer but it is my understanding that the original well was developed into both the Madison and Deadwood. This is not the type of construction that is allowed under today's well construction standards but was done in the day when this well was drilled. In addition, Water Rights customarily permits by individual water source and not combined sources on the same permit. Never the less, that appears to have occurred with WR No. 419-2.

Then in 1998 the NPS made a request for an additional well. This was granted by the Chief Engineer (see attachment) as long as no additional water was appropriated and the well was constructed into the Deadwood Formation. I believe this was granted for the Deadwood Formation based on the proposed depth stated on NPS's request and the commingled nature of the water sources under the original WR No. 419-2.

Now it appears that the additional well that was subject to the 1998 authorization was completed into the Madison Aquifer instead of the Deadwood.

I next had correspondence with Jeff Hughes a little over a year ago (see email below) regarding this issue. Looking back, I am not certain my email to Jeff was as clear as it should have been.

The Water Rights Program authorized this additional well to be into the Deadwood Formation. Right or wrong, that authorization did not have a time frame to complete this additional well into the Deadwood Formation. Now NPS intends to develop the additional well into the authorized source - the Deadwood. So no further authorization is necessary. However, if this well remains completed into the Madison Aquifer, then water right permitting will be necessary.

This 1998 authorization for the additional well did not impact the original well's development into both formations.

Eric Gronlund
Water Rights Program, DENR
605 773-3352

-----Original Message-----

From: Gronlund, Eric
Sent: Monday, July 16, 2007 11:15 AM
To: 'Jeff_Hughes@nps.gov'
Subject: RE: Wind cave well deepening and meeting

A water right permit will need to be obtained if NPS develops into a different water source. Technically, the water right permit should be obtained prior to drilling. However, there is the ability to request to drill a "test well". This is the cased production well that then could not be used until a water right permit is obtained. If this is the

avenue NPS wants to take, a written request can be made to Jim Goodman, Water Rights Program, DENR, 523 E Capitol Avenue, Pierre SD.

As far as meeting in mid to late August. It would probably be better for you to throw out a few dates when NPS is available to come up to SD and from there I will check which date works best. I do know that August 7 thru 10, August 14 and August 27 - 29 will NOT work.

Eric

-----Original Message-----

From: Jeff Hughes@nps.gov [mailto:Jeff_Hughes@nps.gov]
Sent: Friday, July 13, 2007 9:26 AM
To: Gronlund, Eric
Cc: Dan McGlothlin@nps.gov
Subject: Wind cave well deepening and meeting

Eric,

Hope the Board meeting went well.

I believe I had mentioned to you earlier that Wind Cave NP was considering deepening the backup well (Well #2) associated with the park water supply under water right 419-2. This well is presently completed in the Madison Aquifer and the water tested in the well has exceeded EPA drinking water standards for arsenic and fluoride in the past.

The park has notified me that they have approval to deepen the well into the Deadwood formation and see if that formation provides better water quality. I recall you telling me that the NPS would need to obtain a new water right for this well because it would be withdrawing water from a different source aquifer.

My question for you is, does the NPS need to apply for a new water right before they begin drilling, or can we wait until after the well is drilled and water samples are analyzed before we apply for a permit? The park has indicated they will seal off the Deadwood formation if it does not provide good quality water, thereby making the new permit moot. If the Deadwood does provide good quality water, they would seal off the Madison aquifer and pump only from the Deadwood.

Please let me know what the State recommends so I can let the park know.

One other item; were you able to see if your staff would be able to meet with the NPS in mid to late August? If so, let me know what dates are acceptable and I'll try to pin people down here and settle on a date.

Thanks Eric. Please let me know if you have any questions.

Jeff

Jeffrey C. Hughes, Hydrologist
National Park Service, Water Resources Division
1201 Oakridge Dr. Suite 250
Fort Collins, CO 80525
(970) 225-3527 (direct)
(970) 225-9965 (fax)
jeff_hughes@nps.gov



NPS letter.pdf



419-2
DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

June 29, 1998

Sena Morrell
National Park Service
P.O. Box 25287
Denver, CO 80225-0287

Dear Ms. Morrell:

I am writing in regard to the National Park Service request for an additional diversion point (Deadwood Formation well) under Water Right No. 419-2. Water Right No. 419-2 appropriates 0.15 cubic feet of water per second from the Deadwood Formation for use at Wind Cave National Park.

The Park Service has requested an additional well to act as a back-up well to the existing well. The new well is to be located in the SE1/4 SE1/4 Section 6, T6S, R6E and is to be constructed into the Deadwood Formation. No additional water will be appropriated.

Upon review of the request and pursuant to SDCL 46-5-13.1, National Park Service is authorized to develop the addition diversion point (well) without application or publication of a notice of hearing pursuant to SDCL 46-2A-4. A new water right permit is necessary for any diversion greater than 0.15 cfs at Wind Cave National Park.

The additional well must be constructed in accordance with SD Well Construction Standards. Standard 74:02:04:28 is the applicable construction standard. The additional well must be grouted from the top of the formation to the land surface in order to comply with the standards. If you have any questions on well construction, please contact Jim Goodman at (605) 773-3352.

Very truly yours,

John Hatch, Chief Engineer
Water Rights Program
(605) 773-3352

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
WATER RIGHTS PROGRAM

June 24, 1978

RE: Request for an additional point of diversion for Water Right No. 419-2, Wind Cave National Park

The National Park Service has submitted an application requesting authorization for an additional point of diversion for Water Right No. 419-2. SDCL 46-5-13.1 provides that a point of diversion may be changed or additional points of diversion may be approved without application or publication of a notice of hearing if the additional point of diversion is from the same source of water, no additional water is appropriated and the chief engineer makes a finding that the change does not increase the potential for interference with existing diversions.

Water Right No. 419-2 appropriates 0.15 cubic feet of water per second (cfs) from one well (approximately 790 feet deep) located in the SE1/4 SE1/4 Section 6, T6S, R6E. Water is used to provide water service to the entire park facility. The additional diversion point is to be used as a back-up well to the existing well authorized by Water Right No. 419-2.

The National Park Service requests an additional diversion point located approximately 500 feet west of the existing well. The proposed well is to be constructed into the Deadwood Formation and will be located in the SE1/4 SE1/4 Section 6, T6S, R6E. The request states that the additional well will be constructed to a depth of 750 to 800 feet into the same formation and the operation of the two wells will not exceed the 0.15 cfs appropriated under Water Right No. 419-2.

As part of the review of this request for an additional diversion point, a review of well construction reports on file with the Water Rights Program and existing water rights was conducted. There are no existing water rights utilizing the Deadwood Formation in the area. The nearest well completion reports on file are found approximately 2 1/2 miles to the northwest toward Pringle and 3 miles southeast of the proposed additional diversion point.

This additional diversion point is to be used as a back-up water supply. No additional appropriation of water is authorized. The additional well must be constructed in accordance with SD Well Construction Standards. Standard 74:02:04:28 is the applicable construction standard. The additional well must be grouted from the top of the formation to the land surface in order to comply with the standards.

Eric Gronlund
Eric Gronlund
Natural Resources Engineer
Water Rights Program

The Chief Engineer makes a finding that the additional diversion point does not increase the potential for interference with existing diversions. In making the finding, "does not increase the potential for interference" is interpreted to mean potential for adverse interference. An additional point of diversion for Water Right No. 419-2 may be constructed without requiring application or publication of a notice of hearing pursuant to SDCL 46-2A-4. A new water right permit is necessary for any diversions greater than 0.15 cfs at Wind Cave National Park.

John Hatch
John Hatch, Chief Engineer 6-26-78
Water Rights Program

Supporting Hydro Data



<Eric.Gronlund@state.sd.us>

To <Jeff_Hughes@nps.gov>

08/03/2010 11:14 AM EST

cc

bcc

Subject Wind Cave

History:

 This message has been replied to and forwarded.

Jeff - Please find attached a well completion report DENR received on July 27th for a Minnelusa well drill for Wind Cave (care of Mt. Rushmore National Memorial. Also attached is email correspondence from around 2007. Water Right No. 419-2 does not authorize a Minnelusa well. Is it the National Park Service's intention to file a water right permit application for this well?

Eric Gronlund

Water Rights Program, DENR

Phone: (605) 773-3352

Fax: (605) 773-4068

Email: eric.gronlund@state.sd.us

Web: www.denr.sd.gov



00002429.pdf Pages from 419-2.pdf

SD Form - 1621LD V1

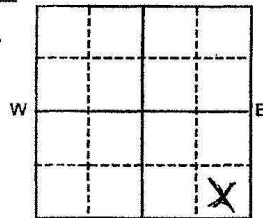
SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE ¼ SE ¼ Sec 6 Twp 6E Rg 6S

County Custer

North

Please mark well
location with an "X"

Well Completion Date

February 17, 2010

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?
1.0 mile from septic (Identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Rotary Downhole Hammer

CASING DATA:

☒ Steel ☐ Plastic ☐ Other
 If other describe 400 ft 7" steel

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	7.00 IN	0.0 FT	400.0 FT	8.75 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Portland II	60	Lb/gal	200.0 Ft	0.0 Ft
w/8% bentoni		Lb/gal	Ft	Ft

Describe grouting procedure
through 1" trimmie pipe

SCREEN:

☒ Perforated pipe ☐ Manufactured
 Diameter 7.00 Inches Length 100.0 Feet
 Material Steel
 Slot Size Set From 360.0 Feet to 300.0 Feet
 Other information 260-220 ft
WAS A PACKER OR SEAL USED? ☒ Yes ☐ No

If so, what material? Neoprene double packer

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? w/chlorine solution☐ No, Why Not?Lab to which water
quality sample sent for analysis
MidContinent Testing

Well Owner: Wind Cave National Park

Business Name: c/o Mt. Rushmore National Memorial

Address: 24290 Doan Mt. Road

City, State, Zip: Keystone SD 57751

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Drift	0	3
Minnelusa	3	230
Fracture 20 gpm	230	240
Minnelusa	240	330
Fracture 50gpm	330	340
Minnelusa	340	400

STATIC WATER LEVEL 190.0 FEET

If flowing: closed in pressure PSI

GPM flow 50.0 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

RECEIVED

JUL 27 2010

WATER RIGHTS
PROGRAMThis well was drilled under license # 324 and this
report is true and accurate.

Drilling firm: Alexander Drilling Inc.

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

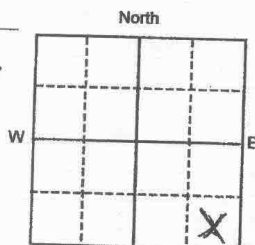
Date:

7-25-10

SOUTH DAKOTA WATER WELL COMPLETION REPORT

SD Form - 1621LD V1

11-02

Location SE ¼ SE ¼ Sec 6 Twp 6E Rg 6SCounty CusterPlease mark well
location with an "X"

Well Completion Date

February 17, 2010

1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.):
1.0 mile from septic (Identify source)

PROPOSED USE:

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

METHOD OF DRILLING:

Rotary Downhole Hammer

CASING DATA:

☒ Steel ☐ Plastic ☐ Other
 If other describe 400 ft 7" steel

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	7.00 IN	0.0 FT	400.0 FT	8.75 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Portland II	60	Lb/gal	200.0 Ft	0.0 Ft
w/8% bentoni		Lb/gal	Ft	Ft

Describe grouting procedure
through 1" trimmie pipe

SCREEN:

☒ Perforated pipe ☐ Manufactured
 Diameter 7.00 Inches Length 100.0 Feet
 Material Steel
 Slot Size Set From 360.0 Feet to 300.0 Feet
 Other information 260-220 ft
WAS A PACKER OR SEAL USED? ☒ Yes ☐ NoIf so, what material? Neoprene double packer

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? w/chlorine solution☐ No, Why Not?Lab to which water
quality sample sent for analysis
MidContinent TestingWell Owner: Wind Cave National ParkBusiness Name: c/o Mt. Rushmore National MemorialAddress: 24290 Doan Mt. RoadCity, State, Zip: Keystone SD 57751

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Drift	0	3
Minnelusa	3	230
Fracture 20 gpm	230	240
Minnelusa	240	330
Fracture 50gpm	330	340
Minnelusa	340	400

STATIC WATER LEVEL 190.0 FEET

If flowing: closed in pressure

GPM flow 50.0 through in inch pipeControlled by ☐ Valve ☐ Reducers ☐ OtherReduced flow rate GPM

Can well be completely shut in?

WELL TEST DATA:

☒ Pumped Describe: w/air
☐ Bailed
☐ Other

Pumping Level Below Land Surface

Ft. After Hrs. pumped GPMFt. After Hrs. pumped GPMIf pump installed, pump rate: GPM

REMARKS

This well was drilled under license # 324 and this
report is true and accurate.Drilling firm: Alexander Drilling Inc.

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

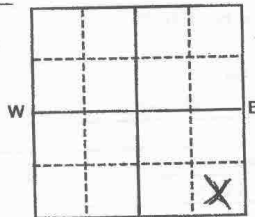
Date:

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE ¼ SE ¼ Sec 6 Twp 6E Rg 6SCounty Custer

North

Please mark well
location with an "X"

Well Completion Date

February 17, 2010

1 Mile

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

PROPOSED USE:

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

METHOD OF DRILLING:

Rotary Downhole Hammer

CASING DATA:

☒ Steel ☐ Plastic ☐ Other
 If other describe 400 ft 7" steel

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	IN	FT	FT	IN
	7.00	0.0	400.0	8.75
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Portland II	60	Lb/gal	200.0 Ft	0.0 Ft
w/8% bentonite		Lb/gal	Ft	Ft

Describe grouting procedure
through 1" trimmie pipe

SCREEN:

☒ Perforated pipe ☐ Manufactured
 Diameter 7.00 Inches Length 100.0 Feet
 Material Steel
 Slot Size Set From 360.0 Feet to 300.0 Feet
 Other information 260-220 ft

WAS A PACKER OR SEAL USED?

☒ Yes ☐ NoIf so, what material? Neoprene double packer
Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? w/chlorine solution☐ No, Why Not?
Lab to which water
quality sample sent for analysis
MidContinent TestingWell Owner: Wind Cave National ParkBusiness Name: c/o Mt. Rushmore National MemorialAddress: 24290 Doan Mt. RoadCity, State, Zip: Keystone SD 57751

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Drift	0	3
Minnelusa	3	230
Fracture 20 gpm	230	240
Minnelusa	240	330
Fracture 50gpm	330	340
Minnelusa	340	400

STATIC WATER LEVEL

190.0 FEET

If flowing: closed in pressure

PSI

GPM flow 50.0 through

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced flow rate

Can well be completed

Attached are 2 copies of the SD

WELL TEST DATA: Well Completion Report. Please☒ Pumped Descr keep 1 copy for your records,
☐ Bailed sign the other copy and mail to:
☐ Other

Pumping Level Below

Dept. of Environment & Natural Resources

Ft. After Water Rights ProgramFt. After 523 E. CapitolIf pump installed, pump Pierre, SD 57501

REMARKS

Thank you for your assistance.

This well was drilled under license # 324 and this
report is true and accurate.Drilling firm: Alexander Drilling Inc.

Signature of License Representative:

Ran Sewell

Signature of Well Owner or Equitable Property Holder:

Date:



MIDCONTINENT
TESTING LABORATORIES, INC.

Page 1 of 1

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 — www.thechemistrylab.com

Sample Site: Wind Cave
Sampled: 02/23/10 at 06:00 PM
by Alexander Drilling
Sample Matrix: Water

COPY

ALEXANDER DRILLING
PO BOX 615
HILL CITY, SD 57745

Lab ID#: 20100224935
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: 1702
Alexander Drilling

Parameter	Result	Units	Method	Analyst/Date	
Radiological					
Gross Alpha	13.1	pCi/L	E900.0	SYS	03/26/10
Radium-226	0.700	pCi/L	E903.0	SYS	03/16/10
Radium-228	< 0.90	pCi/L	RA-05	SYS	03/11/10
Precision Data					
Gross Alpha precision	± 2.20	pCi/L	MC-Gross alpha precision	SYS	03/26/10
Radium-226 precision	± 0.200	pCi/L	MC-Radium 226 precision	SYS	03/16/10
Radium-228 precision	± 0.900	pCi/L	MC-Radium 228 precision	SYS	03/11/10

Notes:

Radiological analyses performed by Energy Laboratories.

Approved By: Steve Disten

Approved On: 4/5/2010 1:39:01 PM

RECEIVED
APR 21 2010
NEKOTA MABO

**MIDCONTINENT**
TESTING LABORATORIES, INC.

Page 1 of 1

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 — www.thechemistrylab.com

COPY

MID-CONTINENT TESTING LABORATORIES, INC.
2381 S PLAZA DR
RAPID CITY, SD 57702Sample Site: 504 Trip Blank
Sampled: 02/23/10 at 06:00 PM
by N/A
Sample Matrix: WaterLab ID#: 20100224932
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: W1224
Mid-Continent Testing Laboratories, Inc.

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Semi-Volatile							
DBCP	< 0.050	µg/L	1	0.022	0.050	EPA 504.1	NAH 03/05/10
Ethylene Dibromide(EDB)	< 0.050	µg/L	1	0.028	0.050	EPA 504.1	NAH 03/05/10

Approved By:

Steve Distau

Approved On: 3/29/2010 3:11:43 PM



MIDCONTINENT
TESTING LABORATORIES, INC.

Page 1 of 1

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 — www.thechemistrylab.com

Sample Site: Wind Cave
Sampled: 02/23/10 at 06:00 PM
by Alexander Drilling
Sample Matrix: Water

Lab ID#: 20100224933
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: 1702
Alexander Drilling

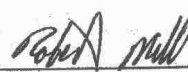
COPY

ALEXANDER DRILLING
PO BOX 615
HILL CITY, SD 57745

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Volatile							
Benzene	< 0.500	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
Carbon Tetrachloride	< 0.500	µg/L	1	0.010	0.500	EPA 524.2	RAM 03/05/10
Chlorobenzene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichloroethane	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichlorobenzene	< 0.500	µg/L	1	0.057	0.500	EPA 524.2	RAM 03/05/10
1,4-Dichlorobenzene	< 0.500	µg/L	1	0.015	0.500	EPA 524.2	RAM 03/05/10
1,1-Dichloroethylene	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Cis-1,2-Dichloroethylene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
Trans-1,2-Dichloroethylene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
Dichloromethane	< 0.500	µg/L	1	0.040	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichloropropane	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Ethylbenzene	< 0.500	µg/L	1			EPA 524.2	RAM 03/05/10
Styrene	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
Tetrachloroethylene	< 0.500	µg/L	1	0.002	0.500	EPA 524.2	RAM 03/05/10
Toluene	2.35	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
1,1,1-Trichloroethane	< 0.500	µg/L	1	0.004	0.500	EPA 524.2	RAM 03/05/10
1,1,2-Trichloroethane	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
1,2,4-Trichlorobenzene	< 0.500	µg/L	1	0.020	0.500	EPA 524.2	RAM 03/05/10
Trichloroethylene	< 0.500	µg/L	1	0.002	0.500	EPA 524.2	RAM 03/05/10
Vinyl Chloride	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Xylenes(o,m,p)	< 1.00	µg/L	1	0.013	1.00	EPA 524.2	RAM 03/05/10

Quality Control Data

Parameter	Result	Limits	DF	Method	Analyst/Date
Surrogate Recovery-Volatile					
4-Bromofluorobenzene	96.8 %	(84.24) - (101.0)	1	EPA 524.2 QC	RAM 03/05/10
1,2-Dichlorobenzene-d4	96.1 %	(86.50) - (100.3)	1	EPA 524.2 QC	RAM 03/05/10

Approved By: 

Approved On: 3/15/2010 9:05:20 AM



MIDCONTINENT
TESTING LABORATORIES, INC.

Page 1 of 1

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 – www.thechemistrylab.com

Sample Site: VOC Trip Blank
Sampled: 02/23/10 at 06:00 PM
by N/A
Sample Matrix: Water

MID-CONTINENT TESTING LABORATORIES, INC.
2381 S PLAZA DR
RAPID CITY, SD 57702

Lab ID#: 20100224934
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: W1224
Mid-Continent Testing Laboratories, Inc.

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Volatile							
Benzene	< 0.500	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
Carbon Tetrachloride	< 0.500	µg/L	1	0.010	0.500	EPA 524.2	RAM 03/05/10
Chlorobenzene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichloroethane	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichlorobenzene	< 0.500	µg/L	1	0.057	0.500	EPA 524.2	RAM 03/05/10
1,4-Dichlorobenzene	< 0.500	µg/L	1	0.015	0.500	EPA 524.2	RAM 03/05/10
1,1-Dichloroethylene	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Cis-1,2-Dichloroethylene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
Trans-1,2-Dichloroethylene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
Dichloromethane	< 0.500	µg/L	1	0.040	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichloropropane	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Ethylbenzene	< 0.500	µg/L	1			EPA 524.2	RAM 03/05/10
Styrene	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
Tetrachloroethylene	< 0.500	µg/L	1	0.002	0.500	EPA 524.2	RAM 03/05/10
Toluene	< 0.500	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
1,1,1-Trichloroethane	< 0.500	µg/L	1	0.004	0.500	EPA 524.2	RAM 03/05/10
1,1,2-Trichloroethane	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
1,2,4-Trichlorobenzene	< 0.500	µg/L	1	0.020	0.500	EPA 524.2	RAM 03/05/10
Trichloroethylene	< 0.500	µg/L	1	0.002	0.500	EPA 524.2	RAM 03/05/10
Vinyl Chloride	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Xylenes(o,m,p)	< 1.00	µg/L	1	0.013	1.00	EPA 524.2	RAM 03/05/10

Quality Control Data

Parameter	Result	Limits	DF	Method	Analyst/Date
Surrogate Recovery-Volatile					
4-Bromofluorobenzene	91.4 %	(84.24) - (101.0)	1	EPA 524.2 QC	RAM 03/05/10
1,2-Dichlorobenzene-d4	91.9 %	(86.50) - (100.3)	1	EPA 524.2 QC	RAM 03/05/10

Approved By: 

Approved On: 3/15/2010 9:05:20 AM


MIDCONTINENT
 TESTING LABORATORIES, INC.

Page 1 of 1

 2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
 (605) 348-0111 -- www.thechemistrylab.com

 Sample Site: THM Trip Blank
 Sampled: 02/23/10 at 06:00 PM
 by N/A
 Sample Matrix: Water

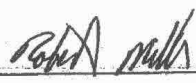
 Lab ID#: 20100224937
 Received: 02/24/10 at 07:30 AM
 by Greg McDougall
 Account: W1224
 Mid-Continent Testing Laboratories, Inc.

 MID-CONTINENT TESTING LABORATORIES, INC.
 2381 S PLAZA DR
 RAPID CITY, SD 57702

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Volatile							
Bromodichloromethane	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
Bromoform	< 0.500	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
Chlorodibromomethane	< 0.500	µg/L	1	0.004	0.500	EPA 524.2	RAM 03/05/10
Chloroform	< 0.500	µg/L	1	0.004	0.500	EPA 524.2	RAM 03/05/10
Calculated Totals							
Total Trihalomethanes	< 2.00	µg/L	1			EPA 524.2	RAM 03/15/10

Quality Control Data

Parameter	Result	Limits	DF	Method	Analyst/Date
Surrogate Recovery-Volatile					
4-Bromofluorobenzene	89.8 %	(84.53) - (100.5)	1	EPA 524.2 QC	RAM 03/05/10
1,2-Dichlorobenzene-d4	92.9 %	(86.52) - (100.2)	1	EPA 524.2 QC	RAM 03/05/10

 Approved By: 

Approved On: 3/15/2010 9:05:20 AM



MIDCONTINENT
TESTING LABORATORIES, INC.

Page 1 of 1

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: Wind Cave
Sampled: 02/23/10 at 06:00 PM
by Alexander Drilling
Sample Matrix: Water

Lab ID#: 20100224936
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: 1702
Alexander Drilling

ALEXANDER DRILLING
PO BOX 615
HILL CITY, SD 57745

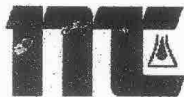
Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Volatile							
Bromodichloromethane	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
Bromoform	< 0.500	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
Chlorodibromomethane	< 0.500	µg/L	1	0.004	0.500	EPA 524.2	RAM 03/05/10
Chloroform	< 0.500	µg/L	1	0.004	0.500	EPA 524.2	RAM 03/05/10
Calculated Totals							
Total Trihalomethanes	< 2.00	µg/L	1			EPA 524.2	RAM 03/15/10

Quality Control Data

Parameter	Result	Limits	DF	Method	Analyst/Date
Surrogate Recovery-Volatile					
4-Bromofluorobenzene	93.1 %	(84.53) - (100.5)	1	EPA 524.2 QC	RAM 03/05/10
1,2-Dichlorobenzene-d4	91.5 %	(86.52) - (100.2)	1	EPA 524.2 QC	RAM 03/05/10

Approved By: 

Approved On: 3/15/2010 9:05:20 AM



MIDCONTINENT
TESTING LABORATORIES, INC.

Page 1 of 3

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 — www.thechemistrylab.com

Sample Site: Wind Cave
Sampled: 02/23/10 at 06:00 PM
by Alexander Drilling
Sample Matrix: Water

Lab ID#: 20100224931
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: 1702
Alexander Drilling

COPY

ALEXANDER DRILLING
PO BOX 615
HILL CITY, SD 57745

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
SOC Organohalide Pesticides + PCBs							
Alachlor	< 1.00	µg/L	1	0.065	1.00	EPA 525.2	RAM 03/17/10
Aldrin	< 1.00	µg/L	1	0.096	1.00	EPA 525.2	RAM 03/17/10
Aroclor 1016	< 0.080	µg/L	1	0.047	0.080	EPA 525.2	RAM 03/19/10
Aroclor 1221	< 0.500	µg/L	1	0.094	0.500	EPA 525.2	RAM 03/19/10
Aroclor 1232	< 0.500	µg/L	1	0.041	0.500	EPA 525.2	RAM 03/19/10
Aroclor 1242	< 0.300	µg/L	1	0.058	0.300	EPA 525.2	RAM 03/19/10
Aroclor 1248	< 0.100	µg/L	1	0.038	0.100	EPA 525.2	RAM 03/19/10
Aroclor 1254	< 0.100	µg/L	1	0.043	0.100	EPA 525.2	RAM 03/19/10
Aroclor 1260	< 0.200	µg/L	1	0.030	0.200	EPA 525.2	RAM 03/19/10
Chlordane	< 1.00	µg/L	1	0.164	1.00	EPA 525.2	RAM 03/17/10
Dieldrin	< 1.00	µg/L	1	0.076	1.00	EPA 525.2	RAM 03/17/10
Endrin	< 1.00	µg/L	1	0.086	1.00	EPA 525.2	RAM 03/17/10
Heptachlor	< 0.400	µg/L	1	0.095	0.400	EPA 525.2	RAM 03/17/10
Heptachlor Epoxide	< 0.200	µg/L	1	0.052	0.200	EPA 525.2	RAM 03/17/10
Hexachlorobenzene	< 0.500	µg/L	1	0.072	0.500	EPA 525.2	RAM 03/17/10
Hexachlorocyclopentadiene	< 1.00	µg/L	1	0.083	1.00	EPA 525.2	RAM 03/17/10
Lindane	< 0.200	µg/L	1	0.044	0.200	EPA 525.2	RAM 03/17/10
Methoxychlor	< 2.00	µg/L	1	0.076	2.00	EPA 525.2	RAM 03/17/10
Toxaphene	< 2.00	µg/L	1	0.359	2.00	EPA 525.2	RAM 03/19/10
SOC Organic Chemicals							
Atrazine	< 1.00	µg/L	1	0.046	1.00	EPA 525.2	RAM 03/17/10
Benzo (a) pyrene	< 0.200	µg/L	1	0.052	0.200	EPA 525.2	RAM 03/17/10
Butachlor	< 1.00	µg/L	1	0.089	1.00	EPA 525.2	RAM 03/17/10
Bis (2-ethylhexyl) Adipate	< 3.00	µg/L	1	0.075	3.00	EPA 525.2	RAM 03/17/10
Bis (2-ethylhexyl) Phthalate	< 3.00	µg/L	1	0.372	3.00	EPA 525.2	RAM 03/17/10
Metolachlor	< 1.00	µg/L	1	0.050	1.00	EPA 525.2	RAM 03/17/10
Metribuzin	< 1.00	µg/L	1	0.070	1.00	EPA 525.2	RAM 03/17/10
Propachlor	< 1.00	µg/L	1	0.069	1.00	EPA 525.2	RAM 03/17/10
Simazine	< 1.00	µg/L	1	0.125	1.00	EPA 525.2	RAM 03/17/10

Report of Analysis for: **Alexander Drilling**Sample Site: **Wind Cave**

Page 2 of 3

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Semi-Volatile							
DBCP	< 0.050	µg/L	1	0.022	0.050	EPA 504.1	NAH 03/05/10
Ethylene Dibromide(EDB)	< 0.050	µg/L	1	0.028	0.050	EPA 504.1	NAH 03/05/10
SOC Carbamates							
3-Hydroxycarbofuran	< 4.00	µg/L	1	0.450	4.00	EPA 531.1	EJF 03/04/10
Aldicarb	< 1.00	µg/L	1	0.250	1.00	EPA 531.1	EJF 03/04/10
Aldicarb Sulfone	< 1.00	µg/L	1	0.340	1.00	EPA 531.1	EJF 03/04/10
Aldicarb Sulfoxide	< 1.00	µg/L	1	0.220	1.00	EPA 531.1	EJF 03/04/10
Carbaryl	< 4.00	µg/L	1	0.460	4.00	EPA 531.1	EJF 03/04/10
Carbofuran	< 4.00	µg/L	1	0.530	4.00	EPA 531.1	EJF 03/04/10
Methomyl	< 4.00	µg/L	1	0.220	4.00	EPA 531.1	EJF 03/04/10
Oxamyl	< 2.00	µg/L	1	0.350	2.00	EPA 531.1	EJF 03/04/10
SOC Diquat							
Diquat Dibromide	< 4.00	µg/L	1	0.458	4.00	EPA 549.2	EJF 02/26/10
SOC Endothall							
Endothall	< 16.0	µg/L	2			EPA 548.1	SYS 03/01/10
SOC Glyphosate							
Glyphosate	< 50.0	µg/L	1	3.31	50.0	EPA 547	EJF 03/09/10
SOC Chlorinated Acids							
2,4,5-Trichlorophenoxypropionic acid	< 1.00	µg/L	1	0.098	1.00	EPA 515.3	NAH 03/12/10
2,4-Dichlorophenoxyacetic acid	< 1.00	µg/L	1	0.871	1.00	EPA 515.3	NAH 03/12/10
Dalapon	< 10.0	µg/L	1	0.093	10.0	EPA 515.3	NAH 03/12/10
Dicamba	< 1.00	µg/L	1	0.086	1.00	EPA 515.3	NAH 03/12/10
Dinoseb	< 1.00	µg/L	1	0.095	1.00	EPA 515.3	NAH 03/12/10
Pentachlorophenol	< 0.500	µg/L	1	0.091	0.500	EPA 515.3	NAH 03/12/10
Picloram	< 1.00	µg/L	1	0.084	1.00	EPA 515.3	NAH 03/12/10

Quality Control Data

Parameter	Result	Limits	DF	Method	Analyst/Date
Surrogate Recovery-SV					
2,4-Dichlorophenoxyacetic Acid	102.0 %	(87.03) - (115.9)	1	EPA 515.3 QC	NAH 03/12/10
BDMC	78.4 %	(88.61) - (105.9)	1	EPA 531.1 QC	EJF 03/04/10
- Within QC limits of ±30%					
1,3-Dimethyl-2-nitrobenzene	77.9 %	(67.40) - (115.5)	1	EPA 525.2 QC	RAM 03/17/10
Perylene-d12	72.0 %	(62.46) - (117.3)	1	EPA 525.2 QC	RAM 03/17/10
Pyrene-d10	81.8 %	(79.24) - (118.4)	1	EPA 525.2 QC	RAM 03/17/10
Triphenylphosphate	104.9 %	(100.4) - (135.9)	1	EPA 525.2 QC	RAM 03/17/10

Notes:

Endothall analysis performed by Energy Laboratories.

Approved By: Steve Pistan

Approved On: 3/29/2010 3:11:43 PM



MIDCONTINENT
TESTING LABORATORIES, INC.

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 – www.thechemistrylab.com

Page 1 of 1

Sample Site: VOC Trip Blank
Sampled: 02/23/10 at 06:00 PM
by N/A
Sample Matrix: Water

Lab ID#: 20100224934
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: W1224
Mid-Continent Testing Laboratories, Inc.

MID-CONTINENT TESTING LABORATORIES, INC.
2381 S PLAZA DR
RAPID CITY, SD 57702

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Volatile							
Benzene	< 0.500	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
Carbon Tetrachloride	< 0.500	µg/L	1	0.010	0.500	EPA 524.2	RAM 03/05/10
Chlorobenzene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichloroethane	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichlorobenzene	< 0.500	µg/L	1	0.057	0.500	EPA 524.2	RAM 03/05/10
1,4-Dichlorobenzene	< 0.500	µg/L	1	0.015	0.500	EPA 524.2	RAM 03/05/10
1,1-Dichloroethylene	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Cis-1,2-Dichloroethylene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
Trans-1,2-Dichloroethylene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
Dichloromethane	< 0.500	µg/L	1	0.040	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichloropropane	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Ethylbenzene	< 0.500	µg/L	1			EPA 524.2	RAM 03/05/10
Styrene	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
Tetrachloroethylene	< 0.500	µg/L	1	0.002	0.500	EPA 524.2	RAM 03/05/10
Toluene	< 0.500	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
1,1,1-Trichloroethane	< 0.500	µg/L	1	0.004	0.500	EPA 524.2	RAM 03/05/10
1,1,2-Trichloroethane	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
1,2,4-Trichlorobenzene	< 0.500	µg/L	1	0.020	0.500	EPA 524.2	RAM 03/05/10
Trichloroethylene	< 0.500	µg/L	1	0.002	0.500	EPA 524.2	RAM 03/05/10
Vinyl Chloride	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Xylenes(o,m,p)	< 1.00	µg/L	1	0.013	1.00	EPA 524.2	RAM 03/05/10

Quality Control Data

Parameter	Result	Limits	DF	Method	Analyst/Date
Surrogate Recovery-Volatile					
4-Bromofluorobenzene	91.4 %	(84.24) - (101.0)	1	EPA 524.2 QC	RAM 03/05/10
1,2-Dichlorobenzene-d4	91.9 %	(86.50) - (100.3)	1	EPA 524.2 QC	RAM 03/05/10

Approved By: 

Approved On: 3/15/2010 9:05:20 AM



MIDCONTINENT
TESTING LABORATORIES, INC.

Page 1 of 1

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 — www.thechemistrylab.com

Sample Site: Wind Cave
Sampled: 02/23/10 at 06:00 PM
by Alexander Drilling
Sample Matrix: Water

COPY

ALEXANDER DRILLING
PO BOX 615
HILL CITY, SD 57745

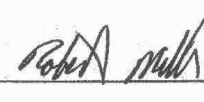
Lab ID#: 20100224933
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: 1702
Alexander Drilling

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Volatile							
Benzene	< 0.500	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
Carbon Tetrachloride	< 0.500	µg/L	1	0.010	0.500	EPA 524.2	RAM 03/05/10
Chlorobenzene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichloroethane	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichlorobenzene	< 0.500	µg/L	1	0.057	0.500	EPA 524.2	RAM 03/05/10
1,4-Dichlorobenzene	< 0.500	µg/L	1	0.015	0.500	EPA 524.2	RAM 03/05/10
1,1-Dichloroethylene	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Cis-1,2-Dichloroethylene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
Trans-1,2-Dichloroethylene	< 0.500	µg/L	1	0.006	0.500	EPA 524.2	RAM 03/05/10
Dichloromethane	< 0.500	µg/L	1	0.040	0.500	EPA 524.2	RAM 03/05/10
1,2-Dichloropropane	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Ethylbenzene	< 0.500	µg/L	1			EPA 524.2	RAM 03/05/10
Styrene	< 0.500	µg/L	1	0.003	0.500	EPA 524.2	RAM 03/05/10
Tetrachloroethylene	< 0.500	µg/L	1	0.002	0.500	EPA 524.2	RAM 03/05/10
Toluene	2.35 *	µg/L	1	0.005	0.500	EPA 524.2	RAM 03/05/10
1,1,1-Trichloroethane	< 0.500	µg/L	1	0.004	0.500	EPA 524.2	RAM 03/05/10
1,1,2-Trichloroethane	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
1,2,4-Trichlorobenzene	< 0.500	µg/L	1	0.020	0.500	EPA 524.2	RAM 03/05/10
Trichloroethylene	< 0.500	µg/L	1	0.002	0.500	EPA 524.2	RAM 03/05/10
Vinyl Chloride	< 0.500	µg/L	1	0.007	0.500	EPA 524.2	RAM 03/05/10
Xylenes(o,m,p)	< 1.00	µg/L	1	0.013	1.00	EPA 524.2	RAM 03/05/10

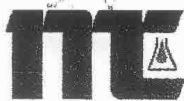
Quality Control Data

* MCL = 1 mg/L

Parameter	Result	Limits	DF	Method	Analyst/Date
Surrogate Recovery-Volatile					
4-Bromofluorobenzene	96.8 %	(84.24) - (101.0)	1	EPA 524.2 QC	RAM 03/05/10
1,2-Dichlorobenzene-d4	96.1 %	(86.50) - (100.3)	1	EPA 524.2 QC	RAM 03/05/10

Approved By: 

Approved On: 3/15/2010 9:05:20 AM

**MIDCONTINENT**

TESTING LABORATORIES INC.

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 — www.thechemistrylab.comReceived: 02/24/10 at 07:30 AM
by Greg McDougall
Account: 1702
Alexander DrillingALEXANDER DRILLING
PO BOX 615
HILL CITY, SD 57745**DRINKING WATER REPORT**

EPA #	SAMPLE SITE	SAMPLE POINT	SAMPLE DATE & TIME	TOTAL COLIFORM SM 9223 P/A	FECAL COLIFORM SM 9223 P/A	NITRATE	ANALYST	LAB NUMBER
	Wind Cave ₁		02/23/10 06:00 PM	Absent	Absent		KLS 02/24/10	20100224827

Key to Notes:

- 1. Bacteriologically safe for drinking or washing uncooked foods at the time of sampling.

APPROVED BY:

Steve Distau

APPROVED DATE: 2/25/2010 2:30:09 PM

DATE PRINTED: 02/25/2010 02:42 PM

Last test
has everything



MIDCONTINENT
TESTING LABORATORIES, INC.

Page 1 of 2

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 — www.thechemistrylab.com

Sample Site: Wind Cave
Sampled: 02/23/10 at 06:00 PM
by Alexander Drilling
Sample Matrix: Water

Lab ID#: 20100224930
Received: 02/24/10 at 07:30 AM
by Greg McDougall
Account: 1702
Alexander Drilling

ALEXANDER DRILLING
PO BOX 615
HILL CITY, SD 57745

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Physical Properties							
Electrical Conductivity	437	µmhos/cm	1	0.349	10.0	EPA 120.1	JAM 02/25/10
Hardness	210	mg/L	1			SM 2340 B	SCR 03/01/10
pH	7.87	SU	1			SM 4500-H+ B	JAM 02/25/10
Total Dissolved Solids	241	mg/L	100ml	13.7	50.0	SM 2540 C	TMN 02/25/10
Non-Metallics							
Alkalinity	203	mg/L	1	0.274	10.0	SM 2320 B	JAM 02/25/10
Bicarbonate	248	mg/L	1	0.622	10.0	SM 2320 B	JAM 02/25/10
Chloride (Cl-)	3.50	mg/L	1	0.372	0.500	SM 4500-Cl B	PAT 02/25/10
Cyanide, Free	< 0.020	mg/L	1	0.006	0.020	116-D588-01	TMN 03/01/10
Fluoride	0.603	mg/L	1	0.003	0.050	SM 4500 F-C	EJF 02/24/10
Langelier Scale Index	0.361	LSI	1			Calculation	SCR 03/01/10
Nitrogen, Nitrate (NO3)	0.947	mg/L	1	0.009	0.050	SM 4500-NO3 F	BLL 02/25/10
Nitrogen, Nitrite (NO2)	< 0.050	mg/L	1	0.009	0.050	SM 4500-NO2 B	BLL 02/25/10
T. Phos as Phosphate	0.039	mg/L	1	0.005	0.010	SM 4500-P E	EJF 02/24/10
Sulfate (SO4)	24.3	mg/L	1	0.362	1.00	SM 4500-SO4 E	BLL 02/25/10
Metals - Dissolved							
Calcium (Ca)	48.5	mg/L	5	0.325	5.00	SM 3111 B	NMA 02/26/10
Magnesium (Mg)	21.7	mg/L	5	0.108	2.50	SM 3111 B	NMA 02/26/10
Sodium (Na)	12.0	mg/L	5	1.03	2.50	SM 3111 B	NMA 02/26/10
Metals - Total							
Aluminum (Al)	0.403	mg/L	10	0.004	0.010	EPA 200.8	SAC 02/26/10
Antimony (Sb)	< 0.005	mg/L	10	0.0002	0.005	EPA 200.8	SAC 02/26/10
Arsenic (As)	0.007	mg/L	10	0.0003	0.005	EPA 200.8	SAC 02/26/10
Barium (Ba)	0.100	mg/L	10	0.00012	0.005	EPA 200.8	SAC 02/26/10
Beryllium (Be)	< 0.001	mg/L	10	0.000093	0.001	EPA 200.8	SAC 02/26/10
Cadmium (Cd)	< 0.001	mg/L	10	0.0002	0.001	EPA 200.8	SAC 02/26/10
Chromium (Cr)	0.003	mg/L	10	0.0001	0.001	EPA 200.8 DRC	SAC 02/26/10
Copper (Cu)	< 0.005	mg/L	10	0.00015	0.005	EPA 200.8	SAC 02/26/10

Report of Analysis for: **Alexander Drilling**Sample Site: **Wind Cave**

Page 2 of 2

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Metals - Total							
Iron (Fe)	0.550	mg/L	10	0.010	0.050	EPA 200.8	SAC 02/26/10
Lead (Pb)	< 0.001	mg/L	10	0.0001	0.001	EPA 200.8	SAC 02/26/10
Manganese (Mn)	0.022	mg/L	10	0.00012	0.010	EPA 200.8	SAC 02/26/10
Mercury (Hg)	< 0.0002	mg/L	1	0.000021	0.0002	EPA 245.1	NMA 02/26/10
Nickel (Ni)	< 0.005	mg/L	10	0.0001	0.005	EPA 200.8	SAC 02/26/10
Selenium (Se)	0.029	mg/L	10	0.001	0.005	EPA 200.8	SAC 02/26/10
Silver (Ag)	< 0.001	mg/L	10	0.0001	0.001	EPA 200.8	SAC 02/26/10
Thallium (Tl)	< 0.001	mg/L	10	0.00024	0.001	EPA 200.8	SAC 02/26/10
Uranium	0.006	mg/L	10	0.000027	0.001	EPA 200.8	SAC 02/26/10
Vanadium (V)	0.007	mg/L	10	0.000073	0.005	EPA 200.8	SAC 02/26/10
Zinc (Zn)	0.163	mg/L	10	0.008	0.050	EPA 200.8	SAC 02/26/10

Approved By:



Approved On: 3/1/2010 4:08:37 PM

PRODUCT 217

NEBS To Reorder: 1-800-225-6380 or www.nebs.com

Proposal

Page No. of Pages

ALEXANDER DRILLING COMPANY, INC.P.O. BOX 615
HILL CITY, SD 57745
(605) 574-2331

PROPOSAL SUBMITTED TO <i>Wind Cave National Park</i>	DATE <i>2-2-10</i>
ADDRESS	PHONE
	DATE OF PLANS
JOB NAME AND LOCATION <i>test wells, well completion, Pumping System Mod.</i>	ARCHITECT
	JOB PHONE

We hereby submit specifications and estimates, subject to all terms and conditions as set forth on both sides, as follows:

Drill test Hole #1 30" $\times$ 800' = 24578.40
 Water testing well #1-2 test 1500' each = 3072.30
 Abandon and Grout well #1 10" $\times$ 800' = 8192.80
 Drill test Hole #2 30" $\times$ 400' = 12539.20
 Water testing well #2-3 test 1500' each = 4608.45
 Install Permanent Casing, Grout, Pitless
 In well #2 33" $\times$ 400' = 13518.12
 Install Pump, Pipe, wire, ck valves and all
 fitting, to complete well at 40gpm
 20hp Pump 2" Pipe, etc. = 22190.20
 total 88699.47

No Need for 8" Casing in Minn. lusa formation
 *Completion Date 30 days from Mod. Approval

We propose hereby to furnish material and labor — complete in accordance with above specifications,
 for the sum of: dollars (\$ 88699.47)

NOTE: This proposal may be withdrawn by us if
 not accepted within _____ days.

Authorized
Signature*Frank Jewell*

Accepted: The above prices, specifications and
 conditions are satisfactory and are hereby accepted. You
 are authorized to do the work as specified. Payment will be
 made as outlined above.

Signature

Date

Signature

Time	Meter Reading	Air Gauge	static water level	GPM	Total Gallons Pump
10:40	18000	76	204	0	0
10:41	18072	66	227	72	72
10:42	18142	61	239	71	142
10:43	18210	57	248	70	210
10:44	18274	56	251	68.5	274
10:45	18345	56	251	69	345
10:46	18410	56	251	68.3	410
10:47	18476	56	251	68	476
10:48	18542	55	253	67.7	542
10:49	18605	54	257	67.2	605
10:50	18670	53	258	67	670
10:55	18983	48	269	63	983
11:00	19288	45	276	61	1288
11:05	19587	43	281	59.8	1587
11:10	19883	42	283	59.8	1883
11:15	20170	40	288	58.4	2170
11:20	20458	39	290	58	2458
11:25	20752	38	292	59	2752
11:30	21042	37	292	58	3042
11:35	21328	36	297	57.2	3328
11:40	21611	36	297	57	3611
11:45	21895	35	300	56.8	3895
11:50	22178	35	300	56.6	4178
11:55	22460	35	300	56.4	4460
12:00	22741	34	301	56.2	4741
12:05	23020	34	301	56	5020

Time	Meter Reading	Air Gauge	static water level	GPM	Total Gallons Pump
12:10	23298	33	303	55.8	5298
12:15	23577	33	303	55.8	5577
12:20	23855	32	305	55.6	5855
12:50	25500	31	308	55	7500
1:20	27126	30	310	54.2	9126
1:50	28728	29	313	53.4	10728
2:20	30313	28	315	52.8	12313
2:50	31883	27	317	52.3	13883
3:20	33442	26	320	51.9	15442
3:50	34992	24	324	51.6	16992
4:20	36572	23	326	52.6	18572
4:50	38115	23	326	51.5	20115
5:20	39642	23	326	51.0	21642
5:50	41162	23	326	50.6	23162
6:20	42676	23	326	50.5	24676
6:50	44178	23	326	50.4	26178
Air Line 380'					
Pump Intake 385'					
Static level at Start 200'					
pump test					

Pump Installation Record

40S200 - 50DS 20hp Grundfos Pump
20 hp 460-480 volt 3phase Hitachi Motor
380' - 2" Galv steel Drop Pipe

2 - 2" CK Valves 1at 360' 1at 180'

400' - 1/4" Air line Bottom of line at 380'

3- probes installed on #14-3 subwire

Black wire bottom electrode at 380'

yellow wire middle electrode at 365'

Red wire top electrode at 350'

Green wire Ground Hook to ground on motor

400' #8-3 Subs wire hooked to motor

7" OD Spool pitless installed with 3" female thread outlet, and water tight cap

* pitless can be turned to line up with water line.



MIDCONTINENT
TESTING LABORATORIES, INC.

Page 1 of 1

2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 – www.thechemistrylab.com

Sample Site: Wind Cave
Sampled: 01/21/10 at 11:30 AM
by Travis Sewell
Sample Matrix: Water

Lab ID#: 20100121845
Received: 01/21/10 at 04:15 PM
by Kate Shreves
Account: 1702
Alexander Drilling

ALEXANDER DRILLING
PO BOX 615
HILL CITY, SD 57745

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Non-Metallics							
Fluoride	0.518	mg/L	1	0.003	0.050	SM 4500 F-C	PAT 01/22/10
Metals - Total							
Antimony (Sb)	< 0.005	mg/L	10	0.0002	0.005	EPA 200.8	SAC 01/22/10
Arsenic (As)	0.007	mg/L	10	0.0003	0.005	EPA 200.8	SAC 01/22/10
Barium (Ba)	0.193	mg/L	10	0.00012	0.005	EPA 200.8	SAC 01/22/10
Beryllium (Be)	< 0.001	mg/L	10	0.000093	0.001	EPA 200.8	SAC 01/22/10
Cadmium (Cd)	< 0.001	mg/L	10	0.0002	0.001	EPA 200.8	SAC 01/22/10
Chromium (Cr)	0.006	mg/L	10	0.0001	0.001	EPA 200.8 DRC	SAC 01/22/10
Mercury (Hg)	< 0.0002	mg/L	1	0.000021	0.0002	EPA 245.1	NMA 01/25/10
Nickel (Ni)	0.006	mg/L	10	0.0001	0.005	EPA 200.8	SAC 01/22/10
Selenium (Se)	0.015	mg/L	10	0.001	0.005	EPA 200.8	SAC 01/22/10
Thallium (Tl)	< 0.001	mg/L	10	0.00024	0.001	EPA 200.8	SAC 01/22/10

Notes:

Well #4 280-400'

Approved By: Steve Pistau

Approved On: 1/26/2010 9:44:38 AM

2nd test
280-400


MIDCONTINENT
 TESTING LABORATORIES, INC.

Page 1 of 1

 2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
 (605) 348-0111 — www.thechemistrylab.com

 Sample Site: Wind Cave
 Sampled: 01/13/10 at 03:15 PM
 by Sewell
 Sample Matrix: Water

 Lab ID#: 20100114809
 Received: 01/14/10 at 12:52 PM
 by Steve Ristau
 Account: 1702
 Alexander Drilling

 ALEXANDER DRILLING
 PO BOX 815
 HILL CITY, SD 57745

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Non-Metallics							
Fluoride	0.547	mg/L	1	0.00066	0.050	SM 4500 F-C	PAT 01/15/10
Metals - Total							
Antimony (Sb)	< 0.005	mg/L	10	0.0002	0.005	EPA 200.8	SAC 01/15/10
Arsenic (As)	0.008	mg/L	10	0.0003	0.005	EPA 200.8	SAC 01/15/10
Barium (Ba)	0.110	mg/L	10	0.00012	0.005	EPA 200.8	SAC 01/15/10
Beryllium (Be)	< 0.001	mg/L	10	0.000093	0.001	EPA 200.8	SAC 01/15/10
Cadmium (Cd)	< 0.001	mg/L	10	0.0002	0.001	EPA 200.8	SAC 01/15/10
Chromium (Cr)	0.002	mg/L	10	0.0001	0.001	EPA 200.8 DRC	SAC 01/15/10
Mercury (Hg)	< 0.0002	mg/L	1	0.000027	0.0002	EPA 245.1	NMA 01/18/10
Nickel (Ni)	< 0.005	mg/L	10	0.0001	0.005	EPA 200.8	SAC 01/15/10
Selenium (Se)	0.029	mg/L	10	0.001	0.005	EPA 200.8	SAC 01/15/10
Thallium (Tl)	< 0.001	mg/L	10	0.00024	0.001	EPA 200.8	SAC 01/15/10

Notes:

Test Well #4, 200-260'

Approved By: Steve Ristau

Approved On: 1/19/2010 7:50:29 AM

 First test
 200-260'

Other Supporting Information



Jeff
Hughes/FTCOLLINS/NPS
04/04/2011 12:20 PM EDT

To Steve Schrempp/WICA/NPS@NPS
cc Dan McGlothlin/FTCOLLINS/NPS@NPS
bcc
Subject Fw: Draft Wind Cave NP permit application - well 3 (or 4, or 2...)

Hi Steve,

Please see Eric's note below. The application looks good. In response to Eric's only comment, I recommend changing item 1 to just "Wind Cave National Park" and leave your name out of it.

Eric also informed me that we do need this new application. We can not use the new well as a supplement to Well No. 1 because the source aquifers are different. I also recommend changing item 7 to "January 1 through December 31" instead of "year round." The former is the more standard way of saying you will use the water all year. Yes, we do have to pay the higher fee if we wish to every use the water at 50 gpm. It looks like it will be \$500 plus a \$200 inspection fee for a total of \$700. Determining the angle and distance from your hand-held GPS unit is fine.



Draft_permit_application_2011_April_1.pdf

Thank you for completing this so quick Steve. You can submit it directly to the State DENR if you wish. My only request if you do that, please send a copy to me for our water right files. We are the repository for documentation for all NPS water rights, so any correspondence between WICA and the State would be appreciated. Thank you Steve. You did a great job filling out the application.

Jeff

Jeffrey C. Hughes, Hydrologist
National Park Service, Water Resources Division
1201 Oakridge Dr. Suite 250
Fort Collins, CO 80525
(970) 225-3527 (direct)
(970) 225-9965 (fax)
jeff_hughes@nps.gov

----- Forwarded by Jeff Hughes/FTCOLLINS/NPS on 04/04/2011 10:01 AM -----



<Eric.Gronlund@state.sd.us>

04/04/2011 10:42 AM EST

To <Jeff_Hughes@nps.gov>
cc
Subject RE: Draft Wind Cave NP permit application

Jeff

The application looks fine. I am assuming that the applicant is Wind Cave National Park and Mr.

Schrempp's name is under Item No. 1 only as the point of contact for NPS on this matter.

Eric

-----Original Message-----

From: Jeff_Hughes@nps.gov [mailto:Jeff_Hughes@nps.gov]

Sent: Monday, April 04, 2011 9:51 AM

To: Gronlund, Eric

Subject: Draft Wind Cave NP permit application

Eric, As we just discussed. Here is the draft application for the new Wind Cave NP water supply well. Please let me know if there are any comments to pass along to the park for corrections.

Thanks! Jeff

Jeffrey C. Hughes, Hydrologist
National Park Service, Water Resources Division
1201 Oakridge Dr. Suite 250
Fort Collins, CO 80525
(970) 225-3527 (direct)
(970) 225-9965 (fax)
jeff_hughes@nps.gov

----- Forwarded by Jeff Hughes/FTCOLLINS/NPS on 04/04/2011 08:47 AM -----

Steve Schrempp /WICA/NPS

To: Jeff Hughes/FTCOLLINS/NPS@NPS

cc: Dan McGlothlin/FTCOLLINS/NPS@NPS, Vidal Davila/WICA/NPS@NPS

04/01/2011 12:33 PM MDT

Subject: Re: Water Right filing status for Well No. 4 [Link](#)

Jeff,

Please review and comment on the attached. Thanks.

Steven D Schrempp, P.E.
Facility Manager
Wind Cave National Park
605-745-1140

SD EForm - 1585LD V3**FORM 2: Application for uses other than irrigation**

(type or print)

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. _____ (office use only) Hydrologic Unit _____
	Basin _____
	Newspaper _____

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 Steven D Schrempp, Wind Cave National Park Phone 605-745-4600
(check one) ☒ Owner ☐ Tenant/lessee
- Mailing Address 26611 US Highway 385 Hot Springs SD 57747
(Address) (City) (State) (Zip Code)
- Amount of water claimed *CFS or 50 **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 Minnelusa aquifer
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Custer
1 well in SE1/4 SE1/4 Section 6-T6S-R6E
- County or counties where water will be used Custer
- Annual period during which water is to be used year round

- 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)

Well will serve as a back up water source for original well #1 constructed in 1956. When float located in storage tank approximately three miles west of well calls for water, well will automatically start and refill the tank. Well pumps will alternate with each call for water. Storage tanks hold approximately 600,000 gallons. One pump cycle is approximately 35,000 gallons.

STATE OF SOUTH DAKOTA)
County of Custer) SS

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

I, Steven D Schrempp, 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 _____

Subscribed and sworn to before me this _____ day of _____ 20 _____

Notary Public signature

Form 2A
(Complete applicable portions only)

Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

See Well Completion Report Attached

- a) Drill Hole Diameter 8.75" Depth 400 ft
- b) Casing Type: steel Diameter 7" Thickness _____
- c) Screen Type steel Diameter 7" Thickness _____
- d) Gravel Pack _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material 230'
- f) Depth to Water (ground surface to water level) 190'
- g) Distance to nearest existing domestic well:
- On applicant's property 20' On property owned by others > 1 mile

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) 6 acres of evaporative lagoons
- b) System Capacity (gallons) 11,000,000.00 Year Constructed 2007
- c) Connected to the City of _____ Sanitary System

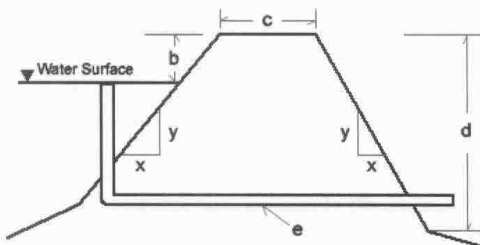
3. Dugout Information

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

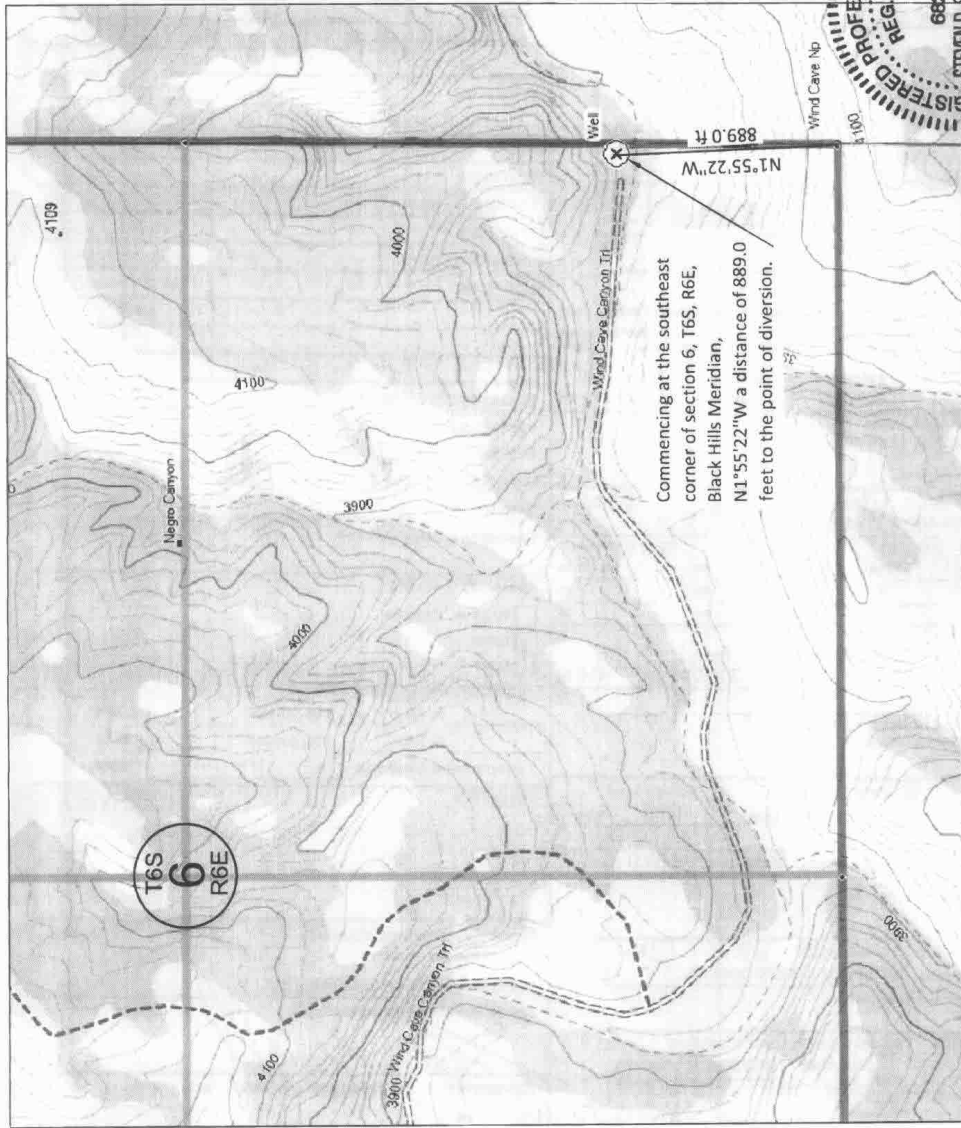
4. Water Storage Dams

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



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6822
STEVEN D. SCHREMP
SOUTH DAKOTA
4/11/11


EXHIBIT A
NOT TO SCALE

SD Form - 1621LD V1

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE ¼ SE ¼ Sec 6 Twp 6E Rg 6S
 County Custer North
 Please mark well location with an "X"

W E

Well Completion Date
February 17, 2010 1 Mile

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?
1.0 mile from septic (Identify source)

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

METHOD OF DRILLING:
 Rotary Downhole Hammer

CASING DATA: ☒ Steel ☐ Plastic ☐ Other
 If other describe 400 ft 7" steel

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	7.00 IN	0.0 FT	400.0 FT	8.75 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:
 Grout Type No. of Sacks Grout Weight From To
Portland II 60 Lb/gal 200.0 Ft 0.0 Ft
w/8% bentonite Lb/gal Ft Ft
 Describe grouting procedure through 1" trimmie pipe

SCREEN: ☒ Perforated pipe ☐ Manufactured
 Diameter 7.00 Inches Length 100.0 Feet
 Material Steel
 Slot Size Set From 360.0 Feet to 300.0 Feet
 Other information 260-220 ft

WAS A PACKER OR SEAL USED? ☒ Yes ☐ No
 If so, what material? Neoprene double packer
 Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?
☒ Yes, How? w/chlorine solution
☐ No, Why Not?
 Lab to which water quality sample sent for analysis
MidContinent Testing

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Drift	0	3
Minnelusa	3	230
Fracture 20 gpm	230	240
Minnelusa	240	330
Fracture 50gpm	330	340
Minnelusa	340	400

STATIC WATER LEVEL 190.0 FEET
 If flowing: closed in pressure PSI
 GPM flow 50.0 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

RECEIVED
JUL 27 2010
WATER RIGHTS PROGRAM

This well was drilled under license # 324 and this report is true and accurate.
 Drilling firm: Alexander Drilling Inc.
 Signature of License Representative: [Signature]
 Signature of Well Owner or Equitable Property Holder:
 Date:

Docket Information

Number of Documents in Docket 54

Documents Dated from 8/29/2008 to 8/30/2011

Docket Compiled: 1/19/2017