

WATER PERMIT NO. 8309-3

Name of Applicant: **Otter Tail Power Company**

Address: **PO Box 496, Fergus Falls MN 56538**

Phone: **218 205-4381**

Amount of Water Claimed: **0.22 cfs (12.3 AF)**

Total Acres: **NA**

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

Water to be used for: **industrial**

County: **Deuel**

Type of Waste Disposal System:

Location: **1 1/2 miles northwest of Astoria**

PRIORITY

Date Received: **9-18-17**

Application/License Fee: **\$ 700**

Corrected Application Received:

Period of Annual Use: **Jan 1 – Dec 31**

Remarks:

Diversion Point: **SE 1/4 NE 1/4 Sec 22-T113N-R48W**

Land to be Irrigated: **NA**

Depth of Well: **679 feet deep**

Well Driller: **Thein Well Co**

Remarks:

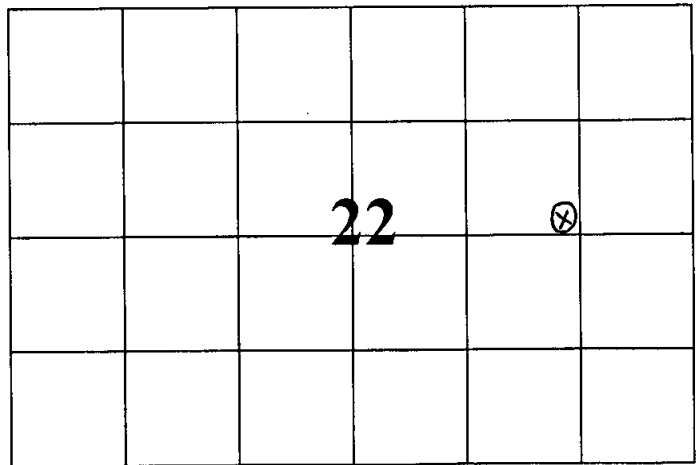
Type of Map: **aerial**

Prepared by:

Reviewed and the Number Assigned on: **9-18-17**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



RECEIVED

SEP 18 2017

WATER RIGHTS
PROGRAM

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8309-3</u> (office use only) Hydrologic Unit <u>07020001</u>
	Basin <u>Minnesota-Whetstone</u>
	Newspaper <u>Clear Lake Courier</u>
	<u>Brookings Register</u>

Application For Permit To Appropriate Water Within The State Of South Dakota**Check use(s) of water:**

☐ Municipal	☐ Water Distribution System	☐ Recreational	☐ Institutional
☐ Rural Water System	☒ Commercial	☐ Fish & Wildlife	☐ Geothermal
☐ 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 to Appear on Water Permit Otter Tail Power Company

Mailing Address 215 S. Cascade Street, P.O. Box 496 Fergus Falls, Mn 56538-0496
(Address) (City) (State) (Zip Code)

Phone 218.739.8526 Mobile 218.205.4381 Email mthoma@otpc.com

2. Amount of water claimed 0.22 *CFS or 100 **GPM and 12.3 ***AF or 4,000,000 Gallons
Flow rate and volume are both required. (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use)3. Source of water supply Altamont Aquifer4. Location of point of diversion 1 well - SE1/4NE1/4 Section 22 T113N R48W County Deuel

(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☐ Yes ☒ No

If "Yes," where will water be used? _____

(example - NW1/4 section 12-T104N-R53W)

5. County or counties where water will be used Deuel6. Annual period during which water is to be used Primarily summer months; some year round use

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)

Water uses for the facility include process water and potable water. The proposed capacity of the production well is 100 gallons per minute (gpm) and 4.0 million gallons per year. The well will pump water into an on-site water storage tank preliminarily sized to be 350,000 gallons. Outside of consuming less than 1 gpm on average for potable water by three to five plant employees, process water consumption at Astoria Station will only be needed at ambient temperatures above 59°F. Typical consumption at warm ambient conditions will be less than 40 gpm, with possible short term maximum usage of approximately 200 gpm. Based on annual average ambient conditions there will be many days or months when process water is not required.

I, Mark Thoma Manager, Environmental Services, the applicant, certify under
Name of Person Mark Thoma Title (if applicable)

penalty of perjury that I have read this application, examined the attached map, and that the matters stated are true. I further certify, if acting on behalf of an entity or individual other than myself, that I am authorized to submit this application.

**SOUTH DAKOTA
WATER PERMIT NO. 8309-3**

Date of first receipt of application September 18, 2017.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8309-3 to Otter Tail Power Company, c/o Mark Thoma, Manager, Environmental Services, PO Box 496, Fergus Falls MN 56538-0496 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. 8309-3 appropriates 12.3 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet of water per second from one well completed into the Altamont Aquifer (679 feet deep) located in the SE 1/4 NE 1/4 Section 22-T113N-R48W. The site is located 1 1/2 miles northwest of Astoria and known as Astoria Station.
2. The water appropriated shall be used for the purpose of industrial and commercial use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 8309-3 is December 11, 2017.
5. The date from which applicant may claim right is September 18, 2017.
6. One-fifth of the construction is to be completed on or before June 11, 2020.
7. All construction is to be completed on or before December 11, 2022.
8. Water is to be put to beneficial use on or before December 11, 2026.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

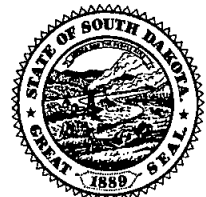
1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8309-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. The Permit holder shall report to the Chief Engineer annually the amount of water withdrawn from the Altamont aquifer.
4. Water Permit No. 8309-3 authorizes a total annual diversion of 12.3 acre feet of water.

WATER MANAGEMENT BOARD

By: 

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

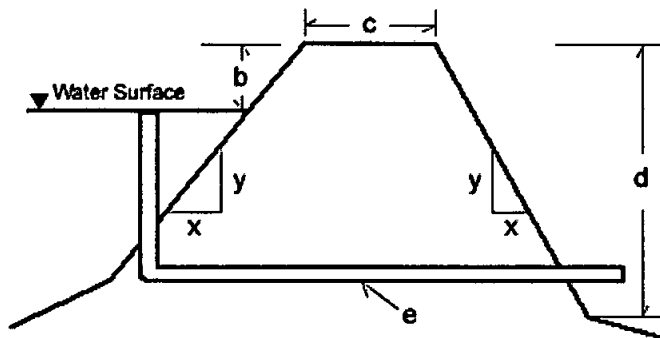
DEC 15 2017
date



(type or print)

(check one or both as applicable) ☒ Drilling new well(s) ☐ Using existing well(s)

- For either Existing or Proposed Wells:**





Banner Associates, Inc.
409 22nd Ave So, Box 298
Brookings, SD 57006
Tel 605.692.6342
Toll Free 855.323.6342
www.bannerassociates.com

EXECUTIVE SUMMARY

TO	Otter Tail Power Company		
DATE	September 6 th , 2017		
SUBJECT	Executive Summary		
PROJECT	Production Well – Astoria Site	BAI No.	22392.00.30

Otter Tail Power Company is an investor-owned electric utility based out of Fergus Falls, Minnesota. Otter Tail Power is proposing to develop a natural gas-fired energy conversion facility in the vicinity of Astoria, South Dakota. Property has been secured for the facility and the intent was to install a production well on the property to provide water for the process and for 3 to 5 plant employees. On May 12, 2017 the SD DENR authorized Their Well to install a test well on the property. This test well is now proposed to be used as a production well.

A site was selected in the southeast corner of the property for Their to drill a well. Their maintained drilling logs throughout the drilling process and the aquifer formation was determined by collecting samples throughout. This log is included in Appendix A of this report and is summarized in the following table.



Table 1: Test Bore

Geological Material	From	To	Geological Material	From	To
Top Soil	0	3	Clay	418	436
Clay	3	51	Sandy Clay	436	440
Sand Med	51	52	Clay w/ Sand Layers	440	451
Clay	52	58	Sand w/ Clay Layers	451	461
Sand Med	58	61	Clay	461	465
Clay	61	64	Sand	465	467
Gravel Course Med	64	67	Clay	467	471
Rock	67	73	Sand w/ Clay Layers	471	473
Clay	73	103	Clay	473	506
Gravel	103	106	Clay w/ Sand	506	526
Sandy Clay	106	177	Shale	526	556
Clay	177	186	Clay	556	561
Clay/Sand Layers	186	192	Shale	561	572
Sand Med	192	196	Clay	572	615
Clay/Few Sand	196	251	Sand	615	617
Sand Med	251	255	Clay	617	618
Clay/Sandy Soft	255	296	Sand	618	619
Sand	296	298	Clay	619	621
Clay	298	307	Sand	621	623
Sand/Rock	307	315	Clay	623	625
Clay/Sandy	315	336	Sandstone w/ Sand	625	646
Gravel	336	340	Sand Med/Fine	646	672
Clay w/ Sand &	340	416	Clay	672	678
Gravel Fine	416	418	Sandstone	678	679

As indicated on the bore log, a good layer of sand/gravel was found from 625 feet to 678 feet, providing 53 feet of good water bearing material. Their reamed out the bore hole and installed a 5-inch casing, including 60 feet of well screen, and gravel pack. A cross section of the Otter Tail Power production well is illustrated in Figure 3.

After the casing, screen, and gravel pack were installed, Their proceeded to develop the well. Their developed the well over a 12-hour period. Upon completion of the well development, Their installed a temporary pump so the well could be test pumped to determine drawdown and recharge characteristics



of the aquifer. The well was test pumped for eight (8) hours at 65 gpm and the drawdown and recharge information is summarized in Table 2. The static water elevation was 269.71 feet below grade.

Table 2: Test Pumping

PUMPING TEST					RECOVERY			
Time	Time (min)	Pumping Level	Draw Down	GPM	Time	Time (min)	Water Level	Draw Down
7:31 AM	1	282.71	-13.0	65	3:35 PM	5	270.71	-1
7:35 AM	5	282	-12.29	65	3:45 PM	15	270.33	-0.62
7:40 AM	10	282.41	-12.7	65	5:30 PM	120	270	-0.29
7:45 AM	15	282.58	-12.87	65				
7:50 AM	20	252.62	-12.91	65				
7:55 AM	25	282.62	-12.91	65				
8:00 AM	30	282.66	-12.95	65				
8:15 AM	45	282.91	-13.2	65				
8:30 AM	60	283	-13.29	65				
8:45 AM	75	283	-13.29	65				
9:00 AM	90	283.1	-13.39	65				
9:30 AM	120	283.21	-13.5	65				
10:00 AM	150	283.29	-13.58	65				
10:30 AM	180	283.41	-13.7	65				
11:00 AM	210	283.5	-13.79	65				
11:30 AM	240	283.45	-13.74	65				
12:00 PM	270	283.54	-13.83	65				
12:30 PM	300	283.62	-13.91	65				
1:00 PM	330	283.66	-13.95	65				
1:30 PM	360	283.75	-14.04	65				
2:00 PM	390	283.79	-14.08	65				
2:30 PM	420	283.83	-14.12	65				
3:00 PM	450	283.9	-14.19	65				
3:30 PM	480	283.91	-14.2	65				



As shown in the table, the water level immediately dropped 13 feet upon starting the test pump, but then stabilized to within approximately an additional one foot over the course of the 8-hour pumping period. The stabilization of the water level indicates the aquifer is recharging to maintain the pumping needs. In addition, the aquifer quickly recovered once the pump was turned off, returning to within one foot of static within 5 minutes.

Water samples were grabbed while test pumping and delivered to the Water & Environmental Engineering Research Center at SDSU for analysis. The water quality characteristics are shown in Table 3.



Table 3: Water Quality Analysis

Water Quality Characteristic	Otter Tail Well	Maximum Contaminant Level	
		Primary Stds ⁺	Secondary Stds ⁺⁺
pH*	7.309	-	-
Temperature (°C)*	14.1	-	-
Alkalinity (mg/l as CaCO ₃)	475	-	-
Nitrate (mg/l as N)	0.153	10	-
Total Suspended Solids (mg/l)	13	-	-
Total Dissolved Solids (mg/l)	1689	-	500
Volatile Suspended Solids (mg/l)	12	-	-
Conductivity (uS/cm)	2270	-	-
E. Coli (mpn/100 ml)	<1	0	-
Chloride (mg/l as Cl)	8.8	-	250
Sulfate (as SO ₄)	1216	-	250
Total Hardness (mg/l as CaCO ₃)	723	-	-
Calcium Hardness (mg/l as CaCO ₃)	415	-	-
Aluminum (mg/l)	not present	-	0.05 -0.2
Barium (mg/l)	0.010	2	-
Boron (mg/l)	1.35	-	-
Cadmium (mg/l)	not present	0.005	-
Calcium (mg/l)	377.1	-	-
Chromium (mg/l)	not present	0.1	-
Copper (mg/l)	not present	1.3	-
Iron (mg/l)	2.51	-	0.3
Lead (mg/l)	not present	0.015	-
Manganese (mg/l)	2.28	-	0.05



Table 3: Water Quality Analysis (continued)

Water Quality Characteristic	Otter Tail	Maximum Contaminant Level	
	Well	Primary Stds ⁺	Secondary Stds ⁺⁺
Magnesium (mg/l)	200	-	-
Molybdenum (mg/l)	not present	-	-
Nickel (mg/l)	not present	-	-
Phosphorus (mg/l)	0.486	-	-
Potassium (mg/l)	36.5	-	-
Sodium (mg/l)	745	-	-
Silver (mg/l)	not present	-	0.10
Vanadium (mg/l)	0.016239	-	-
Zinc (mg/l)	0.000612	-	5
Tin (mg/l)	0.152	-	-
Strontium (mg/l)	3.40	-	-
Thallium (mg/l)	1.08	0.002	-
Cobalt (mg/l)	0.30	-	-
Lithium (mg/l)	0.02	-	-

*pH and temperature were completed on-site by a Banner staff engineer.

*National Primary Drinking Water Regulations (NPDWR) are legally enforceable primary standards and treatment techniques that apply to public water systems. Primary standards and treatment techniques protect public health by limiting the levels of contaminants in drinking water by listing a maximum contaminant level (MCL).

**National Secondary Drinking Water Regulations (NSDWR) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply with the standard. However, states may choose to adopt them as enforceable standards.

PREPARED BY Kristin Bisgard, P.E. – Project Manager



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PROJECT / SHEET TITLE:

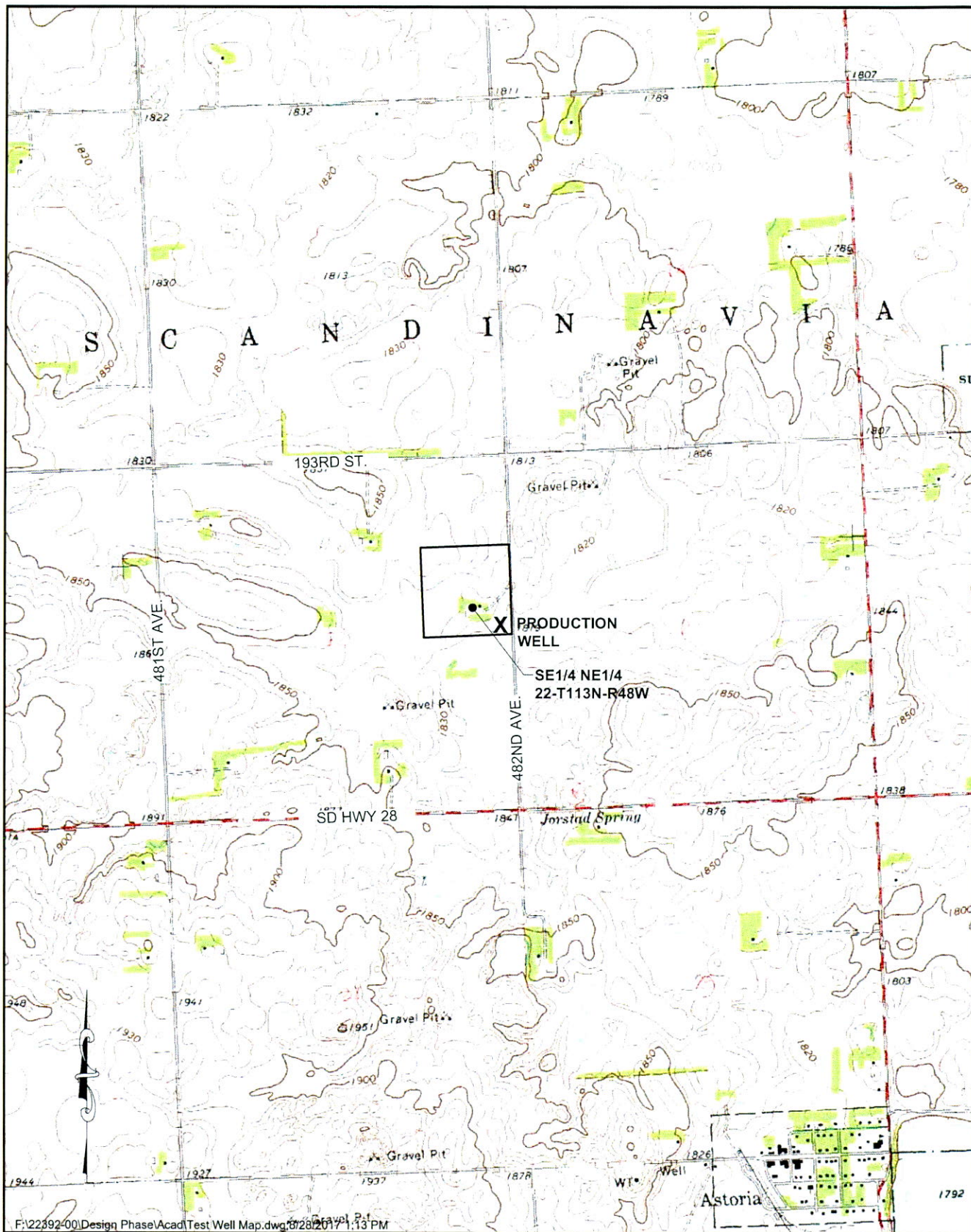
OTTER TAIL POWER COMPANY - ASTORIA STATION
WATER RESOURCE EVALUATION

NEAR ASTORIA, SD

BANNER
engineering a better community
www.bannerassociates.com
Toll Free: 1.855.323.6342

DRAWN BY: JLU
DESIGNED BY: KLB
CHECKED BY: CEB
JOB NO: 22392.00.01
DATE: MAY 2017

SHEET NO.:
FIGURE 1



F:\22392-00\Design Phase\Acad Test Well Map.dwg, 8/28/2017 1:13 PM

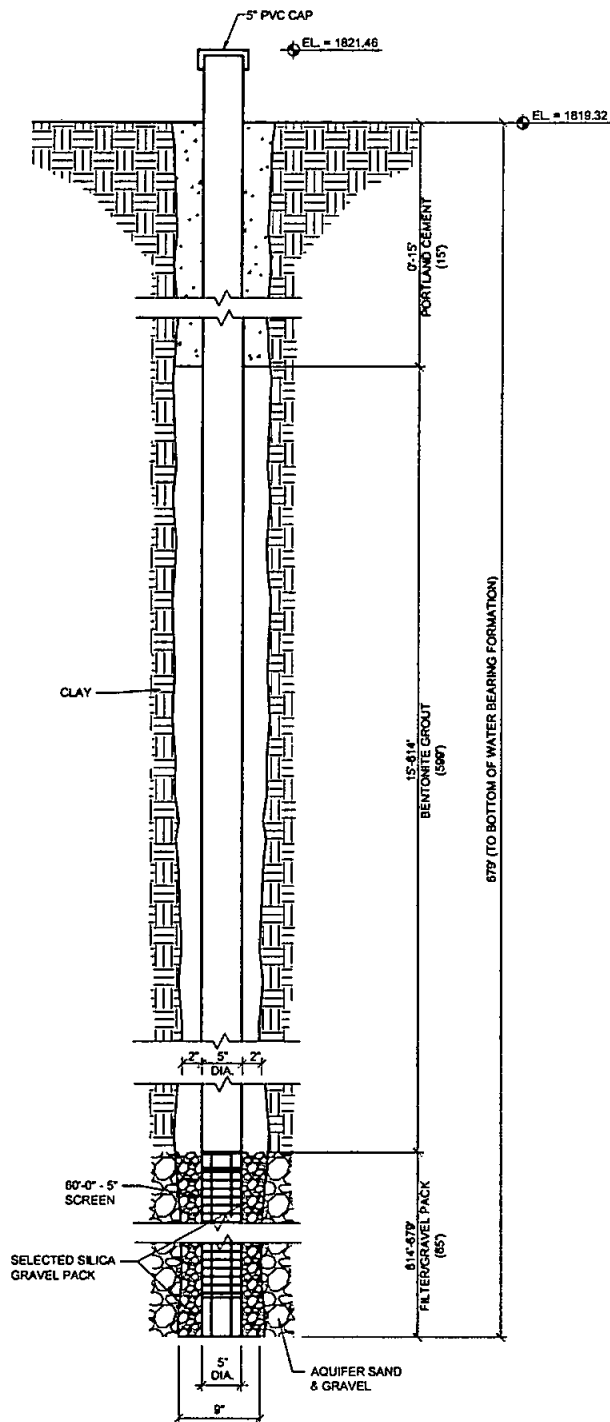
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PROJECT / SHEET TITLE:
OTTER TAIL POWER COMPANY - ASTORIA STATION
WATER RESOURCE EVALUATION

NEAR ASTORIA, SD

DRAWN BY: JLU
 DESIGNED BY: KLB
 CHECKED BY: CEB
 JOB NO.: 22392.00.01
 DATE: AUGUST 2017

SHEET NO.:
FIGURE 2



1 WELL SECTION
SCALE: NOT TO SCALE



F:\22392-00\Design Phase\Acad\Well Section.dwg;8/28/2017 1:19 PM

PROJECT / SHEET TITLE:

OTTER TAIL POWER COMPANY
PRODUCTION WELL SECTION

NEAR ASTORIA, SOUTH DAKOTA

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Toll Free: 1.855.323.6342

DRAWN BY: AME
DESIGNED BY: KJB
CHECKED BY: CEB
JOB NO: 22392.00.01
DATE: AUGUST 2017

SHEET NO.:
FIGURE 3

APPENDIX A:

Driller's Log
(Thein Well Co.)



Well Log for

THEIN WELL

P.O. BOX 778, 11355 HWY. 71 NE (ACROSS FROM RINGO LAKE)
SPICER, MINNESOTA 56288 • (320) 796-2111
www.theinwell.com • E-mail: theinwell@tda.net

WELLS PUMPS
SALES SERVICE

Since 1893

Ottertail Power Co

Date: 6/23/2017

Well Size: 5"
Casing Length: 612'
Screen Length: 60'
Total Well Depth: 679'
SWL: 258'

Geological Material	Color	From	To
Top Soil		0	3
Clay	Brown	3	15
Clay	Blue	15	51
Sand med		51	52
Clay / clay layers	Blue	52	58
Sand med		58	61
Clay		61	64
Gravel course med		64	67
Rock		67	73
Clay	Brown	73	82
Clay	Blue	82	103
Gravel		103	106
Clay sandy	Blue	106	177
Clay	Brown	177	186
Clay/ sand layers	Brown	186	192
Sand med		192	196
Clay / few sand layers		196	211
Clay/ w few thin sand layers	Blue	211	251
Sand Med		251	255
Clay sandy soft	Blue	256	296
Sand		296	298
Clay	Blue	298	307
Rock		307	309
Rocks and sand		309	315
Clay/ sandy	Brown	615	336
Gravel		336	340
Clay w/ sand and gravel layers	Blue	340	392
Clay and sand layers		392	416
Gravel fine		416	418
Clay		418	436
Sandy clay layers		436	440
Clay thin sand layers	Brown	440	451
Sand/ few brown clay layers		451	461
Clay brown soft		461	465
Sand		465	467
Clay	Brown	467	471
Sand/ thin clay layers		471	473
Clay	Blue	473	506
Clay some sand layers		506	526
Shale		526	556
Clay	Blue	556	561
Shale		561	572
Clay blue pebbling		572	615
Sand		615	617
Clay		617	618
Sand		618	619
Clay		619	621
Sand		621	623
Clay		623	625
Sandstone w/ sand layers		625	646
Sand med /fine		646	672
Clay		672	678
Sandstone		678	679

CLARA CITY, MN 56222 (320) 847-3207 • MONTICELLO, MN 55362 (763) 271-4200

MEMBER
NGWA

CERTIFIED MASTER WATER WELL CONTRACTOR
Equal Opportunity Employer

MEMBER
AWWA

APPENDIX B:

Test Pumping
(Thein Well Co.)

THEIN WELL

**P.O. BOX 778, 11355 HWY. 71 NE (ACROSS FROM RINGO LAKE)
SPICER, MINNESOTA 56288 • (320) 796-2111
www.theinwell.com • E-mail: theinwell@tda.net**

WELLS ~ PUMPS
SALES ~ SERVICE

Since 1893

Drawdown/Recovery Measurements

Driller: Anthony Thein

Date: 6-29-2017

Owner: Ottertail Power Co.

Well #9 5" test well

SWL: 269.71

Start Time:

7:30 AM

[illegible]

CLARA CITY, MN 56222 (320) 847-3207 • MONTICELLO, MN 55362 (763) 271-4200

CERTIFIED MASTER WATER WELL CONTRACTOR

Equal Opportunity Employer

MEMBER
NGWA

MEMBER
AWWA

APPENDIX C:

Water Quality Analysis

Kristin Bisgard

From: Kristin Bisgard
Sent: Wednesday, August 16, 2017 11:49 AM
To: Kristin Bisgard
Subject: RE: updated results

From: Klein, Beverly [mailto:Beverly.Klein@SDSTATE.EDU]
Sent: Tuesday, August 08, 2017 2:55 PM
To: Kristin Bisgard <kristinb@bannerassociates.com>
Subject: RE: updated results



WATER & ENVIRONMENTAL ENGINEERING RESEARCH CENTER
SCEH 112 PO Box 2219
Brookings, SD 57007 605-688-6308

Banner Associates Inc
409 22nd Ave. S
Brookings, SD 57006
ATTN: Kristin Bisgard
Phone: 692-6342

Fax: 692-5714
kristinb@bannerassociates.com

Sample #	Date Sampled	Sample	Alkalinity Method: St Meth 2320B	Nitrate Method: EPA 300.0	Total Suspended Solids Dried 103° Method: Std Method 2540D	Total Dissolved Solids Dried 180° Method: Std Met 2540C	Volatile Suspended Solids Dried 104° Method: Std Met 2540E	Conductivity Method: 2510B	E. coli Method: Colilert
			mg/L as CaCO ₃	mg/L as N	mg/L	mg/L	mg/L	µS/cm	mpn/100 mL
06-291700001	06/29/17	Ottertail Test Well	475.0	0.153	13.0	1689	12.0	2270	<1

Sample #	Date Sampled	Sample	Chloride Method: EPA 300.0	Sulfate Method: EPA 300.0	Total Hardness Method: St Method 2340 C	Calcium Hardness Method: St Method 3500-Ca D	Sodium Method: St Method 3111B	Manganese Method: St Method 3111B	Iron Method: St Method 3111B
			mg/L as Cl	mg/L as SO ₄	mg/L as CaCO ₃ titration EDTA	mg/L as CaCO ₃ titration EDTA	mg/L	mg/L	mg/L
06-291700001	06/29/17	Ottertail Test Well	8.81	1216	723.0	415.0	745.0	2.28	2.51

Sample #	Date Sampled	Sample	Aluminum Method: St Method 3111B	Barium Method: St Method 3111B	Boron Method: St Method 3111B	Cadmium Method: St Method 3111B	Calcium Method: St Method 3111B	Chromium Method: St Method 3111B	Copper Method: St Method 3111B
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
06-291700001	06/29/17	Ottertail Test Well	not present	0.010	1.35	not present	377.1	not present	not present

Sample #	Date Sampled	Sample	Lead Method: St Method 3111B	Magnesium Method: St Method 3111B	Molybdenum Method: St Method 3111B	Nickel Method: St Method 3111B	Phosphorus Method: St Method 3111B	Potassium Method: St Method 3111B	Silver Method: St Method 3111B
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
06-291700001	06/29/17	Ottertail Test Well	not present	200.0	not present	not present	0.486	36.5	not present

Sample #	Date Sampled	Sample	Vanadium	Zinc	Tin	Strontium	Thalium	Cobalt	Lithium
06-291700001	06/29/17	Ottertail Test Well	Method: St Method 3111B	Method: St Method 3111B	Method: St Method 3111B	Method: St Method 3111B	Method: St Method 3111B	Method: St Method 3111B	Method: St Method 3111B
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			0.016239	0.000612	0.152	3.40	1.08	0.30	0.02

Beverly Klein
Senior
Chemist
8/8/2017

APPENDIX D:

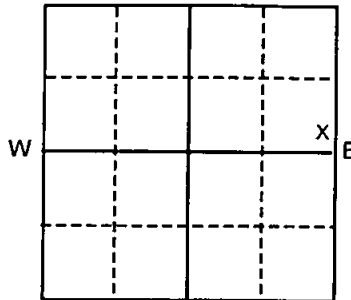
Well Completion Report

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SE ¼ SE ¼ Sec 22 Twp 113N Rg 48WCounty Deuel

North

Please mark well
location with an "X"

Well Completion Date

June 23, 2017

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

PROPOSED USE:

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

METHOD OF DRILLING:

Rotary

CASING DATA:

If other describe

☐ Steel ☒ Plastic ☐ Other

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>SDR 17.0 LB/FT</u>	<u>5.00 IN</u>	<u>0.0 FT</u>	<u>580.0 FT</u>	<u>8.75 IN</u>
<u>SDR 80.0 LB/FT</u>	<u>5.00 IN</u>	<u>580.0 FT</u>	<u>612.0 FT</u>	<u>8.75 IN</u>

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
<u>Bentonite</u>	<u>57</u>	<u>Lb/gal</u>	<u>0.0 Ft</u>	<u>610.0 Ft</u>

Describe grouting procedure
tremie piped

SCREEN:

☐ Perforated pipe ☒ Manufactured
 Diameter 5.00 Inches Length 60.0 Feet
 Material PVC
 Slot Size .016 Set From 0.0 Feet to 60.0 Feet

Other information

WAS A PACKER OR SEAL USED? ☐ Yes ☒ No

If so, what material?

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? Chlorinated☐ No, Why Not?Lab to which water
quality sample sent for analysisWell Owner: Otter Tail Power Company

Business Name:

Address: 215 S. Cascade St.City, State, Zip: Fergus Falls MN 56537

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Top Soil	0	3
Clay Brown	3	15
Clay Blue	15	51
Sand	51	52
Clay Blue w/ clay layers	52	58
Sand	58	61
Clay	61	64
Gravel Coarse Med	64	67

Continued on next page.

STATIC WATER LEVEL 270.0 FEET

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced flow rate _____ GPM

Can well be completely shut in?

WELL TEST DATA:

☒ Pumped Describe:☐ Bailed☐ Other

Pumping Level Below Land Surface

284.0 Ft. After 8.0 Hrs. pumped 65.0 GPM

_____ Ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate: _____ GPM

REMARKS

GPS: N44 34 48.2

W96 33 42.6

This well was drilled under license # 475 and this report is true and accurate.Drilling firm: Thein Well Company

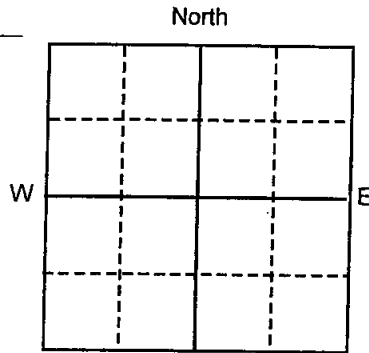
Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

Date: 9/11/17

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location $\frac{1}{4}$ $\frac{1}{4}$ Sec Twp Rg County Please mark well
location with an "X"Well Completion Date

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

PROPOSED USE:

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

METHOD OF DRILLING:

CASING DATA:

☐ Steel ☐ Plastic ☐ Other
If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u> </u> LB/FT	<u> </u> IN	<u> </u> FT	<u> </u> FT	<u> </u> IN
<u> </u> LB/FT	<u> </u> IN	<u> </u> FT	<u> </u> FT	<u> </u> IN
<u> </u> LB/FT	<u> </u> IN	<u> </u> FT	<u> </u> FT	<u> </u> IN

GROUTING DATA:

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

Describe grouting procedure

SCREEN:

☐ Perforated pipe ☐ Manufactured
Diameter Inches Length FeetMaterial Slot Size Set From Feet to FeetOther information

WAS A PACKER OR SEAL USED?

☐ Yes ☐ No
If so, what material? Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How?
☐ No, Why Not?

 Lab to which water
 quality sample sent for analysis
Well Owner: Otter Tail Power CompanyBusiness Name: Address: 215 S. Cascade St.City, State, Zip: Fergus Falls MN 56537

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Clay Brown	67	82
Clay Blue	82	103
Gravel	103	106
Sandy Blue Clay	106	177
Clay Brown	177	186
Clay Brown w/ sand layers	186	192
Sand Med.	192	196
Clay Brown	196	211

Continued on next page

STATIC WATER LEVEL

FEET

If flowing: closed in pressure

PSI

GPM flow through Inch pipeControlled by ☐ Valve ☐ Reducers ☐ Other Reduced flow rate GPMCan well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:
☐ Bailed

☐ Other

Pumping Level Below Land Surface

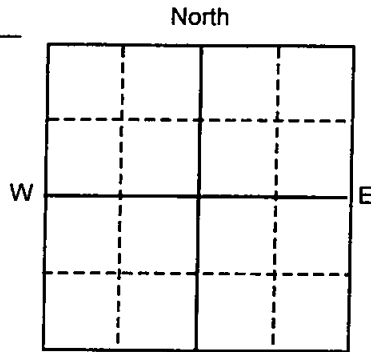
 Ft. After Hrs. pumped GPM Ft. After Hrs. pumped GPMIf pump installed, pump rate: GPM

REMARKS

This well was drilled under license # 475 and this report is true and accurate.Drilling firm: Thein Well CompanySignature of License Representative Signature of Well Owner or Equitable Property Holder: Date: 9/11/17

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location 1/4 1/4 Sec Twp Rg County Please mark well
location with an "X"Well Completion Date

1 Mile

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

PROPOSED USE:

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

METHOD OF DRILLING:

CASING DATA:

☐ Steel ☐ Plastic ☐ Other
If other describe

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

GROUTING DATA:

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

Describe grouting procedure

SCREEN:

☐ Perforated pipe ☐ Manufactured
Diameter Inches Length FeetMaterial Slot Size Set From Feet to FeetOther information

VAS A PACKER OR SEAL USED?

☐ Yes ☐ No
If so, what material? Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How?
☐ No, Why Not?
Lab to which water
quality sample sent for analysis Well Owner: Otter Tail Power CompanyBusiness Name: Address: 215 S. Cascade St.City, State, Zip: Fergus Falls MN 56537

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Clay Blue few thin sand layers	211	251
Sand Med.	251	255
Clay Blue Sandy	255	296
Sand	296	298
Clay Blue	298	309
Rocks & Sand	309	315
Sandy Brown Clay	315	336
Gravel	336	390

Continued on next page.

STATIC WATER LEVEL

FEET

If flowing: closed in pressure

PSI

GPM flow through

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other Reduced flow rate

GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:
☐ Bailed

☐ Other

Pumping Level Below Land Surface

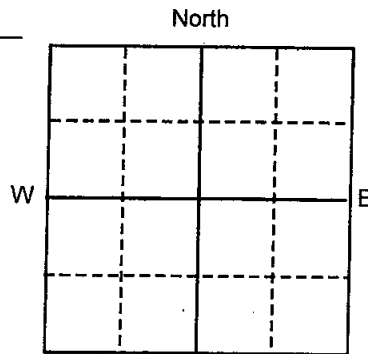
 Ft. After Hrs. pumped GPM Ft. After Hrs. pumped GPMIf pump installed, pump rate: GPM

REMARKS

This well was drilled under license # 475 and this report is true and accurate.Drilling firm: Thein Well CompanySignature of License Representative: *Robert Thein*Signature of Well Owner or Equitable Property Holder: *Mark Shome*Date: 9/11/17

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location 1/4 1/4 Sec Twp Rg County Please mark well
location with an "X"Well Completion Date

1 Mile

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

PROPOSED USE:

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

METHOD OF DRILLING:

CASING DATA:

☐ Steel ☐ Plastic ☐ Other
 If other describe

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

GROUTING DATA:

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

Describe grouting procedure

SCREEN:

☐ Perforated pipe ☐ Manufactured
Diameter Inches Length FeetMaterial Slot Size Set From Feet to FeetOther information

VAS A PACKER OR SEAL USED?

☐ Yes ☐ No
If so, what material? Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How?
☐ No, Why Not?

 Lab to which water
 quality sample sent for analysis
Well Owner: Otter Tail Power CompanyBusiness Name: Address: 215 S. Cascade St.City, State, Zip: Fergus Falls MN 56537

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Clay Blue w/ sand & gravel layers	390	392
Clay & Sand Layers	392	416
Gravel Fine	416	418
Clay	418	436
Sand w/ clay layers	436	441
Clay Brown thin sand layers	441	451
Sand a few brown clay layers	451	461
Clay Brown soft	461	465
Continued on next page.		

STATIC WATER LEVEL

FEET

If flowing: closed in pressure

PSI

GPM flow through

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other Reduced flow rate

GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:
☐ Bailed

☐ Other

Pumping Level Below Land Surface

 Ft. After Hrs. pumped GPM

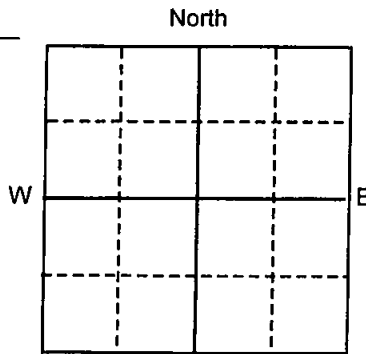
 Ft. After Hrs. pumped GPM
If pump installed, pump rate: GPM

REMARKS

This well was drilled under license # 475 and this report is true and accurate.Drilling firm: Thein Well CompanySignature of License Representative: Signature of Well Owner or Equitable Property Holder: Date: 9/11/17

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location $\frac{1}{4}$ $\frac{1}{4}$ Sec Twp Rg County Please mark well
location with an "X"Well Completion Date

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

PROPOSED USE:

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

METHOD OF DRILLING:

CASING DATA:

☐ Steel ☐ Plastic ☐ Other
If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u> </u> LB/FT	<u> </u> IN	<u> </u> FT	<u> </u> FT	<u> </u> IN
<u> </u> LB/FT	<u> </u> IN	<u> </u> FT	<u> </u> FT	<u> </u> IN
<u> </u> LB/FT	<u> </u> IN	<u> </u> FT	<u> </u> FT	<u> </u> IN

GROUTING DATA:

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

Describe grouting procedure

SCREEN:

☐ Perforated pipe ☐ Manufactured
Diameter Inches Length FeetMaterial Slot Size Set From Feet to FeetOther information WAS A PACKER OR SEAL USED? ☐ Yes ☐ NoIf so, what material? Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How? ☐ No, Why Not? Lab to which water
quality sample sent for analysis Well Owner: Otter Tail Power CompanyBusiness Name: Address: 215 S. Cascade St.City, State, Zip: Fergus Falls MN 56537

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Sand	465	467
Clay Brown	467	471
Sand w/ thin clay layers	471	473
Clay Blue	473	506
Clay w/ some sand layers	506	526
Shale	526	556
Clay Blue	556	561
Shale	561	572

Continued on next page

STATIC WATER LEVEL

FEET

If flowing: closed in pressure

PSI

GPM flow through Inch pipeControlled by ☐ Valve ☐ Reducers ☐ Other Reduced flow rate GPMCan well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe: ☐ Bailed☐ Other

Pumping Level Below Land Surface

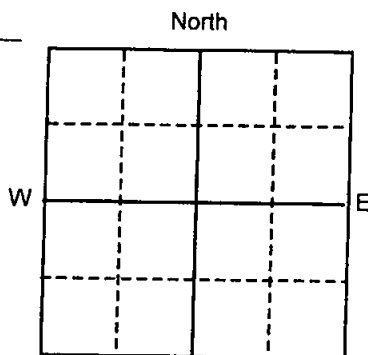
 Ft. After Hrs. pumped GPM Ft. After Hrs. pumped GPMIf pump installed, pump rate: GPM

REMARKS

This well was drilled under license # and this
report is true and accurate.Drilling firm: Signature of License Representative: Signature of Well Owner or Equitable Property Holder: Date: 9/11/17

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location $\frac{1}{4}$ $\frac{1}{4}$ Sec Twp Rg County Please mark well
location with an "X"Well Completion Date

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

PROPOSED USE:

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

METHOD OF DRILLING:

CASING DATA:

☐ Steel ☐ Plastic ☐ Other
If other describe

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

GROUTING DATA:

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

Describe grouting procedure

SCREEN:

☐ Perforated pipe ☐ Manufactured
Diameter Inches Length FeetMaterial Slot Size Set From Feet to FeetOther information

WAS A PACKER OR SEAL USED?

☐ Yes ☐ No
if so, what material? Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How?
☐ No, Why Not?
Lab to which water Quality sample sent for analysis Well Owner: Otter Tail Power CompanyBusiness Name: Address: 215 S. Cascade St.City, State, Zip: Fergus Falls, MN 56573

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Shale	561	572
Clay Blue Pebbly	572	615
Sand	615	617
Clay	617	618
Sand	618	619
Clay	619	621
Sand	621	623
Clay	623	625

Continued on next page

STATIC WATER LEVEL

FEET

If flowing: closed in pressure

PSI

GPM flow through Inch pipeControlled by ☐ Valve ☐ Reducers ☐ Other Reduced flow rate GPMCan 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 GPMIf pump installed, pump rate: GPM

REMARKS

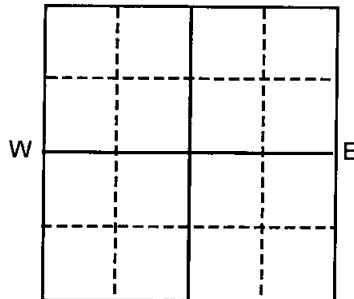
This well was drilled under license # 475 and this report is true and accurate.Drilling firm: Thein Well CompanySignature of License Representative: Signature of Well Owner or Equitable Property Holder: Date: 9/11/17

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location $\frac{1}{4}$ $\frac{1}{4}$ Sec Twp Rg County

North

Please mark well
location with an "X"Well Completion Date

1 Mile

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

PROPOSED USE:

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

METHOD OF DRILLING:

CASING DATA:

☐ Steel ☐ Plastic ☐ Other
If other describe

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

GROUTING DATA:

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

Describe grouting procedure

SCREEN:

☐ Perforated pipe ☐ Manufactured
Diameter Inches Length FeetMaterial Slot Size Set From Feet to FeetOther information

WAS A PACKER OR SEAL USED?

☐ Yes ☐ No
If so, what material? Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How?

☐ No, Why Not?
Lab to which water
quality sample sent for analysis Well Owner: Otter Tail Power CompanyBusiness Name: Address: 215 S. Cascade St.City, State, Zip: Fergus Falls MN 56573

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Clay	623	625
Sandstone w/ sand layers	625	646
Sand med fine	646	672
Clay	672	678

STATIC WATER LEVEL

FEET

If flowing: closed in pressure

PSI

GPM flow through

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other Reduced flow rate GPMCan 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 GPMIf pump installed, pump rate: GPM

REMARKS

This well was drilled under license # 475 and this report is true and accurate.Drilling firm: Thein Well CompanySignature of License Representative: Signature of Well Owner or Equitable Property Holder: Date: 9/11/17

APPENDIX E:

Test Well Temporary Permit



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

**TEMPORARY PERMIT TO USE PUBLIC WATERS
FOR CONSTRUCTION AND TESTING PURPOSES**

This temporary permit to use public waters for construction purposes is issued to Otter Tail Power Company, PO Box 496, Fergus Falls MN, 56538-0496 authorizing withdrawal of 72,000 gallons of water at a maximum rate of 150 gallons per minute from ground water (Prairie Coteau Aquifer) located in the SE ¼ NE ¼ Section 22, T113N, R48W, Deuel County, SD. The project involves drilling bore holes to determine aquifer presence and thickness. A test well will be installed for test pumping purposes.

The bore holes and test well authorized by this temporary permit shall be constructed by a licensed well driller and construction shall comply with Water Management Board Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) from the producing formation to the surface pursuant to Section 74:02:04:28. Any test holes that are abandoned must be plugged pursuant to the SD Well Construction Standards.

The well(s) authorized under this temporary permit may be located near domestic wells and other wells which may obtain water from the same aquifer. The well owners, under this temporary permit, shall control withdrawals so there is not a reduction of needed water supplies in other wells.

The ground water withdrawn will be discharged to to an unnamed tributary to Fish Lake. Any discharge of water must comply with the "*General Permit for Temporary Discharges*" issued by this Department. (The "*General Permit for Temporary Discharges*" is issued as a separate permit through the Surface Water Quality Program.)

This temporary permit becomes effective June 1, 2017 and expires on June 30, 2017. *The project is scheduled for a period of seven days. This temporary permit is issued for a longer time frame to take into account any delays that may occur with the project.*

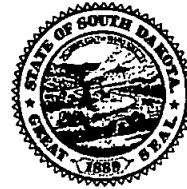
This permit does not provide necessary right-of-way. Such arrangements should be made with the proper land owner.

continued

**Temporary Permit
Ottetail Power Company
Page 2**

Issuance of this temporary permit deals with the withdrawal of water only. It does not address other concerns or permitting issues from other State or Federal entities.


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



Issued: May 12, 2017

- c: Mark Thoma, Mgr, Environmental Services, Otter Tail Power Company (email)
Kristin Bisgard, PE, Banner & Associates Inc (email)

Note:

If Otter Tail Power Company plans to use the well after the test pumping has been completed, a regular appropriative water permit must be obtained. Following review of a Water Permit Application; and assessing the availability of water, the potential impacts to existing users, the beneficial use, and the public interest of a permit, the Chief Engineer will make a recommendation to the Water Management Board regarding the application. The recommendation to approve, deny, or defer the application will be publicly noticed and an opportunity afforded for the public to intervene. A public hearing may be required to consider the water permit.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

May 12, 2017

Mark Thoma
Otter Tail Power Company
215 S. Cascade Street
PO Box 496
Fergus Falls, MN 56538

Dear Mr. Thoma:

As requested, pursuant to South Dakota Well Construction Standard 74:02:04:21, Thein Well Company, Inc. is authorized to construct a test well prior to the approval of a water permit for Otter Tail Power Company. The test well will be located in the SE ¼ NE ¼ Sec. 22-T113N-R48W. All test wells must be constructed in accordance with the SD Well Construction Standards. Any test holes that are abandoned must be plugged pursuant to the SD Well Construction Standards.

Authorization must be obtained before water from the well can be used in excess of domestic use as defined by South Dakota Codified Law 46-1-6(7). Approval of this test well does not assure issuance of a water permit. Following review of a Water Permit Application and assessing the availability of water, the potential impacts to existing users, the beneficial use, and the public interest of a permit, the Chief Engineer will make a recommendation to the Water Management Board regarding the application. The recommendation to approve, deny, or defer the application will be publicly noticed and an opportunity afforded for the public to intervene. A public hearing may be required to consider the water permit. If you have questions, call Eric Gronlund at (605) 773-3352.

Sincerely,

A handwritten signature in black ink that reads "Jeanne Goodman".

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

Cc: Kristin Bisgard
Banner Associates
409 22nd Ave. S.
Brookings, SD 57006

Robert Thein
Thein Well Company Inc.
PO Box 778
Spicer, MN 56222

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date September 18, 20 17

RECEIVED OF Otter Tail Power Co. 215 S Cascade Street, Fergus Falls MN 56537

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

Fee for Application for Permit No. <u>8309-3</u> to Appropriate Water, to construct and to put water to beneficial use	500	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>8309-3</u>	200	00
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	700 00

No. **08330**

By Jeanne Goodman
Chief Engineer

ycm

215 South Cascade Street
PO Box 496
Fergus Falls, Minnesota 56538-0496
218 739-8200
www.otpc.com

RECEIVED

SEP 18 2017

WATER RIGHTS
PROGRAM

September 14, 2017

Ms. Jeanne Goodman
Chief Engineer
South Dakota Department of Environment
and Natural Resources
Water Rights Program
Joe Foss Building
523 East Capitol Avenue
Pierre, South Dakota 57501-3182



SUBJECT: Otter Tail Power Company – Astoria Station
Application to Appropriate Water for Nonirrigation Use

Dear Ms. Goodman:

Enclosed is a permit application and filing fee to appropriate water for nonirrigation use at the Otter Tail Power Company (Otter Tail) Astoria Station. Astoria Station is a proposed approximate 250 megawatt simple-cycle electric generating facility, located 1.5 miles northwest of Astoria, South Dakota. During periods of warm ambient temperatures, process water will be required to augment the power output of the combustion turbine. Potable water will also be required for three to five site personnel.

This application is subsequent to the May 12, 2017 Temporary Permit granted by the South Dakota Department of Environment and Natural Resources (SD DENR) to construct a test well and conduct a pump test at the site. Enclosed with the application is a summary report of the test well construction and pump test results. Additionally, a Well Completion Report for the test well is included.

Finally, please note that on application Form 2A, the box in Section 1 is selected for "Drilling New Wells". Although this seems to be the correct box to select, the intent of this application is to request use the test well that was already installed as a permanent production well.

If you have any questions about this information, please do not hesitate to contact me at the phone numbers or email address provided in the application.

Sincerely,

A handwritten signature in black ink that reads "Mark Thoma".

Mark Thoma
Manager, Environmental Services

Enclosure

Gronlund, Eric

From: Thoma, Mark <mthoma@otpc.com>
Sent: Monday, September 18, 2017 2:49 PM
To: Gronlund, Eric; Kristin Bisgard
Cc: Schlaak, Karen
Subject: RE: [EXT] Otter Tail Power Company - Application to Appropriate Water for Nonirrigation Use at Astoria Station

Greetings Eric,

You are correct – the maximum diversion from the well to the storage tank is requested to be 100 gpm. During operations, whether 40 gpm or 200 gpm is needed, that will be pumped from the storage tank. Thank you for requesting clarification and for already taking a look at the application!

Mark

Mark Thoma
Manager, Environmental Services
Otter Tail Power Company
Telephone: 218.739.8526
Email: mthoma@otpc.com

From: Gronlund, Eric [<mailto:Eric.Gronlund@state.sd.us>]
Sent: Monday, September 18, 2017 1:54 PM
To: Thoma, Mark <mthoma@otpc.com>; Kristin Bisgard <kristinb@bannerassociates.com>
Cc: Schlaak, Karen <Karen.Schlaak@state.sd.us>
Subject: RE: Otter Tail Power Company - Application to Appropriate Water for Nonirrigation Use at Astoria Station

This is an EXTERNAL email. DO NOT open attachments or click links in suspicious email.

Mr. Thoma and Ms. Bisgard:

DENR is in receipt of the water permit application filed by Otter Tail for the Astoria Station. The application requests an annual volume of 4 million gallons at a diversion rate of 100 gpm. The description of project states typical consumption at warm ambient conditions will be less than 40 gpm, with possible short term maximum usage of approximately 200 gpm. Am I correct that the peak diversion rate from the well will be 100 gpm and during the short term periods when 200 gpm is needed, that diversion will come from the on-site storage to meet the peaking rate?

The reason for asking is if the diversion rate from the water source (the well) was to be 200 gpm to meet this peak need then the application should reflect 200 gpm as the diversion rate. However, if 100 gpm is pumped from the well to storage and the storage is used to meet the need when peaking occurs that is fine and the application should reflect a 100 gpm diversion rate.

Thanks,

Eric Gronlund
Water Rights Program, DENR
605 773-3352

From: Thoma, Mark [<mailto:mthoma@otpc.com>]

Sent: Thursday, September 14, 2017 11:07 AM

To: Goodman, Jeanne

Cc: Gronlund, Eric; Kristin Bisgard

Subject: [EXT] Otter Tail Power Company - Application to Appropriate Water for Nonirrigation Use at Astoria Station

Ms. Goodman,

Otter Tail Power Company is pleased to submit the attached application to appropriate water for nonirrigation uses at the proposed Astoria Station. Astoria Station will be a new natural gas-fired electricity-generating station near Astoria, South Dakota. The original hardcopy of this application along with a check for the filing fee is being put in the mail today.

Please do not hesitate to contact me if you have any questions on the application. We look forward to working with you and your staff on this project.

Regards,

Mark Thoma

Mark Thoma
Manager, Environmental Services
Otter Tail Power Company
Telephone: 218.739.8526
Email: mthoma@otpc.com

**Water Rights Program
File Documentation**

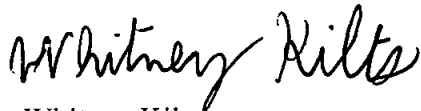
NAME OF PERSON OR FILE: Application No. 8309-3 Otter Tail Power Company

DATE: 11/12/2017

RE: call to Thein Well Company on well log for application

COMMENTS:

I called Robert Thein with Thein Well Company regarding some questions on the well completion report for the well for this application (located in Appendix D of the Executive Summary by Banner). The corrected well location is the SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 22-T 113-R 48W. The corrected screened interval is 612 to 672 feet. Although not documented on the well completion report there is an interval of cement grout near ground surface as indicated in Figure 3 of the Executive Summary by Banner.

A handwritten signature in black ink, reading "Whitney Kilts". The signature is written in a cursive, flowing style.

Whitney Kilts
Natural Resources Engineer



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8309-3, Otter Tail Power Company**

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. 8309-3, Otter Tail Power Company, c/o Mark Thoma, Environmental Services Manager, PO Box 496, Fergus Falls MN 56538.

The Chief Engineer is recommending APPROVAL of Application No. 8309-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. The well authorized by Permit No. 8309-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. The Permit holder shall report to the Chief Engineer annually the amount of water withdrawn from the Altamont aquifer.
4. Water Permit No. 8309-3 authorizes a total annual diversion of 12.3 acre feet of water.

See report on application for additional information.

A handwritten signature in black ink, reading "Jeanne Goodman". The signature is written in a cursive, flowing style.

Jeanne Goodman, Chief Engineer
November 16, 2017

Report to the Chief Engineer
Water Permit Application No. 8309-3
Otter Tail Power Company
October 23, 2017

Water Permit Application No. 8309-3 for Otter Tail Power Company c/o Mark Thoma proposes to appropriate 12.3 acre-feet of water annually at a maximum diversion rate of 0.22 cubic feet per second (cfs) from the Altamont aquifer. The diversion point for this application is one well located in the SE ¼ NE ¼ Section 22 T113N-R48W in Deuel County. The water is for industrial and commercial use at the Astoria Station located in SE ¼ NE ¼ Section 22 T113N-R48W of Deuel County about 1.5 miles northwest of Astoria.

Aquifer: Altamont aquifer (A)

Hydrogeology and Aquifer Characteristics

The well for this application is screened at 612 to 672 feet below grade. The primary materials in this interval are “sandstone w/ sand layers” from 625 to 646 feet below grade and “sand medium fine” from 646 to 672 feet below grade. A review of the available geologic data for the area indicates the elevation at which this well is screened is too high for it to be bedrock sandstone (SDGS, 2017). The elevation of the screened aquifer materials correlates closest to the basal outwash in the area (SDGS, 2017). Basal aquifers are considered to be glacial outwash aquifers that are in contact with bedrock or are separated from the bedrock by only a thin layer of till. Hedges et al. (1982) applied the name Altamont aquifer to the previous unnamed basal outwash aquifers of the Prairie Coteau region of South Dakota. Identifying the aquifer for this well as Altamont aquifer is also consistent with the work done on the county scale by Kume (1985).

Hedges et al. (1982) estimated the Altamont aquifers collectively underlie in excess of about 1,672,800 acres of Beadle, Brookings, Brown, Clark, Codington, Day, Deuel, Grant, Hamlin, Kingsbury, Marshall, Roberts, and Spink Counties and contains in excess of about 7,197,360 acre-feet of recoverable water. In Deuel County, the Altamont aquifer is estimated to underlie about 305,900 acres with an estimated 1,605,900 acre-feet of water in storage (Hedges et al., 1982). Kume (1985) describes the Altamont aquifer throughout most of its extent in Deuel County as a sheet of basal outwash that appears to be continuous but notes that there could be areas where the outwash is not continuous and may not have a hydraulic connection with the rest of the basal outwash. Kume (1985) also maps areas where the basal outwash was not encountered.

The Altamont aquifer has not been subdivided into management units by the Water Rights Program and the Water Management Board. Historically water availability has been reviewed for the entire Altamont aquifer when considering a new application (Water Rights, 2017b). However, more recent reviews have additionally examined water availability in the

aquifer on a more localized scale where information is available and hydrogeologic conditions warrant a more localized review (Water Rights, 2017b). One such example is Hamilton's (1986) Altamont aquifer no. 2 in Clark County. Information is not available to delineate a localized hydrogeologic unit for this application. For the review of this application, water availability will be examined aquifer wide in South Dakota and to offer a localized perspective on water availability for the portion of the Altamont aquifer in Deuel County.

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

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

Water Availability

Water Permit Application No. 8309-3 proposes to appropriate water from the Altamont aquifer for industrial and commercial use. The probability of unappropriated water available from an aquifer can be evaluated by considering SDCL 46-6-3.1 which requires "No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source." If the source of the water is older or lower than the Greenhorn Formation and a water distribution system has applied for a permit, the Board need not consider the recharge/withdrawal issue. Here, a water distribution system is not involved and the Altamont aquifer is not older or lower than the Greenhorn Formation, therefore the withdrawal/recharge issue must be considered.

Observation Wells

In determining the availability of unappropriated water for a permit application Administrative Rule 74:02:05:07 requires the Water Management Board to rely on the record of observation well measurements, in addition to other data, to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated annual recharge.

The Water Rights Program monitors 31 observation wells completed into the Altamont aquifer (Water Rights, 2017a). Of these, two are located in Deuel County with the remainder in Clark, Spink, and Day Counties. Observation wells in Day, Clark, and Spink Counties primarily show increased to relatively stable water levels when comparing current data to the start of the period of record with fluctuations in response to climatic conditions. Some wells also document seasonal pumping of nearby irrigation wells. Water levels in the observation wells monitoring the aquifer generally increase during wet periods and gradually decrease during dry periods or

remain relatively stable. This indicates that natural conditions dominate the aquifer, and recharge to and natural discharge from the aquifer exceeds pumping. Since recharge to and natural discharge from an aquifer can be captured for pumping, there is a reasonable probability that unappropriated water is available from the Altamont aquifer in South Dakota.

The hydrographs for the Deuel County wells are shown in Figure 1 and 2. These observation wells are under confined conditions. Observation Well R2-96-02 is in close proximity to a well field for a rural water system (Lincoln-Pipestone Rural Water) located in Minnesota with several wells that are likely completed into aquifer materials of a similar elevation to those monitored by observation well R2-96-02 and are identified as Altamont aquifer wells (MNDNR, 2017 and Healy, 2000). R2-96-02 is likely documenting the localized impacts of the rural water system's pumping rather than the overall condition of the aquifer in Deuel County. However, in comparing the early and later portions of the hydrograph for R2-96-02, it appears that the water level in the observation well is in the process of stabilizing.

The hydrograph for observation well DU-73A is expected to be more representative of conditions at the well site for this application. DU-73A has about 300 feet of artesian head pressure. Over the period of record for DU-73A the water level has fluctuated over a range of about 15.52 feet. Water levels in DU-73A declined during a period of time from 1997 to 2003, but have been relatively stable since 2003. If water levels in an aquifer decline over an extended period of time, it may be suggestive of withdrawal exceeding recharge. However, the water levels of DU-73A stabilized rather than continuing to decrease, and water levels in R2-96-02 appear to be in the process of stabilizing indicating that natural conditions dominate the aquifer in the area. This indicates withdrawals from the aquifer have not exceeded recharge. Since recharge to and groundwater outflow from an aquifer can be captured for well withdrawals, this further supports unappropriated water being available in the aquifer.

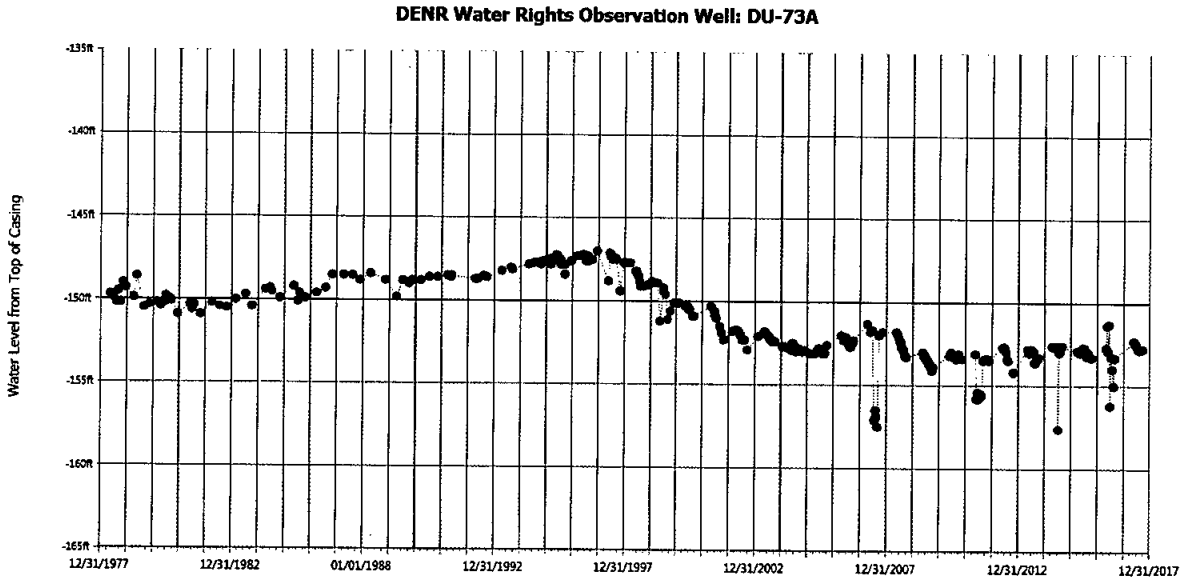


Figure 1: Hydrograph of Observation Well DU-73A located about 6.1 miles northeast (Water Rights, 2017a)

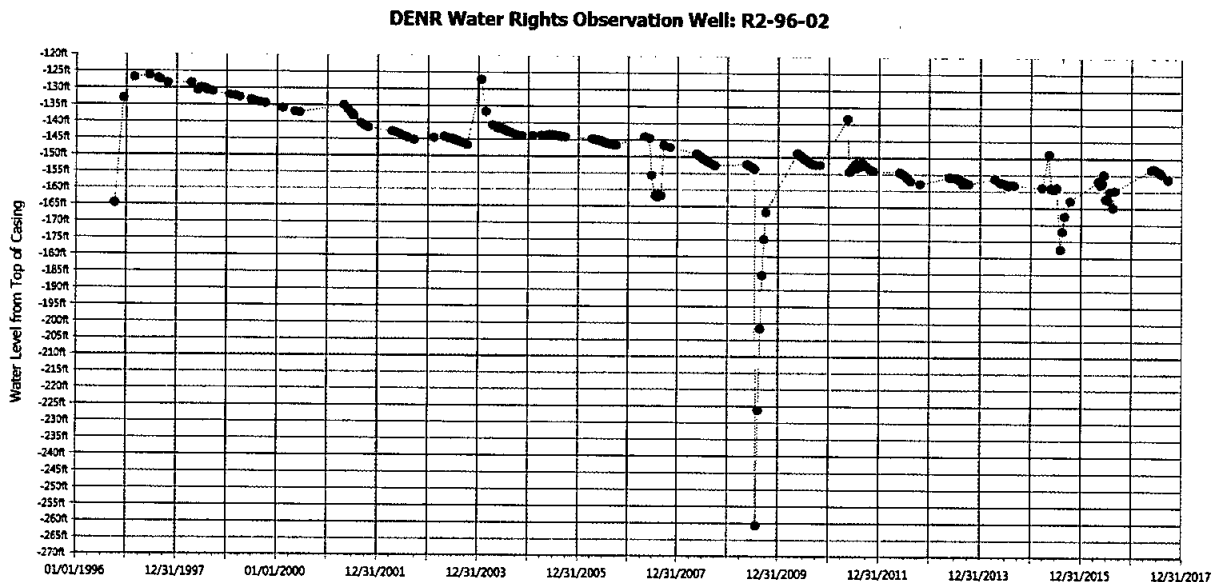


Figure 2: Hydrograph of Observation Well R2-69-02 located about 10.1 miles northeast (Water Rights, 2017a)

Hydraulic Budget

Recharge

Recharge to the Altamont aquifer in Deuel County is primarily from lateral groundwater inflow from other counties where the aquifer is closer to ground surface where infiltration of precipitation can more readily occur. A very small amount of recharge may also occur from infiltration of precipitation though the overlaying aquifers and till (Hamilton, 1989). Hedges et al. (1985) estimates average annual recharge to the unconfined portion of the Altamont aquifer at

2.2 inches per year. However for confined aquifers, Hedges et al. (1985) recommended recharge rates of 0.15 to 0.60 inches per year for use by management and development programs. Since the Altamont aquifer is primarily a confined aquifer the recommended recharge range for confined aquifers will be used to examine the hydraulic budget of the Altamont aquifer. There is no estimate of recharge to the Altamont aquifer specifically for Deuel County. Estimated range of average annual recharge to the Altamont aquifer based on the area of Hedges et al. (1982) and the recommended recharge rate for confined aquifers is 20,910 to 83,640 acre-feet per year for the entire Altamont aquifer and for Deuel County the estimated average annual recharge range is 3,824 to 15,295 acre-feet per year.

Withdrawals

Discharge from the Altamont aquifer in Deuel is primarily through groundwater outflow to other counties and well withdrawals (Hamilton, 1989). Hamilton's (1989) map of the potentiometric contours of the Altamont aquifer in Brookings County indicates lateral groundwater inflow from Deuel County into Brookings County. There are currently 74 water rights/permit authorized to appropriate water for the Altamont aquifer and two future use permits (Water Rights, 2017b). Of these, 55 are located in Clark County, 10 in Day County, five in Codington County, three in Spink County, one in Deuel County, one in Grant County, and one in Kingsbury County. Due to their relatively low diversion rates, withdrawals from domestic wells are not considered to be a significant portion of the hydrologic budget. Additionally with the development of rural water in areas where the Altamont aquifer is the uppermost aquifer available, domestic users may have transitioned to rural water since in general rural water provides better water quality than direct use domestic use of the Altamont aquifer.

There are 53 irrigation water rights/permits currently authorized to appropriate water from the Altamont aquifer. Irrigation water rights/permits from the Altamont aquifer are all located in Clark, Day, or Spink Counties. Reported irrigation usage from the Altamont aquifer is shown in Figure 3. Average yearly reported irrigation pumpage for the data in Figure 3 is 2,346 acre-feet per year. Eleven of the water permits for irrigation have been issued relatively recently (since the start of 2012). These recent water permits have authorized the irrigation of 2,158 acres (Water Rights, 2017b). Although these recent irrigation appropriations can be used at rates of up to two feet per acre per year, aquifers in the eastern portion of the state for which the application rate per irrigated acre has been quantified have yielded application rates of less than ten inches per acre per year. Utilizing the historical average combined with an estimated usage of less than ten inches per acre for recent appropriations and assuming that all recently permitted acres will be irrigated results in estimation for irrigation use of less than 4,145 acre-feet per year. It should also be noted that this method is expected to overestimate irrigation use since actual use by the noted recently issued water permits was not excluded from the average of the reported water use.

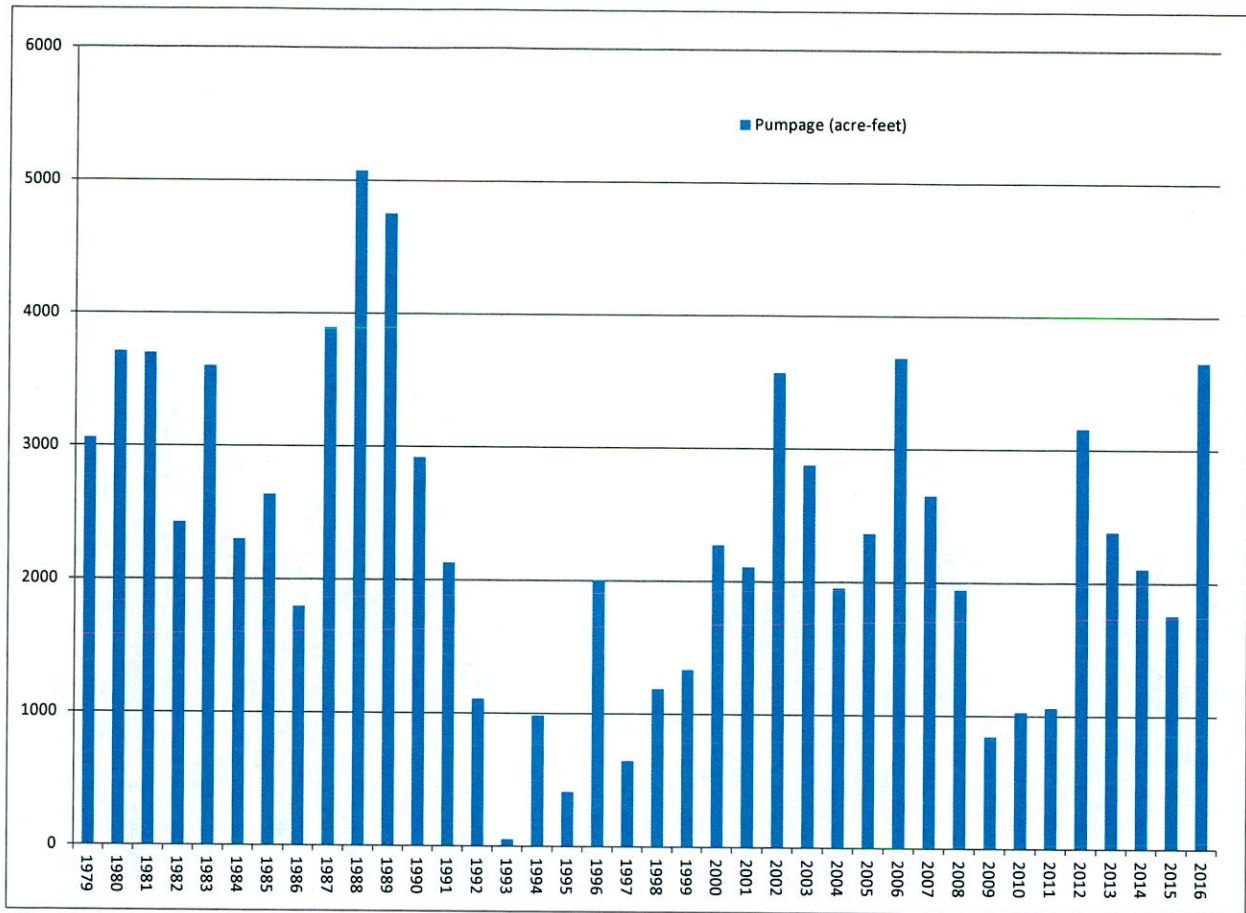


Figure 3: Reported irrigation pumpage by year from the Altamont aquifer (Water Rights, 1980-2017)

There are two future use permits reserving water from the Altamont aquifer for the Towns of Henry (Permit No. 4052-2) and Wallace (Permit No. 4054B-3); however both communities are on rural water so full development of these permits is unlikely (Drinking Water, 2016). However for estimating water use for future use permits it is assumed that future use permits will be fully developed, therefore estimated water use for these permits is 881 acre-feet per year. Historically, average water use by non-irrigation appropriations limited by instantaneous diversion rate has been less than 60% of full time pumping at the permitted diversion rate. The Cities of Arlington, Roslyn, Bristol, and Clark all obtain their water from rural water systems (Drinking Water, 2016). Therefore, water use under these water rights is expected to be minimal with the water right maintained primarily for emergency purposes (i.e. backup or fire protection). Estimated average annual water use for the remaining non-irrigation water rights/permits is estimated to be less than 2,364 acre-feet per year. Therefore, average non-irrigation annual appropriative withdrawals from the aquifer are estimated to be less than 3,245 acre-feet per year.

Balance

Total average annual appropriative water use from the Altamont aquifer is estimated to be less than 7,390 acre-feet per year. Estimated average annual recharge to the aquifer is 20,910 to 83,640 acre-feet per year. Therefore, there is a reasonable probability that unappropriated water is available in the Altamont aquifer for the appropriation proposed by this application.

On a county scale the only water right currently authorized to appropriate water from the Altamont aquifer in Deuel County is Water Right No. 451-3 for the City of Brandt. The City of Brandt appears to be primarily served by individual connections to Brookings-Deuel Rural Water (Friedeman, 2017). Sixty percent usage of the maximum instantaneous diversion rate authorized by this water right would be about 56 acre-feet per year. However, in reviewing the file for Water Right No. 451-3 a well depth of 60 feet is documented (Water Rights, 2017b); given the available geologic information a well completed into the basal outwash (Altamont aquifer) in that area would be expected to be closer to 550 to 650 feet in depth (SDGS, 2017; Kume, 1985; Kume, 1976; Tomhave and Schulz, 2004). Since Water Right No. 451-3 is an older water right, information on the well for the water right is fairly limited; however assuming the well depth of 60 feet is correct this well is likely completed into an Unknown management unit of the Pleistocene series or an aquifer of the Prairie Coteau and not the Altamont aquifer (Water Rights, 2017b; SDGS, 2017; Kume, 1985; Kume, 1976; Tomhave and Schulz, 2004). For Deuel County, the estimated average annual recharge range is 3,824 to 15,295 acre-feet per year. This application is proposing an annual appropriation of 12.3 acre-feet. Therefore, there is a reasonable probability that unappropriated water is available in the Altamont aquifer in Deuel County for the appropriation proposed by this application.

Existing Users

The approximate well location for this application and the nearest water right are shown in Figure 4. The diversion point for Water Right No. 451-3 held by the City of Brandt is located about seven miles to the northwest of the well this application propose to utilize. As previously discussed, the well may not be completed into the Altamont aquifer. The next closest South Dakota Water Right authorized to withdraw from the Altamont aquifer is Water Right No. 1490-3 for the Town of Revillo located about 30 miles to the north. A review of area well completion reports on file with the Water Rights Program within five miles of the well location for this application indicates wells completed into shallower glacial aquifers rather than the Altamont aquifer (Water Rights, 2017c). There are farm sites within one mile that could potentially have wells completed into the Altamont aquifer. However, the depth and poor water quality of the Altamont aquifer would make either shallower aquifers, if available, or rural water systems more appealing as a water supply.



Figure 4: Map of area including water rights/permits in South Dakota currently authorized to appropriate water from the Altamont aquifer and Water Rights observation wells currently monitoring the Altamont aquifer (Water Rights, 2017b and Water Rights, 2017a)

The exact amount of drawdown as the result of pumping due to this proposed diversion cannot be quantified without more extensive aquifer testing. Since the aquifer is under confined conditions in the area of the well, some amount of drawn down from pumping is expected. However, given the amount of artesian head pressure in the Altamont aquifer at this well location (approximately 340 feet) the diversions under this permit, if approved, would not be expected to adversely impact adequate wells or existing water rights in the area.

The Water Management Board has promulgated rules that allow water to be placed to maximum beneficial use without the necessity of maintaining artesian head pressure for domestic use. Administrative Rule of South Dakota (ARSD) 74:02:04:20(7) defines an adversely impacted domestic well as “a well in which the pump intake was set at least 20 feet below the top of the aquifer at the time of construction or, if the aquifer is less than 20 feet thick, is as near to the bottom of the aquifer as is practical and the water level of the aquifer has declined to a level that the pump will no longer deliver sufficient water for the well owner's needs.” In the case of Water Permit Application No. 2313-2 for the Coca-Cola Bottling Company of the Black Hills, the Water Management Board adopted findings that noted that if the increased costs or decreased production as a result of the impacts of legitimate users on artesian head pressure could be considered an adverse impact it would conflict with SDCL 46-1-4 (Water Rights, 1995). SDCL

46-1-4 requires the water resources of the state be put to beneficial use to the maximum extent of which they are capable (Water Rights, 1995).

Historical Notes

Several of the past applications for Otter Tail Power Company have been contested. The most recent was now cancelled Water Permit No. 6846-3 for the Veblen aquifer in Grant County (Water Rights, 2017b). Previously contested applications have been for large annual withdrawals, in the case of now cancelled Water Permit No. 6846-3 “a maximum annual withdrawal from ground water of 10,000 acre-feet of water with a total volume beneficial use not to exceed 4,700 acre-feet of water annually averaged on a rolling 20 period” (Water Rights, 2017b). In the case of this application Otter Tail Power Company is requesting to appropriate 12.3 acre-feet of water annually from the Altamont aquifer.

There is also a history of concern involved with the noted Burr wellfield of the Lincoln-Pipestone Rural Water System in Minnesota. The concern centered on the possibility that pumping by the rural water system may impact the water levels of Lake Cochrane. Water level monitoring and management planning over this concern are focused primarily on the shallower Prairie Coteau aquifer in the area (Healy, 2000 and USDA, 1999). The aquifer that this application is proposing to appropriate water from is the Altamont aquifer.

In Clark County, there have been multiple concerns regarding water rights appropriating water from the Altamont aquifer. These are primarily tied to impacts of a well or wells impacting other wells, surface waters, or springs (Buhler, 2014). None of these resulted in a determination of adverse impact as a result of pumping (Buhler, 2014). Springs with the Altamont aquifer as a water source are typically the result of downward sloping terrain along the edge of the Coteau Des Prairies incising area aquifers. The well location for this application is not in close proximity to a downward sloping edge of the Coteau Des Prairies, and the static water level for this well is not above ground surface.

Conclusions

1. Water Permit Application No. 8309-3 for Otter Tail Power Company proposes to appropriate 12.3 acre-feet of water annually at a maximum diversion rate of 0.22 cfs from the Altamont aquifer for industrial and commercial use at the Astoria Station. The diversion point for this application is one well located in the SE ¼ NE ¼ Section 22 T113N-R48W.
2. There is a reasonable probability that unappropriated water is available in the Altamont aquifer for this application.
3. There is a reasonable probability that this application, if approved, will not adversely impact adequate domestic wells or existing water rights/permits.


Whitney Kilts
SD DENR-Water Rights Program

References

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- Water Rights. 2017a. Observation Well Files, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.
- Water Rights. 2017b. Water Right/Permit Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.
- Water Rights. 2017c. Well Completion Reports. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

denr.sd.gov

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

November 20, 2017

Otter Tail Power Company
c/o Mark Thoma, Manager, Environmental Services
PO Box 496
Fergus Falls MN 56538

Dear Mr. Thoma:

Water Permit Application No. 8309-3 for industrial and commercial use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Clear Lake Courier printed at Clear Lake SD (Ph # 605-874-2499) and the Brookings Register printed at Brookings SD (Ph # 605-692-6271). You will need to contact the newspaper(s) and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper(s) to authorize publication of your Notice and to arrange for payment. Early contact with the paper(s) can eliminate delays. Upon receiving authorization from you, the publisher has been instructed to publish your notice. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

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

Instruction to Newspaper - Publish the Notice on November 29, 2017. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 8309-3 to Appropriate Water

Notice is given that Otter Tail Power Company, c/o Mark Thoma, Manager, Environmental Services, PO Box 496, Fergus Falls MN 56538 has filed an application for a water permit to appropriate 12.3 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet of water per second from one well completed into the Altamont Aquifer (679 feet deep) located in the SE 1/4 NE 1/4 Section 22-T113N-R48W for industrial and commercial use. The site is located 1 1/2 miles northwest of Astoria and known as Astoria Station.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8309-3 with qualifications 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. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Eric Gronlund for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by December 11, 2017.

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.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. 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.

Steven M. Pirner, Secretary, Department of Environment and Natural Resources. Published once at the total approximate cost of _____.

Schlaak, Karen

From: Schlaak, Karen
Sent: Monday, November 20, 2017 9:31 AM
To: registerclassifieds (registerclassifieds@brookingsregister.com)
Subject: FW: 8309-3, Otter Tail Power Company
Attachments: FORM8.FRM.doc; 8309-3public.short.docx

Attached is a notice to be published on November 29, 2017.

Otter Tail Power Company, c/o Mark Thoma, Manager, Environmental Services, PO Box 496, Fergus Falls MN 56538 (218 205-4381) has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol, Pierre SD 57501.

Let me know if you have questions. Please acknowledge receipt of this email.

Karen Schlaak
SD DENR, Water Rights Program
(605) 773-3352



Schlaak, Karen

From: Schlaak, Karen
Sent: Monday, November 20, 2017 9:30 AM
To: Clear Lake Courier (clprint1@itctel.com)
Subject: 8309-3, Otter Tail Power Company
Attachments: FORM8.FRM.doc; 8309-3public.short.docx

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Karen Schlaak

SD DENR, Water Rights Program
(605) 773-3352



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DEC 07 2017

WATER RIGHTS
PROGRAM

Affidavit of Publication

State of South Dakota

ss

Exhibit "A"

County of Brookings

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

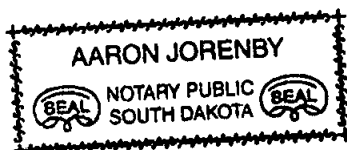
Leg#981 Notice of Application 8309-3 to Appropriate Water

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

November 29, 2017

said Exhibit "A" inures to the sole benefit for the publishers of said newspaper; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever; that the fees charged for the publication thereof are:

Twenty-Six Dollars and Twelve Cents \$26.12



Kim Felle

4 day of

December

Notary Public in and for the County of Brookings, South Dakota.

My Commission expires February 22, 2020.

Legal 981, 1x, 11/29
NOTICE OF APPLICATION NO. 8309-3 to Appropriate Water
Notice is given that Otter Tail Power Company, c/o Mark Thoma, Manager, Environmental Services, PO Box 496, Fergus Falls MN 56538 has filed an application for a water permit to appropriate 12.3 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet of water per second from one well completed into the Altamont Aquifer (679 feet deep) located in the SE 1/4 NE 1/4 Section 22-T113N-R48W for industrial and commercial use. The site is located 1 1/2 miles northwest of Astoria and known as Astoria Station.
Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8309-3 with qualifications 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. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <http://denr.sd.gov/public> or contact Eric Gronlund for this information, or other information, at the Water Rights Program address provided below. Any person interested in

opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by December 11, 2017. 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. If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. 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. Steven M. Pirner, Secretary, Department of Environment and Natural Resources. Published once at the total approximate cost of \$26.12.

AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA
COUNTY OF DEUEL

Ken Reiste being first duly sworn, on oath says: That he is publisher of the Clear Lake Courier, a weekly newspaper published in the City of Clear Lake, Deuel County, South Dakota; that he has full and personal knowledge of all facts herein stated; that said newspaper is a legal newspaper as defined in SDCL 17-2-2.1 through 17-2-2.4 inclusive; that said newspaper has been published within the said County of Deuel and State of South Dakota, for at least one year next prior to the first publication of the attached public notice, and that the

Notice Of Application No.8309-3 To Appropriate Water

a printed copy of which, taken from the paper in which the same was published, and which is hereto attached and made a part of this affidavit, was published in said newspaper for one successive week(s) to wit:

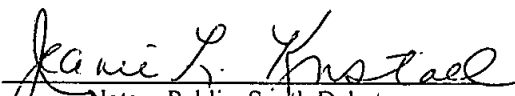
November 29,2017

That the full amount of the fee charged for publication of the attached public notice insures to the sole benefit of the publisher; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever; that the fees charged for the publication thereof are: \$28.05


Ken Reiste

Subscribed and sworn to before me

this 29 day of November
2017


Notary Public, South Dakota
JEANIE L. KJENSTAD My Commission Expires
1/20/2023
SEAL NOTARY PUBLIC SEAL
SOUTH DAKOTA

Public notice

NOTICE OF APPLICATION NO. 8309-3 to Appropriate Water

Notice is given that Otter Tail Power Company, c/o Mark Thoma, Manager, Environmental Services, PO Box 496, Fergus Falls MN 56538 has filed an application for a water permit to appropriate 12.3 acre-feet of water annually at a maximum pump rate of 0.22 cubic feet of water per second from one well completed into the Altamont Aquifer (679 feet deep) located in the SE 1/4 NE 1/4 Section 22-T113N-R48W for industrial and commercial use. The site is located 1 1/2 miles northwest of Astoria and known as Astoria Station.

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Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by December 11, 2017.

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.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. 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.

Steven M. Pirner, Secretary,
Department of Environment and Natural Resources.
Published once at the total approximate cost of \$28.05. (41-1/83)

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DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

DEC 15 2017

Otter Tail Power Company
c/o Mark Thoma, Manager, Environmental Services
PO Box 496
Fergus Falls MN 56538-0496

Dear Mr. Thoma:

Enclosed is Water Permit No. 8309-3 authorizing construction of the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

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

enclosures