CCR Groundwater Monitoring System

Omaha Public Power District

Nebraska City Station
NC2 Ash Disposal Area

Nebraska City, Nebraska

June 1, 2016

Updated June 2019

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Professional Engineer Certificate

"I hereby certify that the groundwater monitoring system described in this report for the CCR landfill known as the NC2 Ash Disposal Area at the Nebraska City Generating Station, owned and operated by the Omaha Public Power District, has been designed and constructed to meet the requirements of the Coal Combustion Residual Rule 40 CFR 257.91. I am a duly licensed Professional Engineer under the laws of the State of Nebraska."

Print Name: Megan B. Seymour

Signature: Megan B. Seymour

Date: 6-21-2019

License #: E-15931

My license renewal date is December 31, 2020.

1 Introduction

On April 17, 2015 the U.S. Environmental Protection Agency (EPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA). The Federal CCR Rule – effective on October 19, 2015 – applies to Omaha Public Power District's (OPPD's) Nebraska City Generating Station (Station). The Station, located southeast of Nebraska City, Nebraska has two coal-fired combustion units – Unit 1 and Unit 2. CCR from both units may be disposed in the NC2 Ash Disposal Area.

The CCR Rule, 40 CFR Subpart D-Standards for the Disposal of CCRs, Section §257.91 requires groundwater monitoring system that consists of sufficient number of wells at appropriate locations and depths, based on site-specific technical information, to yield groundwater samples from the uppermost aquifer that:

- Accurately represent the quality of both background groundwater, and groundwater passing the boundary of the CCR unit
- Monitor potential contaminant pathways

The groundwater monitoring system at the NC2 Ash Disposal Area was established in June 2016 to meet the requirements of the Federal CCR Rule. The groundwater monitoring network has been updated, as part of this April 2019 revision, to include an additional downgradient monitoring well (NC2-MW-8) that was required by the Nebraska Department of Environmental Quality. This report includes the following sections in support of the certification.

- Section 1.0 Introduction
- Section 2.0 Facility Background
- Section 3.0 Site Hydrogeology Summary
- Section 4.0 Groundwater Monitoring System

2 Facility Background

OPPD has a two-unit (Unit 1 and Unit 2) fossil fuel-fired generating plant at the Station southeast of Nebraska City, Nebraska. This Station has two existing CCR landfills that are permitted under the current NDEQ Title 132 regulations for fossil fuel combustion ash disposal (the NC1 Ash Disposal Area and NC2 Ash Disposal Area).

The NC2 Ash Disposal Area is an existing lined CCR landfill permitted under NDEQ Title 132 regulations for 40.7 acres; Cell 1 was constructed in 2008/2009 with a composite liner and leachate collection system. Construction for NC2 Ash Disposal Area Cells 2 and 3 started before the effective date of the CCR rule – October 19, 2015 – and construction will continue with excavation, structural fill, and installation of a composite liner and leachate collection system. NC2 Ash Disposal Area is an active, existing CCR landfill as defined by the CCR rule.

3 Site Hydrogeology Summary

Based on soil boring advanced at the Station in 2006, the bedrock, in the form of shale, was encountered at a depth of 89 feet below ground surface. The uppermost aquifer, Missouri River Alluvium, depth is anticipated to be from 2 feet to 89 feet below ground surface (bgs).

According to the hydrology assessment conducted at the site in 1995 by SCS Engineers titled *Hydrologic Investigations Report*. The broad upland areas of the Station are underlain by the unconsolidated wind-blown and glacial deposits of Pleistocene age. The surface of the site is generally overlain by fine-grained or cohesive deposits near the surface, based on a study conducted by D'Appolonia Consulting Engineers in 1975. These deposits consist of silty clays, clayey silts, silty sands and fine sands. The bedrock underlying the Station area is medium hard red to gray shale. Several areas outside the Station area are underlain by a thin formation of limestone interbedded with shale.

Data from the boring logs for the monitoring wells and soil borings at the Station indicates that the subsurface geology at the ash disposal area generally consists of the following:

- 3 feet of light brown to dark grayish brown lean clay (CL) (Fill/Topsoil), overlying,
- Approximately 9 feet of alluvium consisting of light brown to grayish brown silty clayey sand (SM), poorly graded sand with silty sand (SP-SM), silt with very fine sand to silty very fine sand (ML/SM), and high plastic clay (CH), overlying,
- 28 to 77 feet of gray poorly graded sand (SP) to the boring completion depths varying from 40 to 89 feet.
- Some borings indicate that bedrock was encountered at a depth of 103.5 feet.

In the general vicinity of the Station, two primary sources of groundwater are present, Missouri River alluvium and glacial deposits in the upland area west of the Station property. Groundwater in the Missouri River alluvium is found at starting depths of approximately 2 to 17 feet below ground surface (ft bgs) and is largely affected by the river stages. Based on the monitoring reports for the NC2 Ash Disposal Area, groundwater flow was in the south-southeasterly direction. Groundwater levels from the monitoring wells installed on the Station property in 1975 showed a flow direction generally south/southeast.

Slug tests conducted in 1995 on three monitoring wells (MW-1, MW-4 and MW-6) indicate that the horizontal hydraulic conductivity values ranged from 5.7×10^{-4} cm/sec to 8.2×10^{-3} cm/sec. A pumping test was conducted in 2003 by HDR on an 83-foot-deep, 16-inch-diameter well that was installed and pumped at a rate of 1,225 gallons per minute for 72 hours. Water levels were monitored during the pumping period and recovery period in the pumped well and in three observation wells installed for the test. The results of the test indicated that hydraulic conductivity of the aquifer is approximately 2.0×10^{-1} cm/sec, which is in the upper end of the range of literature values for clean sands. It should be noted that the tested interval in the 2003 investigation is deeper (and the sediments coarser) than was tested during the slug tests that were conducted in 1995.

The hydraulic conductivity reported near the NC2 Ash Disposal Area has a range of 1.39 x 10^{-2} cm/sec to 2.42 x 10^{-3} cm/sec as reported by HDR in the 2006 Hydrogeologic Characterization Report (HDR 2006). The geometric mean that has been used for groundwater flow velocity calculations at NC2, based on the hydraulic conductivity tests completed in 2006, is 3.4 x 10^{-3} cm/sec. Effective porosity was reported as 0.405 in HDR 2006. Based on monitoring reports, the gradient has been reported as 0.0017 ft/ft with a velocity of 14.9 ft/year.

From slug test data performed by Terracon (2016) on recently installed well MW-13, the hydraulic conductivity was reported as 3.38 x 10^{-3} cm/sec. This is within the range of previously recorded data.

4 Groundwater Monitoring System

Based on the site-specific specific hydrogeologic information and groundwater flow to the south-southeasterly direction, the groundwater monitoring system for the NC2 Ash Disposal Area for the detection monitoring program consists of three (3) upgradient/background wells, one (1) crossgradient well, and four (4) downgradient wells. This exceeds the minimum number of monitoring wells required by 40 CFR 247.91(c) (i.e. one upgradient and three downgradient). Three (3) additional wells are included for water level measurements and to serve for future 'nature and extent determinations'. The groundwater monitoring system network for the NC2 Ash Disposal Area is summarized below in Table 1.

The monitoring well locations are shown in the attached Figure 1. The groundwater monitoring wells were constructed of 2-inch-diameter, schedule 40 PVC, flush threaded riser pipe, and machine slotted 10-slot (0.010 inch) screen. The surface completion for each well consists of a steel protective casing, concrete apron, and three bollards/posts. Monitoring well construction logs, registrations or abandonment forms for the groundwater monitoring wells are contained in Appendix A of this report.

Table 1: OPPD NC2 Ash Disposal Area, Groundwater Monitoring Well System

Monitoring Well	Date Installed	Well Depth (feet bgs)[1]	Well Depth (feet from TOC)[2]	Gradient	Monitoring Program Use
Monitoring Well Network					
MW-13	1/26/16	13.0	15.19	Background/Upgradient	Detection
NC2-MW-4	9/8/04	14.0	16.01	Background/Upgradient	Detection
NC2-MW-5[3]	9/16/04	15.2	18.93	Background/Upgradient	Detection
NC2-MW-6	9/7/04	11.0	14.66	Crossgradient	Detection
NC2-MW-2	9/8/04	15.0	18.35	Downgradient	Detection
NC2-MW-3	9/8/04	12.0	15.01	Downgradient	Detection
NC2-MW-7	11/6/13	21.0	23.97	Downgradient	Detection
NC2-MW-8	7/9/18	15.0	18.04	Downgradient	Detection
Water Level Measurements Only					
NC1-MW-7 (deep well)	1/20/99	40.5	42.53	Downgradient	Water Level/Nature & Extent Determinations[4]
NC1-MW-8	1/21/99	20.0	22.46	Downgradient	Water Level/Nature & Extent Determinations[4]
MW-14	7/12/18	18.0	21.0	Upgradient	Water Level
Abandoned Well[5]					
NC2-MW-1 (replaced with NC2-MW-7)	9/7/04 (Abandoned 11/6/13)	14.0	17.08	NA	NA

Notes:
1. Depth from ground surface to bottom of installed well (screen depth). Actual boring depth may be deeper.
2. Depth from top of casing to bottom of installed well (screen depth).
3. Well repaired on 11/6/13 which raised the top of casing and ground surface.
4. Monitoring wells to be sampled for nature and extent determinations if an Appendix IV constituent is detected in one or more of the detection monitoring wells at statistically significant level above groundwater protection standard.
5. Abandoned in accordance with State of Nebraska regulations.

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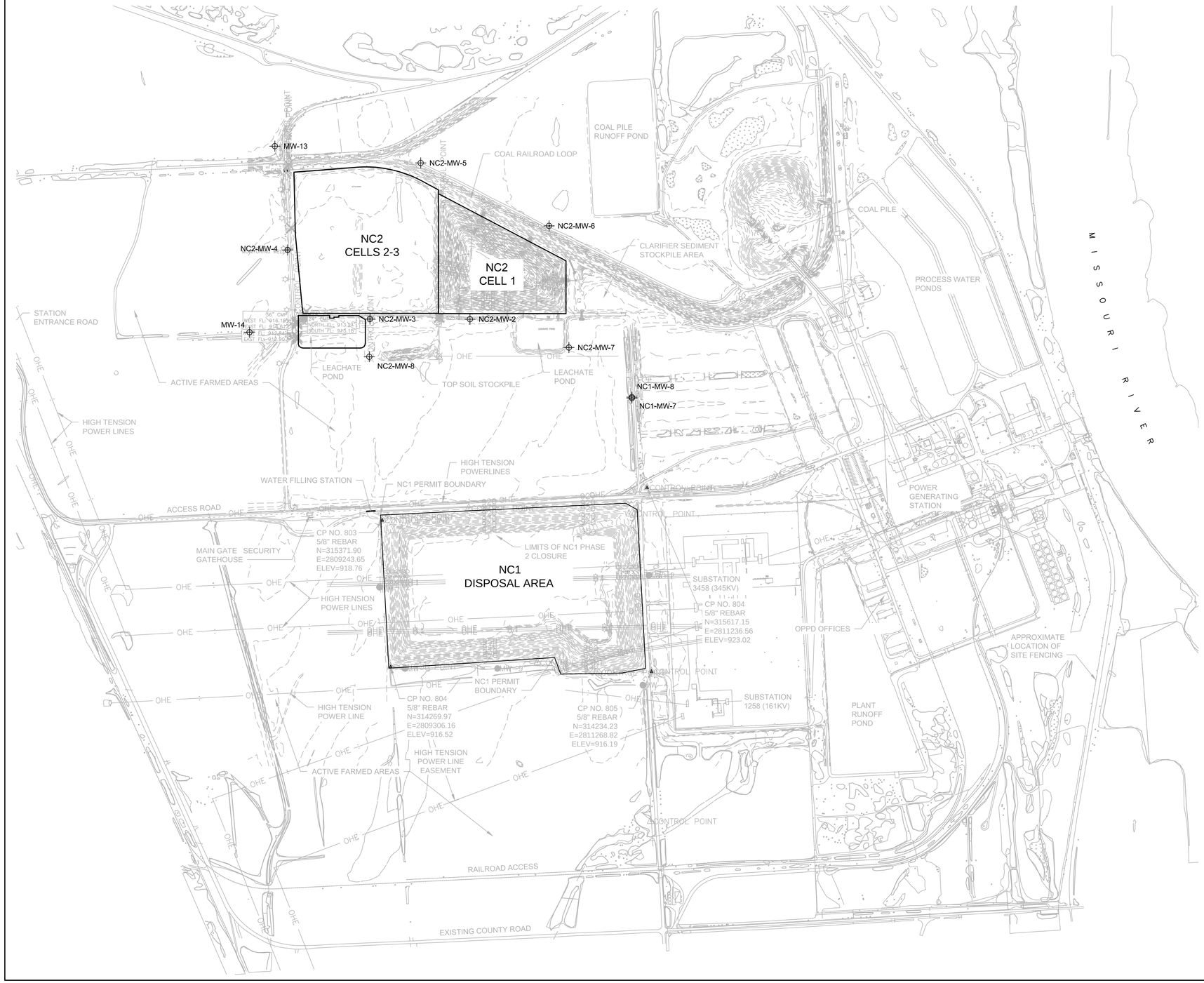
Figure 1

NC2 Ash Disposal Area

Groundwater Monitoring Network



MONITORING WELL NETWORK					
Monitoring Well	Northing	Easting	Elevation (Top of Casing)	Well Depth (Feet BGS)	Location with Respect to Temporary Ash Disposal Area
MW-13	318186.64	2808434.68	918.05	13.0	Background/Upgradient
MW-14	316786.47	2808244.03	920.99	21.0	Upgradient
NC1-MW-7	316290.86	2811121.03	919.20	40.5	Downgradient
NC1-MW-8	316298.57	2811121.28	919.68	15.0	Downgradient
NC2-MW-2	316884.69	2809902.40	922.55	15.0	Downgradient
NC2-MW-3	316885.96	2809149.54	916.22	12.0	Downgradient
NC2-MW-4	317405.90	2808530.80	919.62	14.0	Background/Upgradient
NC2-MW-5	318060.54	2809531.90	922.76	15.2	Background/Upgradient
NC2-MW-6	317587.46	2810497.97	919.72	11.0	Crossgradient
NC2-MW-7	316671.78	2810647.12	918.37	21.0	Downgradient/Crossgradient
NC2-MW-8	316601.90	2809145.16	918.18	15.0	Downgradient

NOTES:
1. TOP OF CASING ELEVATION DETERMINED BY SURVEY DATA OBTAINED JUNE 2019.
2. BGS = BELOW GROUND SURFACE
3. THE FOLLOWING MONITORING WELL LOCATIONS ARE FOR WATER LEVEL DATA ONLY : NC1-MW-7, NC1-MW-8, AND MW-14.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	G. WILLIAMS
ENVIRONMENTAL	M. SEYMOUR
CAD	W. NICHOLSON
PROJECT NUMBER	10111074

OPPD Nebraska City Ash Landfill
NC2 Ash Disposal Area - Permit Drawings
Monitoring Well Network

MONITORING WELL LOCATION MAP

0 1" 2"

FILENAME Figure 1 - NC2.dwg
SCALE 1" = 400'

SHEET 1

Appendix A

Monitoring Well Documentation

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LOG OF BORING NO. MW-1

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-7-04	9-7-04	CME-75	4.25" HSA

SURFACE TYPE	TOTAL DEPTH (FT.)
Berm/Soybean Field	14

WATER LEVEL OBSERVATIONS (FT.)

▽ 7.5 ATD

▼ 8.4 @ 1 Day AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER
1	2S	24		4.5+				
2	2S	24		4.5+				
3	2S	15		2.6				
4	2S	24		1.8 2.8				
5	2S	16		-				
6	2S	18		-				
7	2S	18		-				

DEPTH, FT.	DESCRIPTION	Surface Elevation: 918.0	
	Hard/Medium Dense, Slightly Moist, Mixed Low Plastic Silty Clay/Silt/and Poorly Graded Silty Sand, Very Fine Grained (CL/ML/SM) (Berm Fill)		
5.0			913.0
5	Very Stiff, Moist, Dark Grayish Brown, Low Plastic Silty Clay (CL) (Alluvium)		
7.0			911.0
7.5	Very Stiff, Very Moist, Grayish Brown, Silt (ML) (Alluvium)	▽	910.5
	Loose, Wet, Grayish to Yellowish Brown, Silty Clay, Very Fine Grained (SM) (Alluvium)		
10	Becomes Less Silty (SP-SM/SP)		
	Becomes Very Fine to Fine-Grained, Poorly Graded Sand with Occasional Layer of Silty Sand (SP/SP-SM)		
14.0	Becomes Very Silty (SM), Very Fine Grained, with Some Interbeds of Sandy Silt (ML)		904.0
	Bottom of Boring @ 14'		
	Well Completed Using 3' Stick Up and Concrete Pad		

WELL LOG

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME	LOCATION	PROJECT NUMBER
OPPD Flyash Monofill	Nebraska City, Nebraska	47962

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Mail to
DNR
PO Box 94676
Lincoln, NE 68509-4676

Phone (402)471-2363

10-26-2004-162824-WWRF

Department of Natural Resources (3)

October 2001
DNR Form 145

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 10-26-2004 Sequence No. 162824 Registration No. G-130442A
Owner Code No. 40226 Receipt No. R16991 Omaha NRD

1. a. Well Owner's First Name _____ Last Name _____
   b. Company Name Omaha Public Power District
   c. Correspondent Name Omaha Public Power District Attention James J Krajicek
   Address 444 South 16th Street Mall
   City Omaha State NE Zip 68102 Telephone (402) 636-2309

2. a. Contractor's License No 19245 Contractor's Name Kleinfelder
   Contractor's Email Address locoabel@cox.net
   b. Drilling Firm Name Kleinfelder
   Address 9312 G Court
   City Omaha State NE Zip 68127 Telephone (402) 331-2260
   Drilling Firm's Email Address bhavens@kleinfelder.com

3. a. Well location SE ¼ of the SE ¼ of Section 25, Township 8 North, Range 14 East/West, Otoe County.
   b. Natural Resources District Nemaha NRD
   c. The well is _____ feet from the (North/ South) section line and _____ feet from the (East/West) section line
   (circle one) (circle one)
   or Latitude Degree 40 Minute 37 Second 29
   Longitude Degree 95 Minute 47 Second 04
   d. Street address and subdivision, if applicable _____
   Block _____ Lot _____
   e. Location of water use, if applicable (give legal descriptions) _____
   f. If for irrigation, the land to be irrigated is _____ acres.
   g. Well reference letter(s), if applicable MW-1

4. Permits
   Management Area Permit Number _____
   Geothermal Permit Number _____
   Municipal Permit Number _____
   Well Spacing Permit Number _____
   Surface Water Permit Number _____
   Industrial Permit Number _____
   Transfer Out-Of-State Permit Number _____
   Conduct Permit Number _____
   Other Permit Number _____

5. Purpose of well (indicate one) ___Aquaculture ___Commercial/Industrial Dewatering (over 90 days)
   ___Domestic Ground Heat Exchanger ___Groundwater Source Heat Pump ___Irrigation ___Injection
   ___Livestock __X__Monitoring ___Observation ___Public Water Supply (with spacing (46-638))
   Public Water Supply (without spacing) Recovery ___Other _____
   (indicate use)

6. Wells in a Series.
   a. Is this well a part of a series? __yes Yes go to part b of this section ___No go to part 7 of this application
   b. If one or more of the wells in the series is currently registered, give the well registration number ___NA___
   c. How many wells in the series are you registering at this time? 6

7. Replacement and abandoned well information.
   a. Is this well a replacement well? ___Yes __X__No
   b. Registration number of abandoned well _____ If not registered, date abandoned well was constructed (m)__/(d__/(y)__
   c. Replacement well is _____ feet from abandoned well. d. Abandoned well last operated (m)_____/(d)_____/(y)_____
   e. Original well pump column size _____ inches. f. Completion of original well abandonment on (m)___/(d___/(y)___
   g. Location of water use of abandoned well _____

Q130442A

8. Pump Information.

a. Is pump installed at this time Yes __X__No

Is pump installed by well owner in section 1? ____Yes ____No Is pump installed by contractor in section 2? ____Yes ____No

If pump installed by pump installer, please fill out license number below

b. Pump Installer's License No. _____ Pump Installer's Name _____

Pump Installer's Email Address _____

Pump Installer's Firm Name _____

Pump Installer's Firm Address _____

City _____ State _____ Zip _____ Telephone _____

Pump Installer's Firm Email Address _____

c. Pumping rate _____ gallons per minute _____ Measured _____ Estimated

d. Drop pipe diameter _____ inches e. Length of drop pipe _____ feet

f. Pumping equipment installed (m)___/(d___/(y)____ g. Pump Brand _____

h. This well will be used to pump less than 50 gpm ____Yes ____No

9. Well Construction Information.

a. Total well depth _____~ 14_____ feet. h. Static water level _____~ 8.4_____ feet.

c. Pumping water level _____NA_____ feet d. Well Construction began (month)___9___/(day)__7_/(year_2004

e. Well Construction completed (month)__9____/(day)_8_/(year__2004_ f. Bore hole diameter in inches Top 6.5 Bottom 6.5

g. Casing and Screen Joints are Welded _____ Glued _____ Threaded ___X_____Other _____

10. Well Construction (Casing & Screen)- c, d, e, & g measurements should be in inches to three decimal places

a		b	c	d	e	f	g	h
Placement Depth in Feet		Casing or Screen	Inside Diameter	Outside Diameter	Wall Thickness	Type of Material	Screen Slot Size	Trade Name
From	To							
0	4	Casing	2.047	2.375	0.328	PVC	N/A	Johnson Screens
4	15	Screen	2.000	2.560	0.560	PVC	0.010	Johnson Screens

11. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		
0	2	Bentonite	3/8" Bentonite Holeplug
2	14	Gravel Pack	12-20 Sand

12. Geologic Materials Logged

Depth in Feet From	To	Description	See Attached Boring Log	Depth in Feet From	To	Description

(Additional sheets may be submitted)

13. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature

10-13-04
Date

G130442A

LOG OF BORING NO. MW-1

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-7-04	9-7-04	CME-75	4.25" HSA
SURFACE TYPE	**TOTAL DEPTH (FT.)**		
Berm/Soybean Field	14		

WATER LEVEL OBSERVATIONS (FT.)

▽ 7.5 ATD

▼ 8.4 @ 1 Day AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER
1	2S	24		4.5+				
2	2S	24		4.5+				
3	2S	15		2.6				
4	2S	24		1.8 2.8				
5	2S	16		-				
6	2S	18		-				
7	2S	18		-				

DESCRIPTION **Surface Elevation: 918.0**

DEPTH, FT.		
	Hard/Medium Dense, Slightly Moist, Mixed Low Plastic Silty Clay/Silt/and Poorly Graded Silty Sand, Very Fine Grained (CL/ML/SM) (Berm Fill)	
5.0		913.0
5	Very Stiff, Moist, Dark Grayish Brown, Low Plastic Silty Clay (CL) (Alluvium)	
7.0		911.0
7.5	Very Stiff, Very Moist, Grayish Brown, Silt (ML) (Alluvium) ▽ ▼	910.5
	Loose, Wet, Grayish to Yellowish Brown, Silty Clay, Very Fine Grained (SM) (Alluvium)	
10	Becomes Less Silty (SP-SM/SP)	
	Becomes Very Fine to Fine-Grained, Poorly Graded Sand with Occasional Layer of Silty Sand (SP/SP-SM)	
14.0	Becomes Very Silty (SM), Very Fine Grained, with Some Interbeds of Sandy Silt (ML)	904.0
	Bottom of Boring @ 14'	
	Well Completed Using 3' Stick Up and Concrete Pad	

WELL LOG

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

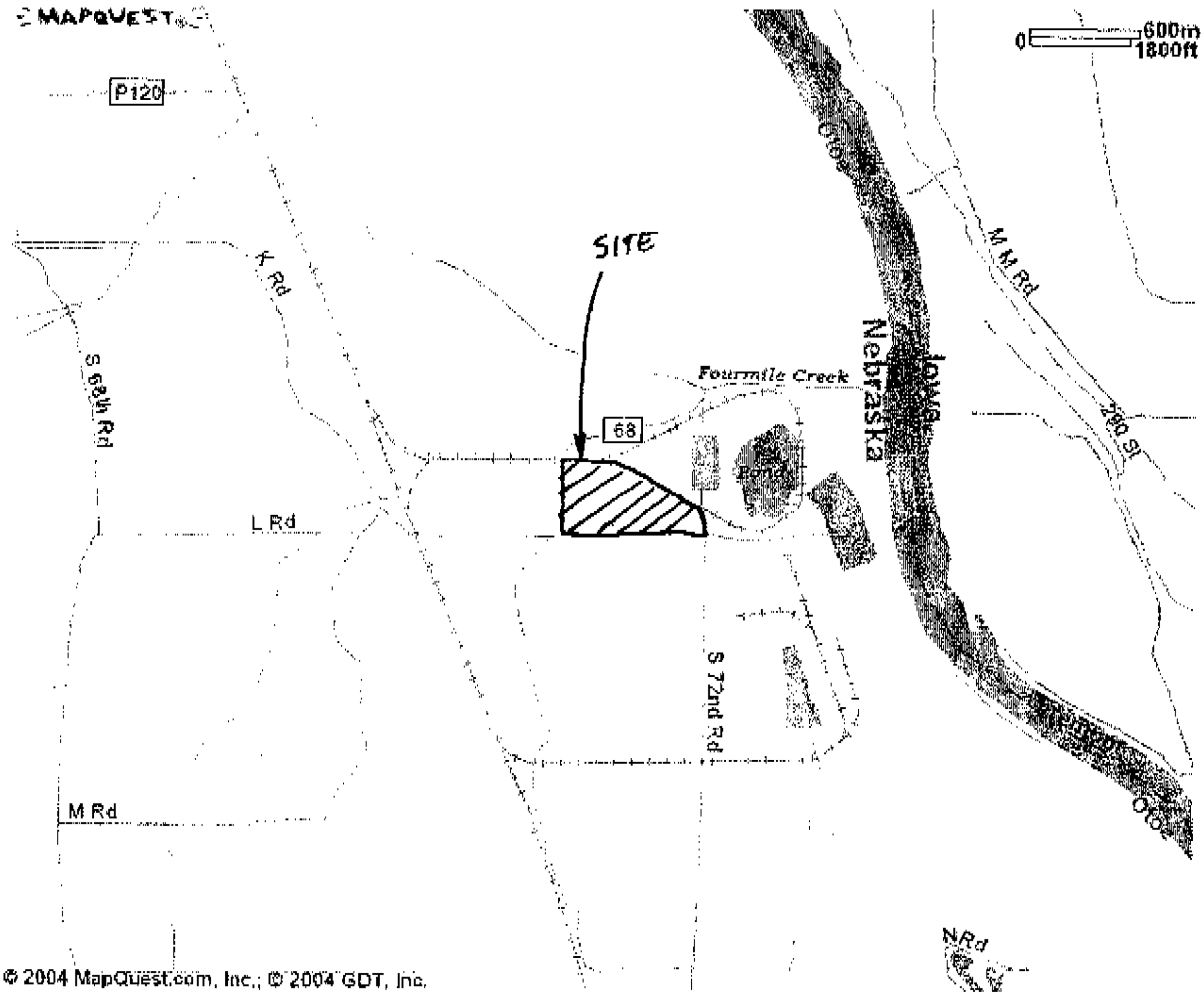
KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

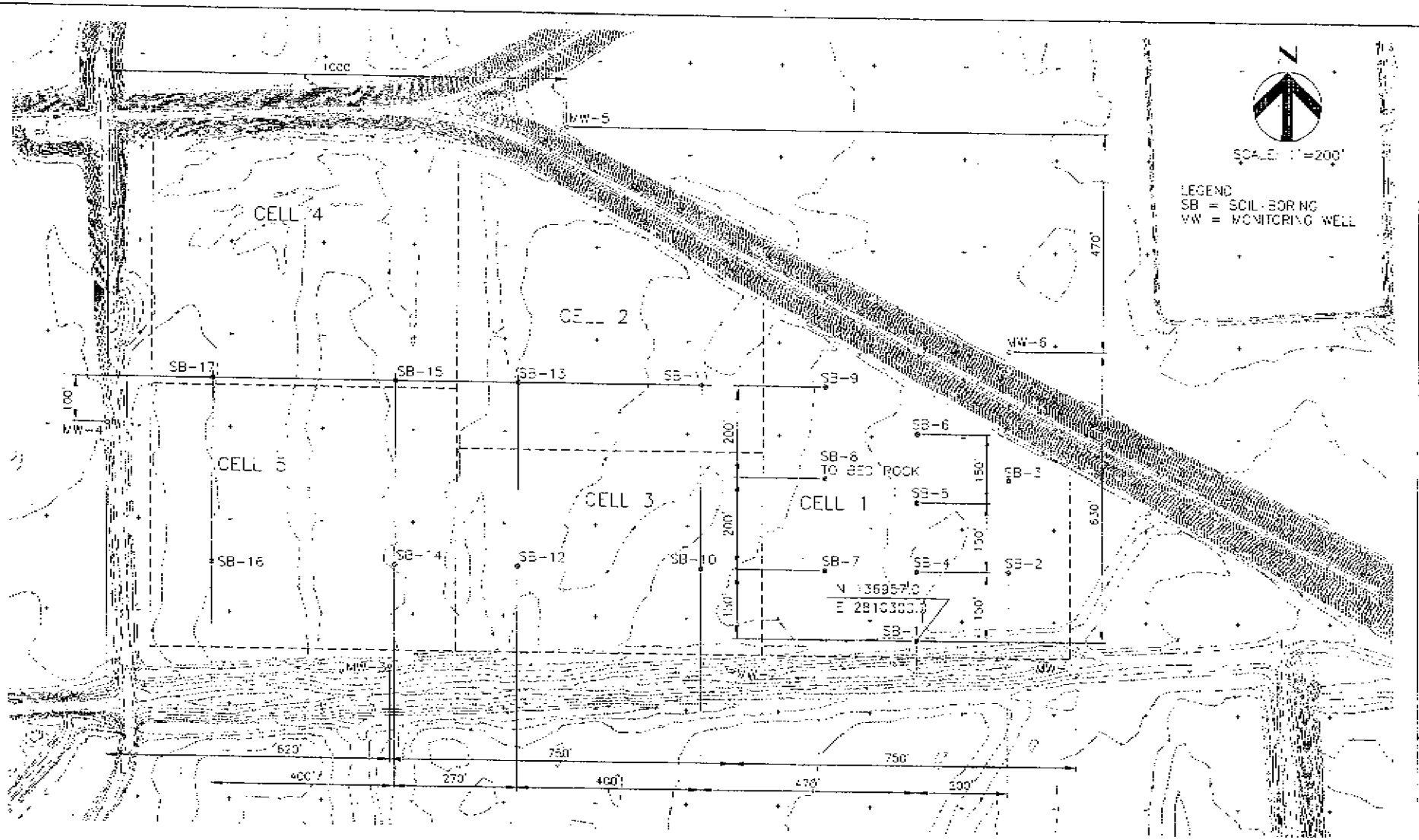
PROJECT NAME	LOCATION	PROJECT NUMBER
OPPD Flyash Monofill	Nebraska City, Nebraska	47962

Nebraska City NE
US

Notes:



SITE LOCATION PLAN



HDR

Soil Borings

WELL LOCATION PLAN

OPPD Nebraska City Station Unit 2

DATE 7/16/04

FIGURE EED-1

6130442

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Submit To:
Department of Natural Resources
301 Centennial Mall South
PO Box 94676
Lincoln, Nebraska 68509-4676
Phone: (402) 471-2363

Oct 2007
DNR DECO

This form is required to be filed within **60 days** of decommissioning of the water well

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES

NOTICE OF WATER WELL DECOMMISSIONING

FOR DEPARTMENT USE ONLY

Date Filed 1/8/14 Owner Code No. 49927 Registration No. G-130442A

01082014 - 162824 - DECF Receipt _____ NEMAHA NRD

Well ID

1. Well Owner's First Name _____ Last Name _____
OR Company Name Omaha Public Power District
Attention Name Patrick Finigan
Address 444 South 16th Street Mall
City Omaha State NE Zip 68102 Telephone _____

2. Contractor (if applicable) Terracon Consultants, Inc. Telephone Number (402) 330-2202
Address 15080 A Circle Contractor License No. 39325
City Omaha State NE Zip 68144
Email: dmsvingen@terracon.com

3 a. Well Registration No. G-130442A

3 b. Purpose of Well: Monitoring Well

3 c. Date Well Last Operated: _____ 3d. Date of Decommissioning: 11/6/13

3 e. List complete well location: Legal, Footage and/or GPS Coordinates
Well Location: SE 1/4 of the SE 1/4 of Section 25, Township 8 North, Range 14 E ☑ W ☐, Otoe County.
The well is _____ feet from the (N ☐ S ☐) section line and _____ feet from the (E ☐ W ☐) section line

OR Latitude Degree: 40 Minute: 37 Second: 29 . 0
Longitude Degree: 95 Minute: 47 Second: 04 . 0

3 f. Location of water use Not Applicable

4. Actual Method for Decommissioning of Well

Placement Depth in Feet		Detailed Description of Material
From	To	
0	0.5	gravel/dirt
0.5	0.5	PVC cap
0.5	14	Bentonite grout

5 a. Well casing Size: 2" 5 b. Bore Hole Diameter: 6.5" (from well registration form)

I hereby certify that the information provided on this form is true and accurate to the best of my knowledge.

Daniel M Svingen
Contractor (**owner)

1/5/14
Date

** Owner may sign on wells prior to 7/1/2001 of sandpoint or if well no longer exists and it is unknown when decommissioning occurred

RECEIVED
JAN 08 2014
DEPARTMENT OF NATURAL RESOURCES

The Department reserves the right to request verification of the information provided.

UG No. (if applicable): Terracon Job No.: 05137163 Terracon Well ID: MW-1

State of Nebraska

01172014-162824-coff(1)

NOTICE OF WATER WELL DECOMMISSIONING UPDATE

Registration Number G-130442A

Sequence Number 162824

Date January 17, 2014

Person Processing Update BJ Green

Information regarding the water well referenced above has been changed in the Department's water well registration records. Please note the following changes and the reason changes were made:

This well is located in subsection NENE, section 36, township 8, range 14. It is within the 150' allowance, as it is 39' south of the line separating the SESE of section 25 and the NENE of section 36.

This change has modified Items 3e of DNR DECO. If these changes are inaccurate, please contact the Department of Natural Resources at P.O. Box 94676, Lincoln, NE, 68509-4676, phone (402) 471-2363.

I certify that this update has been forwarded to the owner of the referenced water well and is now a part of the registration records.

Department of Natural Resources

LOG OF BORING NO. MW-2

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-8-04	9-8-04	CME-75	4.25" HSA
		SURFACE TYPE	**TOTAL DEPTH (FT.)**
		Cornfield/Berm	15

WATER LEVEL OBSERVATIONS (FT.)

▽ 7.7 ATD

▼ 10.6 AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER	GRAPHIC LOG	DEPTH, FT.	DESCRIPTION	Surface Elevation: 919.0	WELL LOG
1	2S	18		3.8							Very Stiff, Slightly Moist, Dark Gray to Yellowish Brown, Low, Medium & High Plastic Clay (CL/CH) (Berm Fill)		
2	2S	14		2.6									
											4.2	914.8	
3	2S	16		1.6						5	Stiff, Moist, Grayish Brown, High Plastic Clay (CH) (Alluvium)		
											6.0	913.0	
4	2S	24									Loose, Wet, Grayish Brown, High Plastic Clay (CH) (Alluvium) ▽		
5	2S	24		0.3							Becomes Soft/Loose, Wet, Brown-Grayish Brown, Interbedded Sandy Silt, Silty Very Fine Sand, and Low Plastic Clay with Some Sand (CL/SM/CL) - Clay Layer @ 8.5-9.5 ▼		
6	2S	21								10	Becomes Loose/Soft, Wet, Grayish Brown, Silty Sand, Very Fine Grained to Sandy Silt (SM/ML) (Alluvium)		
7	2S	21									Becomes Loose, Wet, Gray, Poorly Graded Sand with Some Silt (SP/SP-SM) (Alluvium)		
											15.0	904.0	
										15	Bottom of Boring @ 15'		
											Well Completed Using 3' Stick Up and Concrete Pad		

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME	LOCATION	PROJECT NUMBER
OPPD Flyash Monofill	Nebraska City, Nebraska	47962

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Mail to
DNR
PO Box 94676
Lincoln, NE 68509-4676

Phone (402)471-2363

10262004-162825 WWRF

Department of Natural Resources (3) October 2001 DNR Form 145

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 10-26-2004 Sequence No. 162825 Registration No. G-130442B
Owner Code No. 40226 Receipt No. R16991 Omaha NRD

1. a. Well Owner's First Name _____ Last Name _____
   b. Company Name Omaha Public Power District
   c. Correspondent Name Omaha Public Power District Attention James J Krajicek
   Address 444 South 16th Street Mall
   City Omaha State NE Zip 68102 Telephone (402) 636-2309

2. a. Contractor's License No 19245 Contractor's Name Kleinfelder
   Contractor's Email Address locoabel@cox.net
   b. Drilling Firm Name Kleinfelder
   Address 9312 G Court
   City Omaha State NE Zip 68127 Telephone (402) 331-2260
   Drilling Firm's Email Address bhavens@kleinfelder.com

3. a. Well location SE ¼ of the SE ¼ of Section 25, Township 8 North, Range 14 East/West, Otoe County.
   b. Natural Resources District Nemaha NRD
   c. The well is _____ feet from the (North/ South) section line and _____ feet from the (East/West) section line
   (circle one) (circle one)
   or Latitude Degree 40 Minute 37 Second 29
   Longitude Degree 95 Minute 47 Second 12
   d. Street address and subdivision, if applicable _____
   Block _____ Lot _____
   e. Location of water use, if applicable (give legal descriptions) _____
   f. If for irrigation, the land to be irrigated is _____ acres.
   g. Well reference letter(s), if applicable MW-2

4. Permits
   Management Area Permit Number _____
   Geothermal Permit Number _____
   Municipal Permit Number _____
   Well Spacing Permit Number _____
   Surface Water Permit Number _____
   Industrial Permit Number _____
   Transfer Out-Of-State Permit Number _____
   Conduct Permit Number _____
   Other Permit Number _____

5. Purpose of well (indicate one) ____Aquaculture Commercial/Industrial ____Dewatering (over 90 days)
   ____Domestic ____Ground Heat Exchanger Groundwater Source Heat Pump ____Irrigation ____Injection
   ____Livestock __X__Monitoring ____Observation ____Public Water Supply (with spacing (46-638))
   ____Public Water Supply (without spacing) Recovery ____Other _____
   (indicate use)

6. Wells in a Series.
   a. Is this well a part of a series? __yes Yes go to part b of this section ____No go to part 7 of this application
   b. If one or more of the wells in the series is currently registered, give the well registration number ____NA_____
   c. How many wells in the series are you registering at this time? 6

7. Replacement and abandoned well information.
   a. Is this well a replacement well? ____Yes __X__No
   b. Registration number of abandoned well _____ If not registered, date abandoned well was constructed (m)___/(d___/(y)___
   c. Replacement well is _____ feet from abandoned well. d. Abandoned well last operated (m)_____/(d)_____/(y)_____
   e. Original well pump column size _____ inches. f. Completion of original well abandonment on (m)___/(d___/(y)
   g. Location of water use of abandoned well _____

G130442B

8. Pump Information.

a. Is pump installed at this time Yes X No

Is pump installed by well owner in section 1? Yes No Is pump installed by contractor in section 2? Yes No

If pump installed by pump installer, please fill out license number below

b. Pump Installer's License No. Pump Installer's Name

Pump Installer's Email Address

Pump Installer's Firm Name

Pump Installer's Firm Address

City State Zip Telephone

Pump Installer's Firm Email Address

c. Pumping rate gallons per minute Measured Estimated

d. Drop pipe diameter inches e. Length of drop pipe feet

f. Pumping equipment installed (m)/(d)/(y) g. Pump Brand

h. This well will be used to pump less than 50 gpm Yes No

9. Well Construction Information.

a. Total well depth ~ 15 feet. b. Static water level ~ 10.6 feet.

c. Pumping water level NA feet d. Well Construction began (month) 9 /(day) 8 /(year) 2004

e. Well Construction completed (month) 9 /(day) 9 /(year) 2004 f. Bore hole diameter in inches Top 6.5 Bottom 6.5

g. Casing and Screen Joints are Welded Glued Threaded X Other

10. Well Construction (Casing & Screen)- c, d, e, & g measurements should be in inches to three decimal places

a		b	c	d	e	f	g	h
Placement Depth in Feet		Casing or Screen	Inside Diameter	Outside Diameter	Wall Thickness	Type of Material	Screen Slot Size	Trade Name
From	To							
0	5	Casing	2.047	2.375	0.328	PVC	N/A	Johnson Screens
5	15	Screen	2.000	2.560	0.560	PVC	0.010	Johnson Screens

11. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		
0	3	Bentonite	3/8" Bentonite Holeplug
3	15	Gravel Pack	12-20 Sand

12. Geologic Materials Logged

Depth in Feet From	To	Description	See Attached Boring Log	Depth in Feet From	To	Description

(Additional sheets may be submitted)

13. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature

10-13-04
Date

G130442B

LOG OF BORING NO. MW-2

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-8-04	9-8-04	CME-75	4.25" HSA

SURFACE TYPE	TOTAL DEPTH (FT.)
Cornfield/Berm	15

WATER LEVEL OBSERVATIONS (FT.)

▽ 7.7 ATD

▼ 10.6 AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER
1	2S	18		3.8				
2	2S	14		2.6				
3	2S	16		1.6				
4	2S	24						
5	2S	24		0.3				
6	2S	21						
7	2S	21						

DESCRIPTION **Surface Elevation: 919.0**

DEPTH, FT.	
	Very Stiff, Slightly Moist, Dark Gray to Yellowish Brown, Low, Medium & High Plastic Clay (CL/CH) (Berm Fill)
4.2	914.8
5	Stiff, Moist, Grayish Brown, High Plastic Clay (CH) (Alluvium)
6.0	913.0
	Loose, Wet, Grayish Brown, High Plastic Clay (CH) (Alluvium) ▽
10	Becomes Soft/Loose, Wet, Brown-Grayish Brown, Interbedded Sandy Silt, Silty Very Fine Sand, and Low Plastic Clay with Some Sand (CL/SM/CL) - Clay Layer @ 8.5-9.5 ▼ Becomes Loose/Soft, Wet, Grayish Brown, Silty Sand, Very Fine Grained to Sandy Silt (SM/ML) (Alluvium) Becomes Loose, Wet, Gray, Poorly Graded Sand with Some Silt
15.0	(SP/SP-SM) (Alluvium) 904.0
15	Bottom of Boring @ 15'
	Well Completed Using 3' Stick Up and Concrete Pad

WELL LOG

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

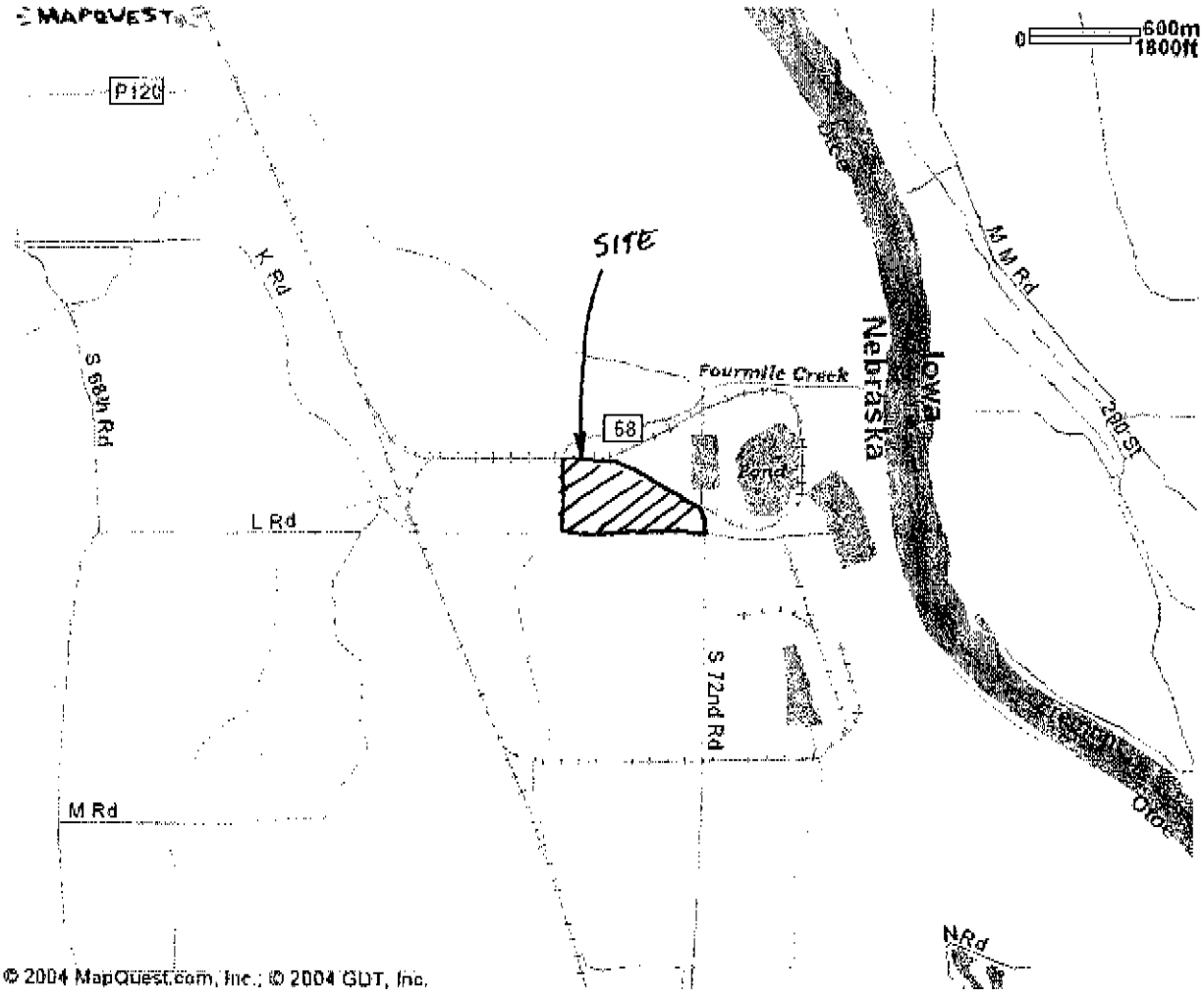
PROJECT NAME	OPPD Flyash Monofill
LOCATION	Nebraska City, Nebraska
PROJECT NUMBER	47962

MAPQUEST

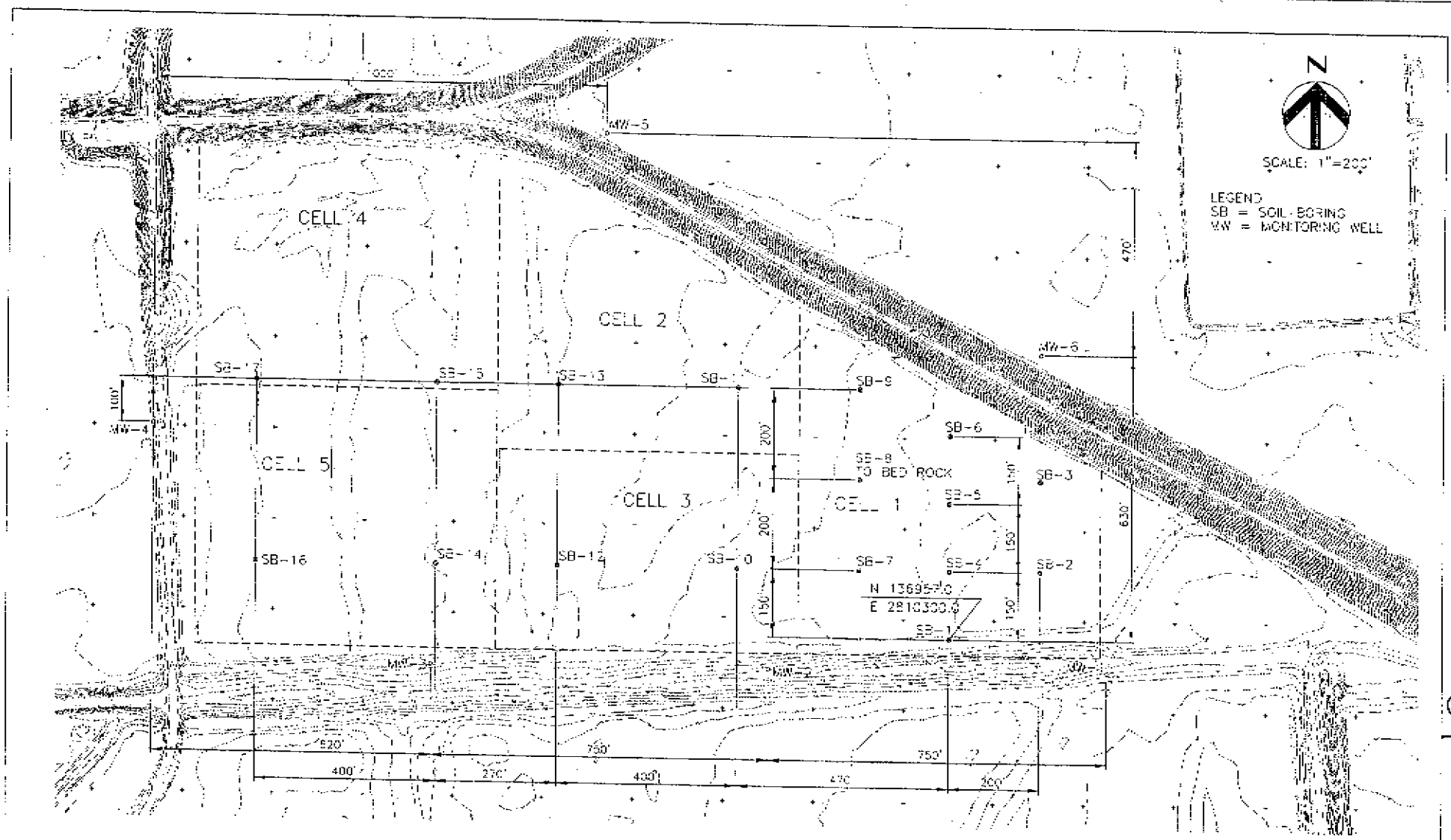
Send To Printer Back to Map

Nebraska City NE
US

Notes:



SITE LOCATION PLAN



HDR

Soil Borings

WELL LOCATION PLAN

OPPD Nebraska City Station Unit 2

DATE 7/16/04

FIGURE SEC-1

6130442

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LOG OF BORING NO. MW-3

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-8-07	9-8-04	CME-75	4.25" HSA

SURFACE TYPE	TOTAL DEPTH (FT.)
Cornfield	12

WATER LEVEL OBSERVATIONS (FT.)

▽ 3.5 ATD

▼ 3.8 AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER	GRAPHIC LOG	DEPTH, FT.
1	2S	13		1.2						
2	2S	24								
3	2S	24								5
4	2S	24								
5	2S	24								
6	2S	24								10

DESCRIPTION **Surface Elevation: 913.0**

1.0 — 912.0

Stiff, Moist, Very Dark Grayish Brown to Yellowish Brown, Medium to High Plastic Clay (CL/CH) (Topsoil)

Loose, Very Moist, Light Brown, Poorly Graded Sand, Very Fine to Fine-Grained (SP) (Alluvium) ▼

Becomes Wet and Mostly Fine-Grained

Becomes Medium Dense

Becomes Loose

12.0 — 901.0

Bottom of Boring @ 12'

Well Completed Using 3' Stick Up and Concrete Pad

WELL LOG

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9313 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME	LOCATION	PROJECT NUMBER
OPPD Flyash Monofill	Nebraska City, Nebraska	47962

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Lincoln, NE 68509-4676

Phone (402)471-2363

10262004-162826-WWRF (3)

Department of Natural Resources

October 2001
DNR Form 145

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 10-26-2004 Sequence No. 162826 Registration No. G-130442 C
Owner Code No. 40226 Receipt No. R16991 Omaha NRD

1. a. Well Owner's First Name _____ Last Name _____
   b. Company Name Omaha Public Power District
   c. Correspondent Name Omaha Public Power District Attention James J Krajicek
   Address 444 South 16th Street Mall
   City Omaha State NE Zip 68102 Telephone (402) 636-2309

2. a. Contractor's License No 19245 Contractor's Name Kleinfelder
   Contractor's Email Address locoabel@cox.net
   b. Drilling Firm Name Kleinfelder
   Address 9312 G Court
   City Omaha State NE Zip 68127 Telephone (402) 331-2260
   Drilling Firm's Email Address bhavens@kleinfelder.com

3. a. Well location SW ¼ of the SE ¼ of Section 25, Township 8 North, Range 14 East/West, Otoe County.
   b. Natural Resources District Nemaha NRD
   c. The well is _____ feet from the (North/ South) section line and _____ feet from the (East/West) section line
   (circle one) (circle one)
   or Latitude Degree 40 Minute 37 Second 30
   Longitude Degree 95 Minute 47 Second 21
   d. Street address and subdivision, if applicable _____
   Block _____ Lot _____
   e. Location of water use, if applicable (give legal descriptions) _____
   f. If for irrigation, the land to be irrigated is _____ acres.
   g. Well reference letter(s), if applicable MW-3

4. Permits
   Management Area Permit Number _____
   Geothermal Permit Number _____
   Municipal Permit Number _____
   Well Spacing Permit Number _____
   Surface Water Permit Number _____
   Industrial Permit Number _____
   Transfer Out-Of-State Permit Number _____
   Conduct Permit Number _____
   Other Permit Number _____

5. Purpose of well (indicate one) ____Aquaculture ____Commercial/Industrial ____Dewatering (over 90 days)
   ____Domestic ____Ground Heat Exchanger ____Groundwater Source Heat Pump ____Irrigation ____Injection
   ____Livestock __X__Monitoring ____Observation ____Public Water Supply (with spacing (46-638))
   ____Public Water Supply (without spacing) ____Recovery ____Other _____
   (indicate use)

6. Wells in a Series.
   a. Is this well a part of a series? ___yes__Yes go to part b of this section ___No go to part 7 of this application
   b. If one or more of the wells in the series is currently registered, give the well registration number ____NA_____
   c. How many wells in the series are you registering at this time? 6

7. Replacement and abandoned well information.
   a. Is this well a replacement well? ____Yes __X__No
   b. Registration number of abandoned well _____ If not registered, date abandoned well was constructed (m)___/(d___/(y)___
   c. Replacement well is _____ feet from abandoned well. d. Abandoned well last operated (m)___/(d)___/(y)___
   e. Original well pump column size _____ inches. f. Completion of original well abandonment on (m)___/(d___/(y)___
   g. Location of water use of abandoned well _____

Q130442C

8. Pump Information.

a. Is pump installed at this time ___Yes ___X__No

Is pump installed by well owner in section 1? ___Yes ____No Is pump installed by contractor in section 2? ___Yes _____No

If pump installed by pump installer, please fill out license number below

b. Pump Installer's License No._____ Pump Installer's Name_____

Pump Installer's Email Address_____

Pump Installer's Firm Name_____

Pump Installer's Firm Address_____

City___ _____ State _____Zip_____ Telephone _____

Pump Installer's Firm Email Address_____

c. Pumping rate _____ gallons per minute _____ Measured _____ Estimated

d. Drop pipe diameter _____ inches e. Length of drop pipe _____ feet

f. Pumping equipment installed (m)___/(d ___/(y)___ g. Pump Brand_____

h. This well will be used to pump less than 50 gpm ____Yes ____No

9. Well Construction Information.

a. Total well depth _____-- 11_____ feet. b. Static water level _____-- 3.8_____ feet.

c. Pumping water level ____ NA _____ feet d. Well Construction began (month)___9___/(day)___8_/(year_2004

e. Well Construction completed (month)___9____/(day)_9_/(year_2004_ f. Bore hole diameter in inches Top 6.5 Bottom 6.5

g. Casing and Screen Joints are Welded _____ Glued _____ Threaded ___X_____ Other _____

10. Well Construction (Casing & Screen)- c, d, e, & g measurements should be in inches to three decimal places

a		b	c	d	e	f	g	h
Placement Depth in Feet		Casing or Screen	Inside Diameter	Outside Diameter	Wall Thickness	Type of Material	Screen Slot Size	Trade Name
From	To							
0	2	Casing	2.047	2.375	0.328	PVC	N/A	Johnson Screens
2	11	Screen	2.000	2.560	0.560	PVC	0.010	Johnson Screens

11. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		
0	1	Bentonite	3/8" Bentonite Holeplug
1	11	Gravel Pack	12-20 Sand

12. Geologic Materials Logged

Depth in Feet From	To	Description	See Attached Boring Log	Depth in Feet From	To	Description

(Additional sheets may be submitted)

13. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature

10-13-04
Date

G130442C

LOG OF BORING NO. MW-3

BORLHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-8-07	9-8-04	CME-75	4.25" HSA
		SURFACE TYPE	**TOTAL DEPTH (FT.)**
		Cornfield	12

WATER LEVEL OBSERVATIONS (FT.)

▽ 3.5 ATD

▼ 3.8 AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER	GRAPHIC LOG	DEPTH, FT.	DESCRIPTION	Surface Elevation: 913.0	WELL LOG
1	2S	13		1.3							1.0 Stiff, Moist, Very Dark Grayish Brown to Yellowish Brown, Medium to High Plastic Clay (CL/CH) (Topsoil)	912.0	
2	2S	24									Loose, Very Moist, Light Brown, Poorly Graded Sand, Very Fine to Fine-Grained (SP) (Alluvium) ▽		
3	2S	24								5	Becomes Wet and Mostly Fine-Grained		
4	2S	24									Becomes Medium Dense		
5	2S	24									Becomes Loose		
6	2S	24								10			
											12.0	901.0	
											Bottom of Boring @ 12'		
											Well Completed Using 3' Stick Up and Concrete Pad		

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

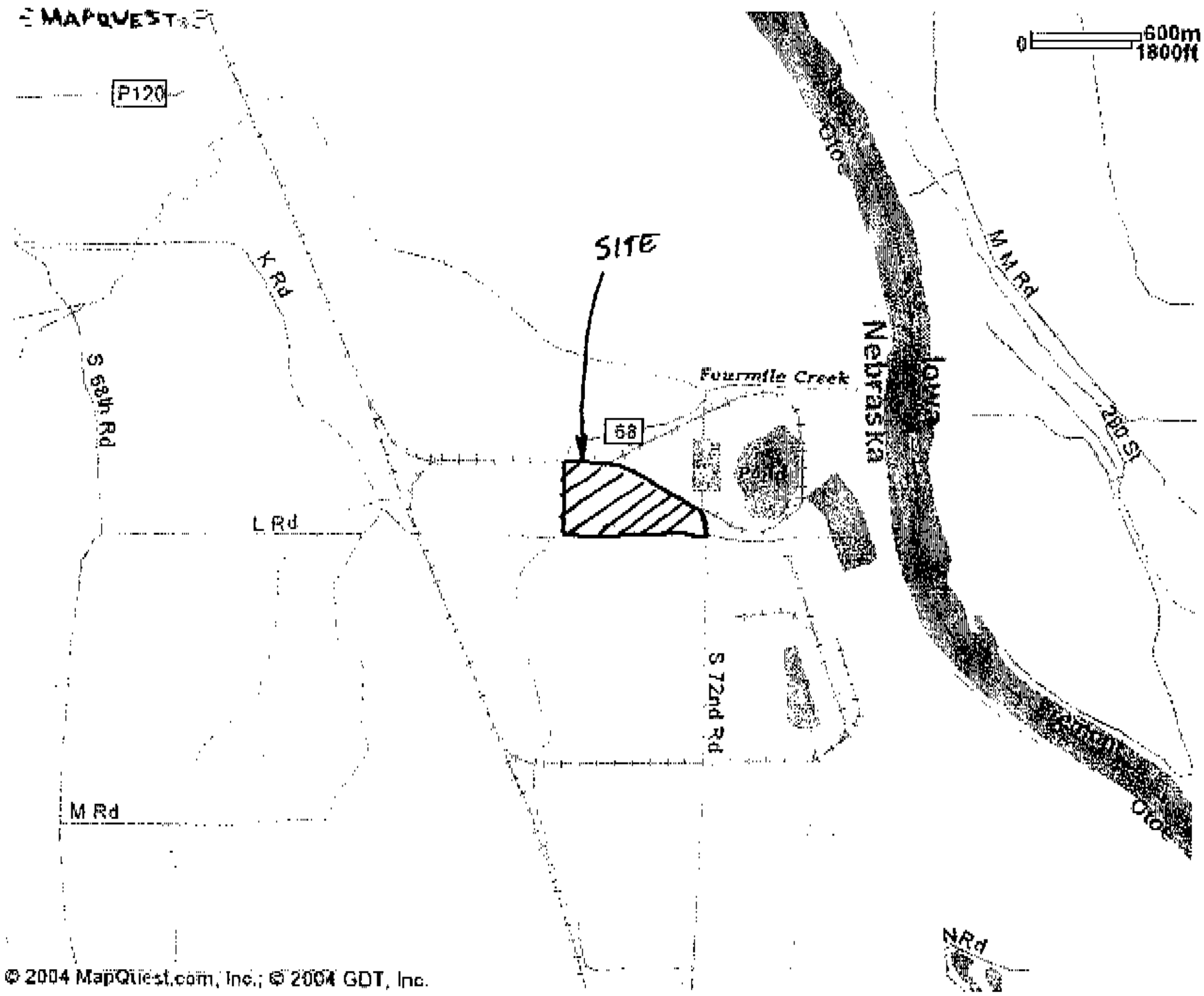
9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME	LOCATION	PROJECT NUMBER
OPPD Flyash Monofill	Nebraska City, Nebraska	47962

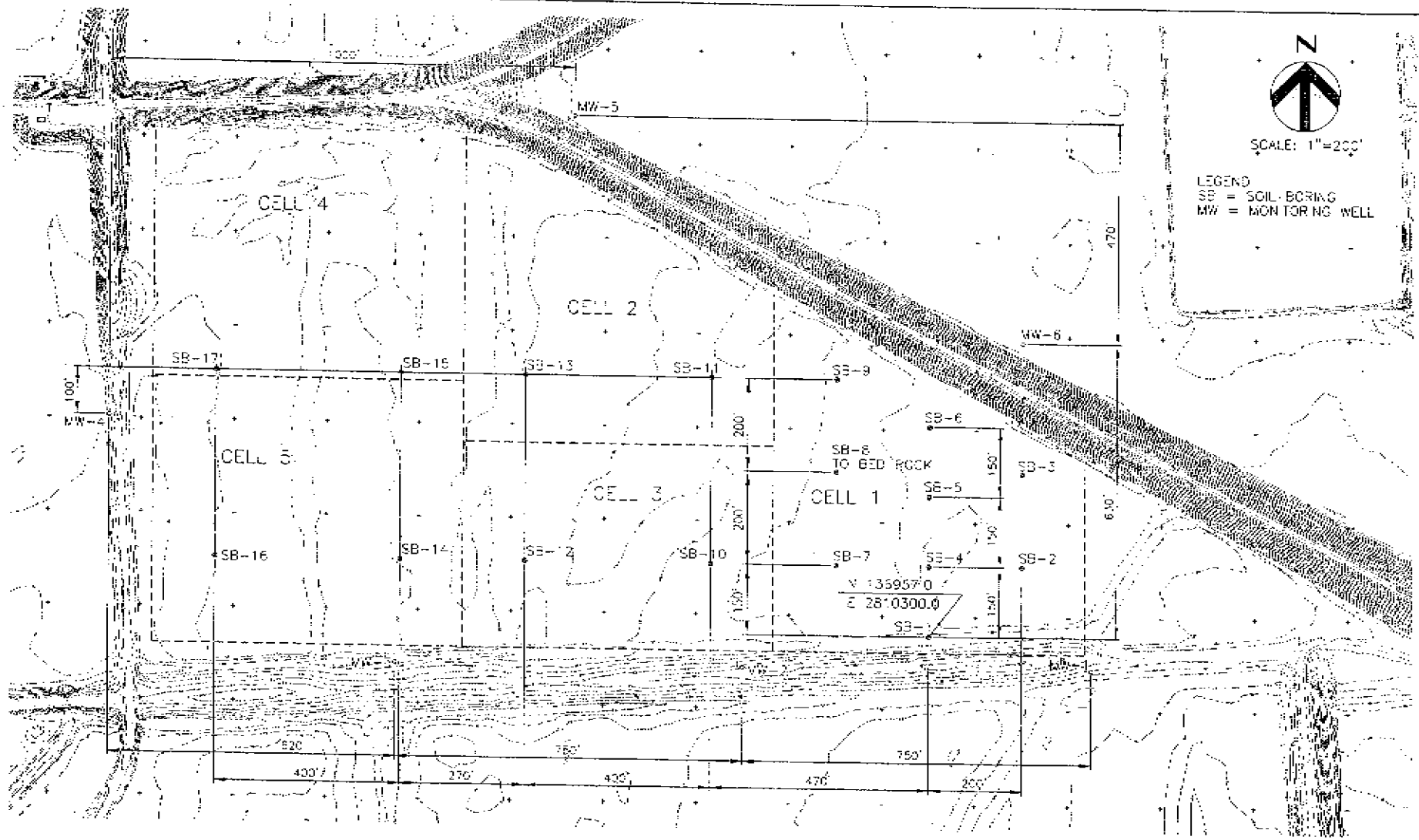
Send To Printer Back to Map

Nebraska City NE
US

Notes:



SITE LOCATION PLAN



HDR

Soil Borings

WELL LOCATION PLAN

OPPD Nebraska City Station Unit 2

DATE 7/16/04

FIGURE SEC-1

6130442

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LOG OF BORING NO. MW-4

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-9-04	9-10-04	CME-75	4.25" HSA

SURFACE TYPE: Weedy, Grassy Shoulder of Gravel Road

TOTAL DEPTH (FT.): 14

WATER LEVEL OBSERVATIONS (FT.)

▽ 8.0 ATD

▼ 6.1 @ 1 Day AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER
1	2S	16		3.0				
2	2S	5		2.1				
3	2S	18		2.6 4.5+				
4	2S	24		0.5				
5	2S	24						

GRAPHIC LOG / DEPTH, FT. / WELL LOG

DESCRIPTION — **Surface Elevation: 916.5**

Very Stiff, Moist, Light Brown to Grayish Brown, Low Plastic Silty Clay to Silt (CL) (Roadbed Fill)

5.0 — 911.5

6.0 — 910.5 — Hard, Slightly Moist, Dark Brownish Gray, Low Plastic Silty Clay (CL) (Buried Soil)

Firm to Soft, Well Completed Using 3' Stick Up and Concrete Padery Moist, ▽ Grayish Brown, Silt with Very Fine Sand to Silty Very Fine Sand (ML/SM) (Alluvium)

9.0 — 907.5

Becomes Wet

Loose, Wet, Grayish Brown, Poorly Graded Sand with Some Silt, Very Fine-Grained (SP/SP-SM) (Alluvium)

14.0 — 902.5

Bottom of Boring @ 14' in Sandy Alluvium

Well Completed Using 3' Stick Up and Concrete Pad

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME: OPPD Flyash Monofill

LOCATION: Nebraska City, Nebraska

PROJECT NUMBER: 47962

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Mail to
DNR
PO Box 94676
Lincoln, NE 68509-4676

Phone (402)471-2363

10262004-162827-WWRF

Department of Natural Resources (3)

October 2001
DNR Form 145

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 10-26-2004 Sequence No. 162827 Registration No. G-130442D
Owner Code No. 40236 Receipt No. B16991 Omaha NRD

1. a. Well Owner's First Name _____ Last Name _____
   b. Company Name Omaha Public Power District
   c. Correspondent Name Omaha Public Power District Attention James J. Krajicek
   Address 444 South 16th Street Mall
   City Omaha State NE Zip 68102 Telephone (402) 636-2309

2. a. Contractor's License No 19245 Contractor's Name Kleinfelder
   Contractor's Email Address locoabel@cox.net
   b. Drilling Firm Name Kleinfelder
   Address 9312 G Court
   City Omaha State NE Zip 68127 Telephone (402) 331-2260
   Drilling Firm's Email Address bhavens@kleinfelder.com

3. a. Well location SW ¼ of the SE ¼ of Section 25, Township 8 North, Range 14 East/West, Otoe County.
   b. Natural Resources District _____ Nemaha NRD
   c. The well is _____ feet from the (North/ South) section line and _____ feet from the (East/West) section line
   (circle one) (circle one)
   or Latitude Degree 40 Minute 37 Second 37
   Longitude Degree 95 Minute 47 Second 32
   d. Street address and subdivision, if applicable _____
   Block _____ Lot _____
   e. Location of water use, if applicable (give legal descriptions) _____
   f. If for irrigation, the land to be irrigated is _____ acres.
   g. Well reference letter(s), if applicable MW-4

4. Permits
   Management Area Permit Number _____
   Geothermal Permit Number _____
   Municipal Permit Number _____
   Well Spacing Permit Number _____
   Surface Water Permit Number _____
   Industrial Permit Number _____
   Transfer Out-Of-State Permit Number _____
   Conduct Permit Number _____
   Other Permit Number _____

5. Purpose of well (indicate one) ____Aquaculture ____Commercial/Industrial ____Dewatering (over 90 days)
   ____Domestic ____Ground Heat Exchanger ____Groundwater Source Heat Pump ____Irrigation ____Injection
   ____Livestock __X__Monitoring ____Observation ____Public Water Supply (with spacing (46 638))
   ____Public Water Supply (without spacing) ____Recovery ____Other _____
   (indicate use)

6. Wells in a Series.
   a. Is this well a part of a series? __yes Yes go to part b of this section ____No go to part 7 of this application
   b. If one or more of the wells in the series is currently registered, give the well registration number ____NA_____
   c. How many wells in the series are you registering at this time? 6

7. Replacement and abandoned well information.
   a. Is this well a replacement well? ____Yes X No
   b. Registration number of abandoned well _____ If not registered, date abandoned well was constructed (m)____/(d____/(y)____
   c. Replacement well is _____ feet from abandoned well. d. Abandoned well last operated (m)____/(d)____/(y)____
   e. Original well pump column size _____ inches. f. Completion of original well abandonment on (m)____/(d____/(y)____
   g. Location of water use of abandoned well _____

G130442D

8. Pump Information.

a. Is pump installed at this time __ Yes ___X__No

Is pump installed by well owner in section 1? ____Yes ____No Is pump installed by contractor in section 2? ____Yes _____No

If pump installed by pump installer, please fill out license number below

b. Pump Installer's License No. _____ Pump Installer's Name _____

Pump Installer's Email Address _____

Pump Installer's Firm Name _____

Pump Installer's Firm Address _____

City_ _____ _____ State _____Zip_____ _____ Telephone _____

Pump Installer's Firm Email Address _____

c. Pumping rate _____ gallons per minute _____ Measured _____ Estimated

d. Drop pipe diameter _____ _____ inches e. Length of drop pipe _____ feet

f. Pumping equipment installed (m)___/(t___/(y) _ g. Pump Brand _____

h. This well will be used to pump less than 50 gpm ____Yes ___ No

9. Well Construction Information.

a. Total well depth _____ ~ 14 _____ feet. b. Static water level _____~ 6.1_____ feet.

c. Pumping water level _NA_____ feet d. Well Construction began (month) ____/(day)___/(year 2004

e. Well Construction completed (month) _____/(day)___/(year 2004_ f. Bore hole diameter in inches Top_6.5___ Bottom____6.5

g. Casing and Screen Joints are Welded _____ Glued _____ Threaded ___X_____Other _____

10. Well Construction (Casing & Screen)- c, d, e, & g measurements should be in inches to three decimal places

a Placement Depth in Feet		b	c	d	e	f	g	h
From	To	Casing or Screen	Inside Diameter	Outside Diameter	Wall Thickness	Type of Material	Screen Slot Size	Trade Name
0	4	Casing	2.047	2.375	0.328	PVC	N/A	Johnson Screens
4	14	Screen	2.000	2.560	0.560	PVC	0.010	Johnson Screens

11. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		
0	2	Bentonite	3/8" Bentonite Holeplug
2	14	Gravel Pack	12-20 Sand

12. Geologic Materials Logged

Depth in Feet From	To	Description See Attached Boring Log	Depth in Feet From	To	Description

(Additional sheets may be submitted)

13. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature

10·13·04
Date

G130442D

LOG OF BORING NO. MW-4

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	BORING COMPLETED	DRILL RIG	DRILLING METHOD
			4.25" HSA

SURFACE TYPE: Weedy, Grassy Shoulder of Gravel Road

TOTAL DEPTH (FT.): 14

WATER LEVEL OBSERVATIONS (FT.)

▽ 8.0 ATD

▼ 6.1 @ 1 Day AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER	GRAPHIC LOG	DEPTH, FT.	DESCRIPTION	Surface Elevation: 916.5	WELL LOG
1	2S	16		3.0							Very Stiff, Moist, Light Brown to Grayish Brown, Low Plastic Silty Clay to Silt (CL) (Roadbed Fill)		
2	2S	5		2.1									
3	2S	18		2.6 4.5+						5	5.0	911.5	
4	2S	24		0.5							6.0 Hard, Slightly Moist, Dark Brownish Gray, Low Plastic Silty Clay (CL) (Buried Soil) ▼	910.5	
											Firm to Soft, Well Completed Using 3' Stick Up and Concrete Padery Moist, ▽ Grayish Brown, Silt with Very Fine Sand to Silty Very Fine Sand (ML/SM) (Alluvium)		
											9.0	907.5	
5	2S	24								10	Becomes Wet Loose, Wet, Grayish Brown, Poorly Graded Sand with Some Silt, Very Fine-Grained (SP/SP-SM) (Alluvium)		
											14.0	902.5	
											Bottom of Boring @ 14' in Sandy Alluvium Well Completed Using 3' Stick Up and Concrete Pad		

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME: OPPD Flyash Monofill

LOCATION: Nebraska City, Nebraska

PROJECT NUMBER: 47962

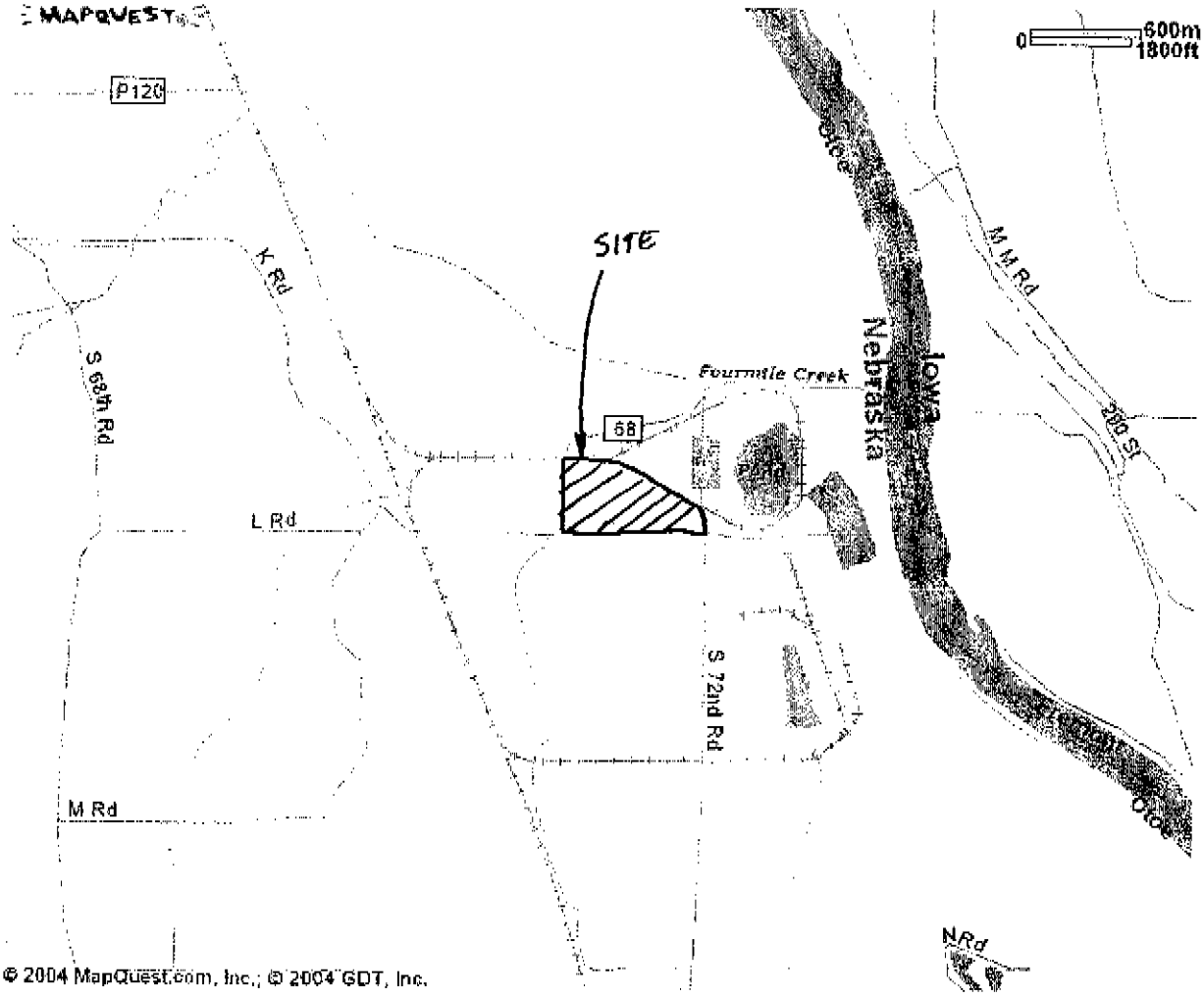
G130442

MAPQUEST

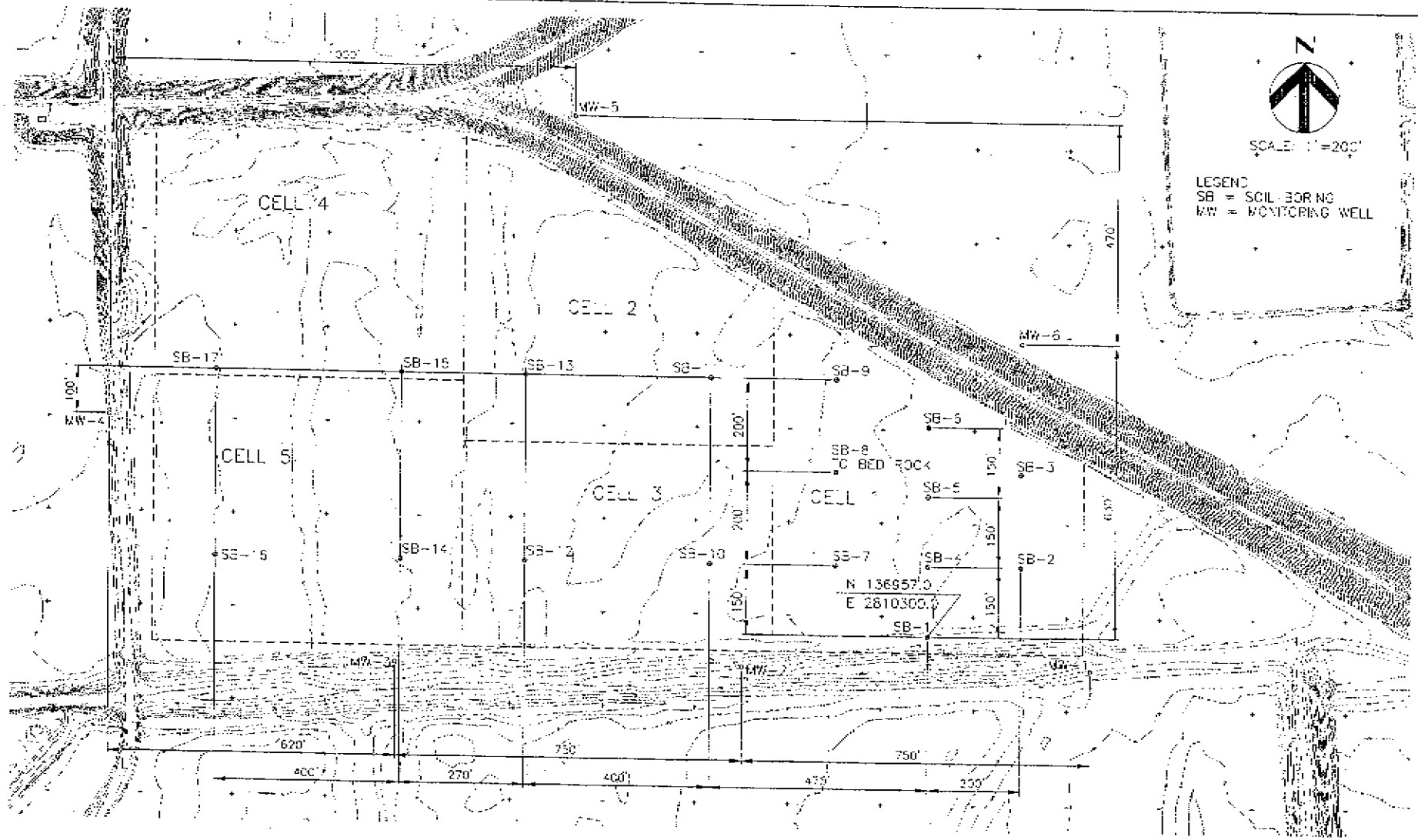
Send To Printer Back to Map

Nebraska City NE
US

Notes:



SITE LOCATION PLAN



HDR

Soil Borings

WELL LOCATION PLAN

CPPD Nebraska City Station Unit 2

DATE 7/15/04

FIGURE SEO-1

612042

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LOG OF BORING NO. MW-5

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-16-04	9-16-04	CME-75	4.25" HSA
		SURFACE TYPE	**TOTAL DEPTH (FT.)**
		Cindery Road	14

WATER LEVEL OBSERVATIONS (FT.)

▽ 7.0 ATD

▼ AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER	GRAPHIC LOG	DEPTH, FT.	DESCRIPTION	Surface Elevation: 917.0	WELL LOG
1	2S	16		3.9							Very Stiff, Slightly Moist, Reddish to Dark Grayish Brown, Low to Medium Plastic Clay with Trace of Fine Debris and Cinders (CL) (Fill)		
2	2S	15		3.5							3.5	913.5	
3	2S	18		3.5						5	Very Stiff, Slightly Moist, Grayish Brown, Low to Medium Plastic, Silty Clay (CL) (Alluvium)		
4	2S	18									5.5	911.5	
5	2S	18									Medium Dense, Wet, Grayish Brown, Poorly Graded Sand, Fine-Grained (SP) (Alluvium) ▽		
6	2S	15								10	Becomes Loose, Poorly Graded Sand with Silt to Silty Sand, Very Fine Grained (SP-SM/SM)		
7	2S	18									14.0	903.0	
											Becomes Poorly Graded Sand, Fine to Medium Grained (SP)		
											Bottom of Boring @ 14'		
											Well Completed using 3' Stick Up and Concrete Pad		

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME	LOCATION	PROJECT NUMBER
OPPD Flyash Monofill	Nebraska City, Nebraska	47962

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Mail to
DNR
PO Box 94676
Lincoln, NE 68509-4676

Phone (402)471-2363

10262004-162828-WWRF (3)

Department of Natural Resources

October 2001
DNR Form 145

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 10-26-2004 Sequence No. 162828 Registration No. G-130443E
Owner Code No. 40226 Receipt No. 816991 Omaha NRD

1. a. Well Owner's First Name _____ Last Name _____
   b. Company Name Omaha Public Power District
   c. Correspondent Name Omaha Public Power District Attention James J. Krajicek
   Address 444 South 16th Street Mall
   City Omaha State NE Zip 68102 Telephone (402) 636-2309

2. a. Contractor's License No 19245 Contractor's Name Kleinfelder
   Contractor's Email Address locoabel@cox.net
   b. Drilling Firm Name Kleinfelder
   Address 9312 G Court
   City Omaha State NE Zip 68127 Telephone (402) 331-2260
   Drilling Firm's Email Address bhavens@kleinfelder.com

3. a. Well location SW ¼ of the SE ¼ of Section 25, Township 8 North, Range 14 East/West, Otoe County.
   b. Natural Resources District Nemaha NRD
   c. The well is _____ feet from the (North/ South) section line and _____ feet from the (East/West) section line
   (circle one) (circle one)
   or Latitude Degree 40 Minute 37 Second 42
   Longitude Degree 95 Minute 47 Second 19
   d. Street address and subdivision, if applicable _____
   Block _____ Lot _____
   e. Location of water use, if applicable (give legal descriptions) _____
   f. If for irrigation, the land to be irrigated is _____ acres.
   g. Well reference letter(s), if applicable MW-5

4. Permits
   Management Area Permit Number _____
   Geothermal Permit Number _____
   Municipal Permit Number _____
   Well Spacing Permit Number _____
   Surface Water Permit Number _____
   Industrial Permit Number _____
   Transfer Out-Of-State Permit Number _____
   Conduct Permit Number _____
   Other Permit Number _____

5. Purpose of well (indicate one) Aquaculture Commercial/Industrial Dewatering (over 90 days)
   Domestic Ground Heat Exchanger Groundwater Source Heat Pump Irrigation Injection
   Livestock X Monitoring Observation Public Water Supply (with spacing (46-638))
   Public Water Supply (without spacing) Recovery Other _____
   (indicate use)

6. Wells in a Series.
   a. Is this well a part of a series? yes Yes go to part b of this section No go to part 7 of this application
   b. If one or more of the wells in the series is currently registered, give the well registration number NA
   c. How many wells in the series are you registering at this time? 6

7. Replacement and abandoned well information.
   a. Is this well a replacement well? Yes X No
   b. Registration number of abandoned well _____ If not registered, date abandoned well was constructed (m)__/(d__/(y)
   c. Replacement well is _____ feet from abandoned well. d. Abandoned well last operated (m)_____/(d)__/(y)____
   e. Original well pump column size _____ inches. f. Completion of original well abandonment on (m)__/(d__/(y)____
   g. Location of water use of abandoned well _____

G130442E

8. Pump Information.

a. Is pump installed at this time _____Yes __X__ No

Is pump installed by well owner in section 1? ____Yes ____No Is pump installed by contractor in section 2? _____Yes _____No

If pump installed by pump installer, please fill out license number below

b. Pump Installer's License No._____ Pump Installer's Name_____

Pump Installer's Email Address _____

Pump Installer's Firm Name _____

Pump Installer's Firm Address_____

City_____ _____ State _____ Zip_____ Telephone _____

Pump Installer's Firm Email Address _____

c. Pumping rate _____ gallons per minute _____ Measured _____ Estimated

d. Drop pipe diameter _____ inches

e. Length of drop pipe _____ feet

f. Pumping equipment installed (m)___/(d___/(y)____

g. Pump Brand_____

h. This well will be used to pump less than 50 gpm ____Yes ____No

9. Well Construction Information.

a. Total well depth _____~ 14_____ feet.

b. Static water level _____~ 7_____ feet.

c. Pumping water level ___ NA _____ feet

d. Well Construction began (month)___9___/(day)_16__/(year_2004

e. Well Construction completed (month)___9 /(day) 17_/(year__2004_

f. Bore hole diameter in inches Top 6.5_____ Bottom 6.5

g. Casing and Screen Joints are Welded _____ Glued _____ Threaded ___X_____Other _____

10. Well Construction (Casing & Screen)- c, d, e, & g measurements should be in inches to three decimal places

a		b	c	d	e	f	g	h
Placement Depth in Feet		Casing or Screen	Inside Diameter	Outside Diameter	Wall Thickness	Type of Material	Screen Slot Size	Trade Name
From	To							
0	3	Casing	2.047	2.375	0.328	PVC	N/A	Johnson Screens
3	13	Screen	2.000	2.560	0.560	PVC	0.010	Johnson Screens

11. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		
0	1.5	Bentonite	3/8" Bentonite Holeplug
1.5	14	Gravel Pack	12-20 Sand

12. Geologic Materials Logged

Depth in Feet From	To	Description See Attached Boring Log	Depth in Feet From	To	Description

(Additional sheets may be submitted)

13. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature

10-13-04
Date

G130442E

LOG OF BORING NO. MW-5

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-16-04	9-16-04	CME-75	4.25" HSA
SURFACE TYPE		**TOTAL DEPTH (FT.)**	
Cindery Road		14	

WATER LEVEL OBSERVATIONS (FT.)

▽ 7.0 ATD

▼ AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER	GRAPHIC LOG	DEPTH, FT.	DESCRIPTION	Surface Elevation: 917.0	WELL LOG
1	2S	16		3.9							Very Stiff, Slightly Moist, Reddish to Dark Grayish Brown, Low to Medium Plastic Clay with Trace of Fine Debris and Cinders (CL) (Fill)		
2	2S	15		3.3							3.5	913.5	
3	2S	18		3.3						5	Very Stiff, Slightly Moist, Grayish Brown, Low to Medium Plastic, Silty Clay (CL) (Alluvium)		
4	2S	18									5.5	911.5	
5	2S	18									Medium Dense, Wet, Grayish Brown, Poorly Graded Sand, Fine-Grained (SP) (Alluvium) ▽		
6	2S	15								10	Becomes Loose, Poorly Graded Sand with Silt to Silty Sand, Very Fine Grained (SP-SM/SM)		
7	2S	18									14.0	903.0	
											Becomes Poorly Graded Sand, Fine to Medium Grained (SP) Bottom of Boring @ 14'		
											Well Completed using 3' Stick Up and Concrete Pad		

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME: OPPD Flyash Monofill

LOCATION: Nebraska City, Nebraska

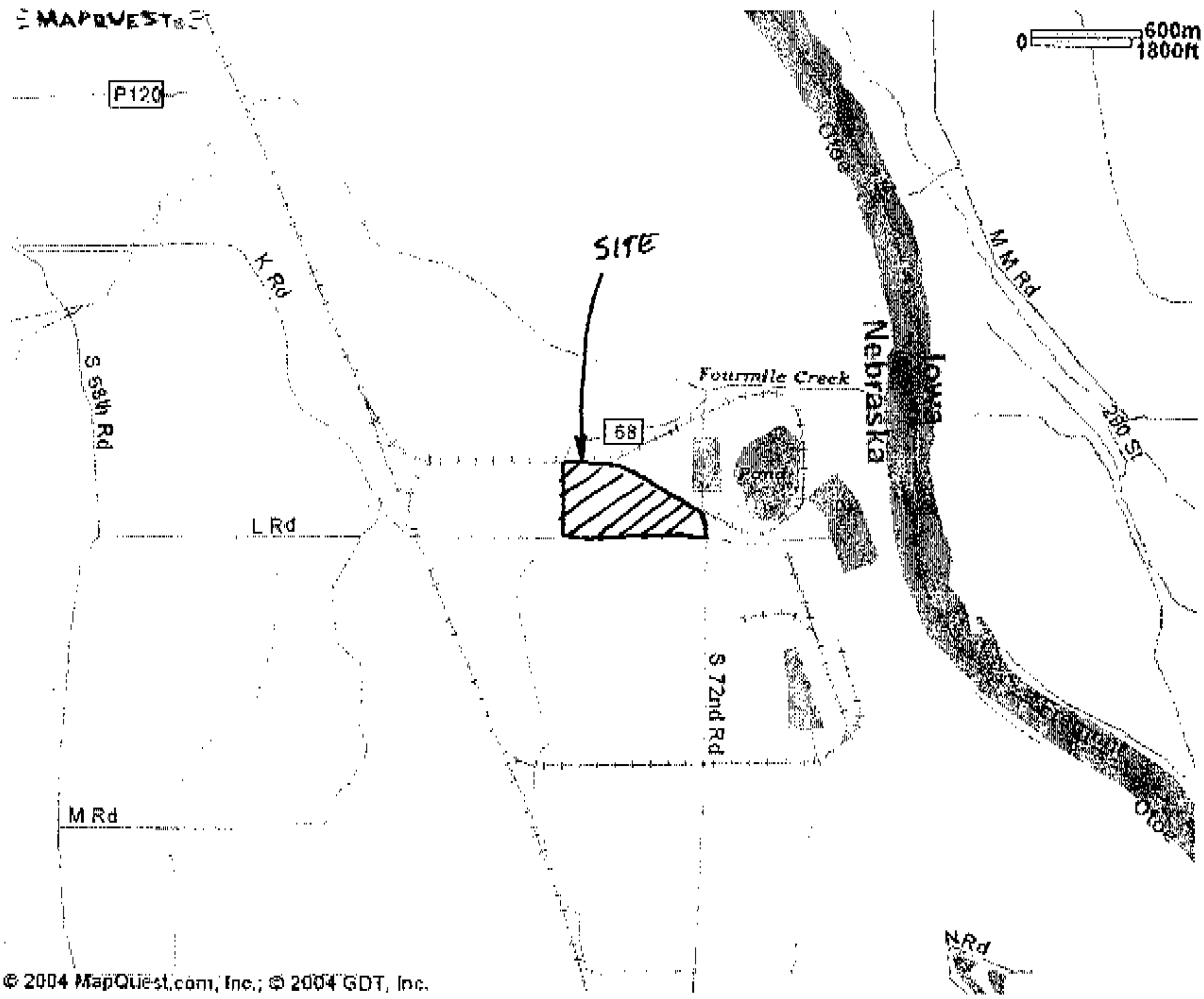
PROJECT NUMBER: 47962

MAPQUEST

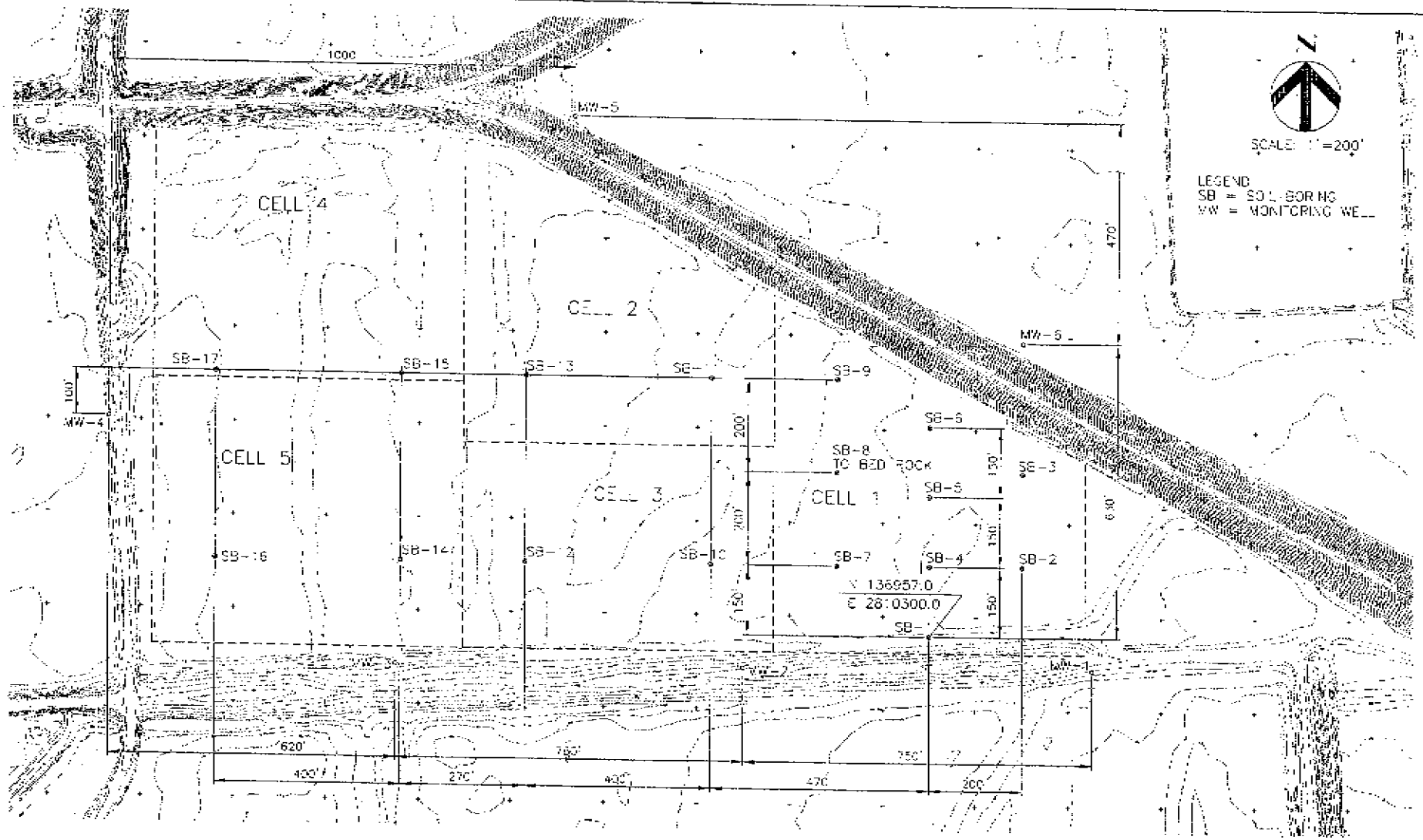
Send To Printer   Back to Map

Nebraska City NE
US

Notes:



SITE LOCATION PLAN



HDR

Soil Borings

WELL LOCATION PLAN

OPPD Nebraska City Station Unit 2

DATE 7/16/04

FIGURE 6EB-1

6130442

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LOG OF BORING NO. MW-6

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-7-04	9-7-04	CME-75	4.25" HSA

SURFACE TYPE	TOTAL DEPTH (FT.)
Unpaved Road	12

WATER LEVEL OBSERVATIONS (FT.)

▽ 5.0 ATD

▼ 6.5 AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER	GRAPHIC LOG	DEPTH, FT.	DESCRIPTION	Surface Elevation: 916.0	WELL LOG
1	2S	22									0.5 Very Stiff, Moist, Light Brown, Low Plastic Silty Clay with Slag Gravel Veneer (CL) (Roadbed Fill)	915.5	
2	2S	24									Medium Dense, Slightly Moist, Dark to Medium Grayish Brown, Poorly Graded Sand with Some Silt (SP-SM/SP) (Alluvium)		
3	2S	18								5	Becomes Loose and Wet ▽ ▼		
4	2S	22									8.0 With Layers of Soft, Sandy Silt to Slit Sand (ML/SM)	908.0	
5	2S	24		<0.2							Very Soft, Wet, Grayish Brown to Dark Gray, Interbedded Low, Medium, & High Plastic Clay with Silt Layers (CH/CL/ML) (Alluvium)		
6	2S	21								10	11.0	905.0	
7	2S										12.0 Loose, Wet, Dark Gray, Silty Clayey Sand, Very Fine Grained (SM) (Alluvium)	904.0	
											Bottom of Boring @ 12'		

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

PROJECT NAME	OPPD Flyash Monofill
LOCATION	Nebraska City, Nebraska
PROJECT NUMBER	47962

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Mail to
DNR
PO Box 94676
Lincoln, NE 68509-4676

Phone (402)471-2363

ID-26-2004-162829-WWR F (3)

October 2001
DNR Form 145

Department of Natural Resources

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

FOR DEPARTMENT USE ONLY

Registration Date 10-26-2004 Sequence No. 162829 Registration No. G-130442 F
Owner Code No. 40226 Receipt No. 816951 Omaha NRD

1. a. Well Owner's First Name _____ Last Name _____
   b. Company Name Omaha Public Power District
   c. Correspondent Name Omaha Public Power District Attention James J. Krajicek
   Address 444 South 16th Street Mall
   City Omaha State NE Zip 68102 Telephone (402) 636-2309

2. a. Contractor's License No 19245 Contractor's Name Kleinfelder
   Contractor's Email Address locoabel@cox.net
   b. Drilling Firm Name Kleinfelder
   Address 9312 G Court
   City Omaha State NE Zip 68127 Telephone (402) 331-2260
   Drilling Firm's Email Address bhavens@kleinfelder.com

3. a. Well location SE ¼ of the SE ¼ of Section 25, Township 8 North, Range 14 East/West, Otoe County.
   b. Natural Resources District Nemaha NRD
   c. The well is _____ feet from the (North/ South) section line and _____ feet from the (East/West) section line
   (circle one) (circle one)
   or Latitude Degree 40 Minute 37 Second 36
   Longitude Degree 95 Minute 47 Second 07
   d. Street address and subdivision, if applicable _____
   Block _____ Lot _____
   e. Location of water use, if applicable (give legal descriptions) _____
   f. If for irrigation, the land to be irrigated is _____ acres.
   g. Well reference letter(s), if applicable MW-6

4. Permits
   Management Area Permit Number _____
   Geothermal Permit Number _____
   Municipal Permit Number _____
   Well Spacing Permit Number _____
   Surface Water Permit Number _____
   Industrial Permit Number _____
   Transfer Out-Of-State Permit Number _____
   Conduct Permit Number _____
   Other Permit Number _____

5. Purpose of well (indicate one) ____Aquaculture ____Commercial/Industrial ____Dewatering (over 90 days)
   ____Domestic ____Ground Heat Exchanger ____Groundwater Source Heat Pump ____Irrigation ____Injection
   ____Livestock X Monitoring ____Observation ____Public Water Supply (with spacing (46-638))
   ____Public Water Supply (without spacing) ____Recovery ____Other _____
   (indicate use)

6. Wells in a Series.
   a. Is this well a part of a series? yes Yes go to part b of this section ____No go to part 7 of this application
   b. If one or more of the wells in the series is currently registered, give the well registration number NA
   c. How many wells in the series are you registering at this time? 6

7. Replacement and abandoned well information.
   a. Is this well a replacement well? ____Yes X No
   b. Registration number of abandoned well _____ If not registered, date abandoned well was constructed (m)___/(d)___/(y)___
   c. Replacement well is _____ feet from abandoned well. d. Abandoned well last operated (m)___/(d)___/(y)___
   e. Original well pump column size _____ inches. f. Completion of original well abandonment on (m)___/(d)___/(y)___
   g. Location of water use of abandoned well _____

G130442F

8. Pump Information.

a. Is pump installed at this time __Yes ___X__No

Is pump installed by well owner in section 1? __ Yes __No Is pump installed by contractor in section 2? _____Yes ___ No

If pump installed by pump installer, please fill out license number below

b. Pump Installer's License No._____ __ Pump Installer's Name____ _____ _____

Pump Installer's Email Address_____ _____ _____

Pump Installer's Firm Name____ _____ _____ _____

Pump Installer's Firm Address _____ _____ _____

City_____ _____ State _ _____ Zip_____ Telephone _____

Pump Installer's Firm Email Address_____ _____

c. Pumping rate ___ _____ gallons per minute _____ Measured _____ Estimated

d. Drop pipe diameter _____ inches e. Length of drop pipe _____ feet

f. Pumping equipment installed (m) _/(d___/(y)___ g. Pump Brand_____ _____

h. This well will be used to pump less than 50 gpm ___Yes ___No

9. Well Construction Information.

a. Total well depth _____ -- 12 _____ feet. b. Static water level _____-- 6.5___ feet.

c. Pumping water level _____NA_____ feet d. Well Construction began (month)___9___/(day)_7__/(year 2004

e. Well Construction completed (month) _9___/(day)_8_/(year__2004 f. Bore hole diameter in inches Top 6.5 ___ Bottom 6.5

g. Casing and Screen Joints are Welded _____ Glued _____ Threaded ___X_____Other _____

10. Well Construction (Casing & Screen)- c, d, e, & g measurements should be in inches to three decimal places

a		b	c	d	e	f	g	h
Placement Depth in Feet		Casing or Screen	Inside Diameter	Outside Diameter	Wall Thickness	Type of Material	Screen Slot Size	Trade Name
From	To							
0	0.5	Casing	2.047	2.375	0.328	PVC	N/A	Johnson Screens
0.5	11	Screen	2.000	2.560	0.560	PVC	0.010	Johnson Screens

11. Grout and Gravel Pack

Placement Depth in Feet		Grout or Gravel Pack	Material Description
From	To		
0	0.5	Bentonite	3/8" Bentonite Holeplug
0.5	12	Gravel Pack	12-20 Sand

12. Geologic Materials Logged

Depth in Feet From	To	Description See Attached Boring Log	Depth in Feet From	To	Description

(Additional sheets may be submitted)

13. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water Well Contractor's Signature

10-13-04
Date

G130442F

LOG OF BORING NO. MW-6

BOREHOLE LOCATION	ELEVATION DATUM	DRILLER	LOGGER
See Boring Location Plan	USGS	Abel Monnarez	Bruce Birge
BORING STARTED	**BORING COMPLETED**	**DRILL RIG**	**DRILLING METHOD**
9-7-04	9-7-04	CME-75	4.25" HSA
SURFACE TYPE		**TOTAL DEPTH (FT.)**	
Unpaved Road		12	

WATER LEVEL OBSERVATIONS (FT.)

▽ 5.0 ATD

▼ 6.5 AD

SAMPLE NO.	SAMPLE TYPE	RECOVERY, in.	PENETRATION RESISTANCE - BLOWS/FT.	POCKET PENETROMETER - TSF	UNCONFINED COMPRESSION - TSF	MOISTURE CONTENT - %	DRY DENSITY - PCF	OTHER
1	2S	22						
2	2S	24						
3	2S	18						
4	2S	22						
5	2S	24		<0.2				
6	2S	21						
7	2S							

DESCRIPTION **Surface Elevation: 916.0**

0.5 — Very Stiff, Moist, Light Brown, Low Plastic Silty Clay with Slag Gravel Veneer (CL) (Roadbed Fill) — 915.5

Medium Dense, Slightly Moist, Dark to Medium Grayish Brown, Poorly Graded Sand with Some Silt (SP-SM/SP) (Alluvium)

Becomes Loose and Wet

8.0 — With Layers of Soft, Sandy Silt to Slit Sand (ML/SM) — 908.0

Very Soft, Wet, Grayish Brown to Dark Gray, Interbedded Low, Medium, & High Plastic Clay with Silt Layers (CH/CL/ML) (Alluvium)

11.0 — 905.0

12.0 — Loose, Wet, Dark Gray, Silty Clayey Sand, Very Fine Grained (SM) (Alluvium) — 904.0

Bottom of Boring @ 12'

The stratification lines represent the approximate boundary lines between soil and rock types. In situ the transition may be gradual.

KLEINFELDER

9312 G Court, Omaha, Nebraska 68127 (402) 331-2260

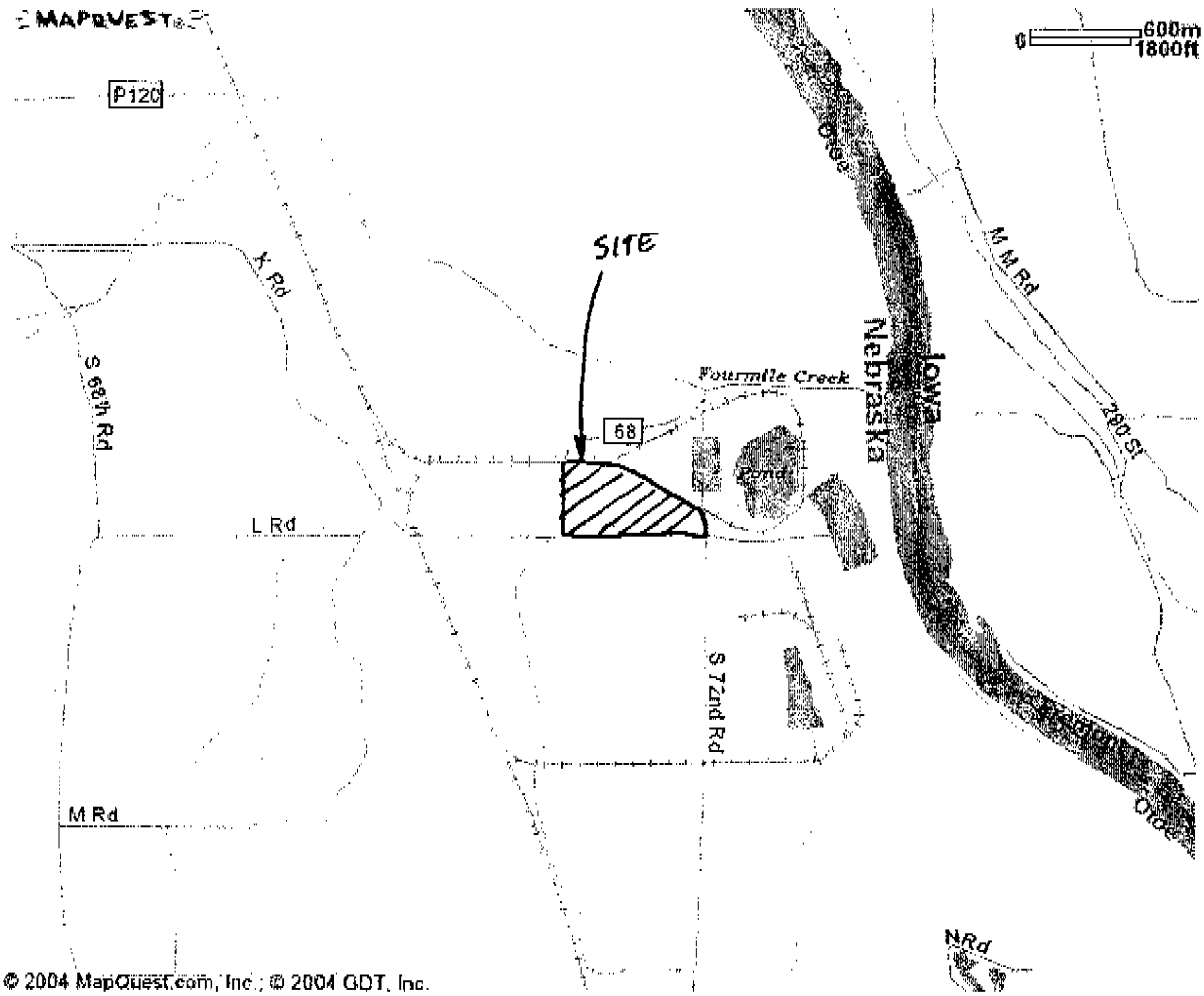
PROJECT NAME: OPPD Flyash Monofill

LOCATION: Nebraska City, Nebraska

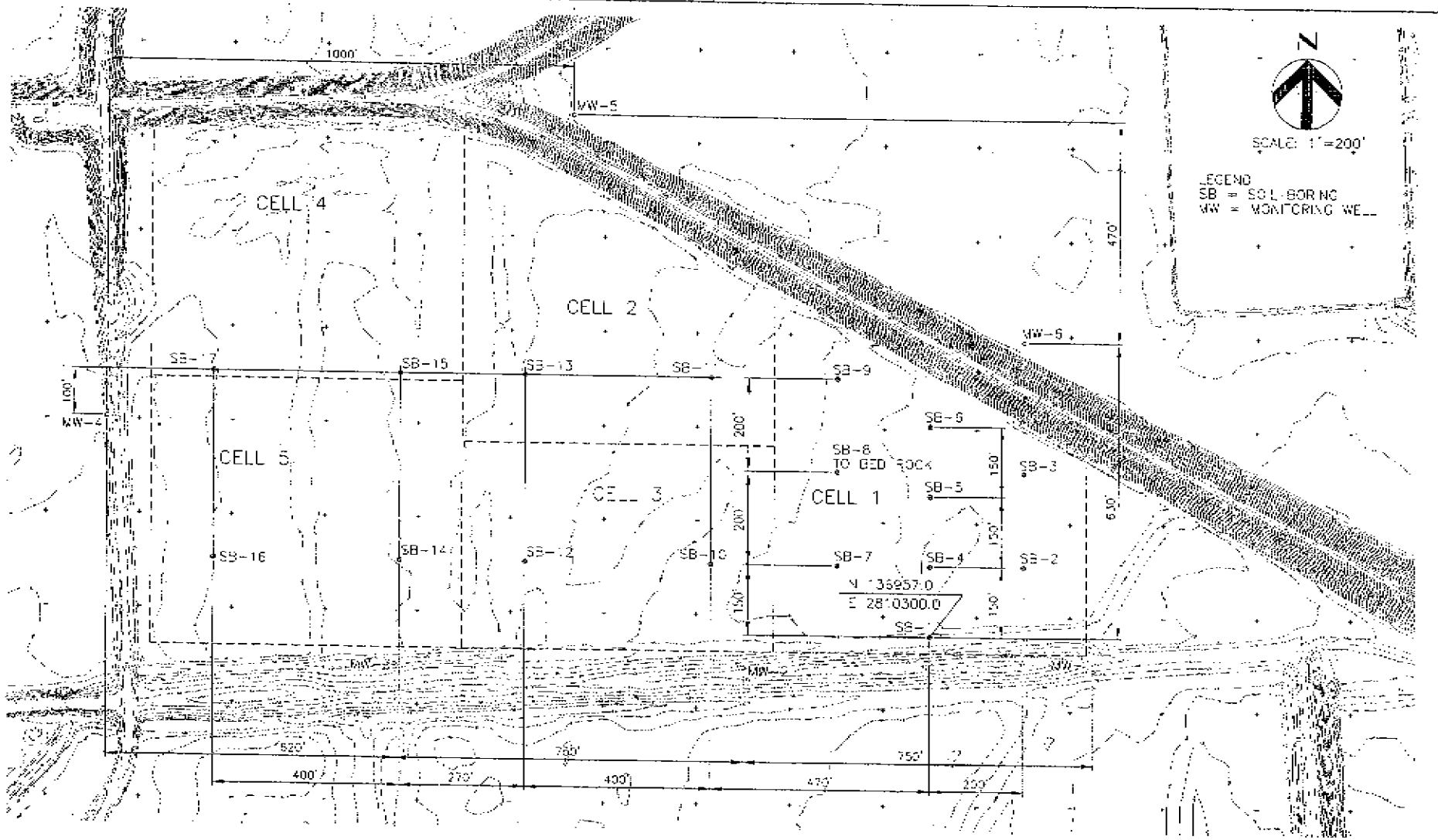
PROJECT NUMBER: 47962

Nebraska City NE
US

Notes:



SITE LOCATION PLAN



HDR

Soil Borings

WELL LOCATION PLAN

CPPD Nebraska City Station Unit 2

DATE 7/15/04

FIGURE GEO-1

G130442

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WELL LOG NO. MW-7

PROJECT: OPPD Nebraska City Station Unit 2

CLIENT: Omaha Public Power District Omaha, NE

SITE: 7264 L RD Nebraska City, NE

GRAPHIC LOG

LOCATION Site Map

Latitude: 40.624142° Longitude: 95.784575°

Surface Elev.: 914.8 (Ft.)

DEPTH	MATERIAL DESCRIPTION	ELEVATION (Ft.)
	LEAN CLAY (CL), yellowish-brown	
7.0		908
	MEDIUM TO FINE SAND (SM), light brown	
13.0		902
	FINE SAND (SM)	
21.0		894
	Boring Terminated at 21 Feet	

INSTALLATION DETAILS

Well Completion:

- TOC - 917.97
- Concrete
- Seal Bentonite 3/8" chips
- Riser Pipe 2" diameter schedule 40 PVC. Flush threaded to PVC Screen, Filter Material silica sand. 20/40 grade, 10' Screen 2" diameter schedule 40 PVC slotted screen, 0.010" slot

DRAFT

DEPTH (ft) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | OVA/PID (ppm)

5 10 15 20

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
4¼-inch hollow stem (8¼-inch hole diameter)

Abandonment Method:
N/A - monitoring well installed

See Appendices for description of laboratory procedures and additional data (If any).

See Appendices for explanation of symbols and abbreviations.

Notes:
Three concrete filled 3-inch steel bollards installed.

WATER LEVEL OBSERVATIONS

▽ *15 ft, While Drilling*

Terracon
15080 A Circle
Omaha, Nebraska

Well Started: 11/6/2013	Well Completed: 11/6/2013
Drill Rig: DR#958	Driller: M. Ramirez
Project No.: 05137163	Exhibit: B-1

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Mail to
Department of Natural Resources
PO Box 94676
Lincoln, NE 68509-4676
Phone (402)471-2363

138679632229200

DRAFT

January 2011
DNR Form 145

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

Please indicate NA for items unknown

FOR DEPARTMENT USE ONLY

Date Filed _____ Owner Code No. _____ Registration No. _____

_____-_____-_____ Receipt _____ _____NRD
Well ID

1. a. Well Owner's First Name _____ Last Name _____

   OR Company Name OMAHA PUBLIC POWER DISTRICT

   b. Attention Name PATRICK FINIGAN

   c. Street Address 444 SOUTH 16TH ST MALL

   Address 2/PO Address _____

   City OMAHA State NE Zip 68102-0000 Telephone 402 636 2521

2. a. Contractor's License No 39325 Contractor's Name DAVID M SVINGEN

   Contractor's Email Address LEBAZER@TERRACON.COM

   b. Drilling Firm Name TERRACON CONSULTANTS, INC.

   Address 15080 A CIR

   City OMAHA State NE Zip 68144 Telephone 402 330 2202

   Drilling Firm's Email Address DMSVINGEN@TERRACON.COM

3. a. Well location NE ¼ of the NE ¼ of Section 36, Township 8 North, Range 14 EAST OTOE County

   Latitude Degree 40 Minute 37 Second 26.91

   Longitude Degree -95 Minute 47 Second 4.47

   GPS Required

   Location of well for a pit is the location of the pump

   b. Natural Resources District NEMAHA

   c. The well is: _____ feet from the (North/ South) section line and _____ feet from the (East/West) section line
   (circle one) (circle one)

   d. Street address and subdivision, if applicable _____ (BLOCK: LOT:)

   e. Location of water use (give legal descriptions) NENE S36 T8 N14E

   f. If for irrigation, the land to be irrigated is _____ acres.

   Location of water use is required on all wells

   g. Well reference letter(s), if applicable MW-7 HHSS PWSID _____

4. Permits

   Management Area Permit Number _____
   Geothermal Permit Number _____
   Municipal Permit Number _____
   Well Spacing Permit Number _____
   HHSS _____
   Surface Water Permit Number _____
   Industrial Permit Number _____
   Transfer Out-Of-State Permit Number _____
   Conduct Permit Number _____
   Other Permit Number _____
   NDEQ _____

5. Purpose of well (indicate one) ___Aquaculture ___Commercial/Industrial ___Dewatering (over 90 days)
   ___Domestic ___Ground Heat Exchanger ___Groundwater Source Heat Pump ___Irrigation ___Injection
   ___Livestock X Monitoring ___Observation ___Pit (for irrigation) ___Public Water Supply (with spacing (46-638))
   ___Public Water Supply (without spacing) ___Recovery ___Other _____
   (further description of use can be provided under other) (indicate use)

6. Wells in a Series.

   a. Is this well a part of a series? ___Yes go to part b of this section X No go to part 7 of this application (Y/N **required**)

   b. If one or more of the wells in the series is currently registered, give well registration number _____

   c. How many wells in the series are you registering at this time?_____ d. How many total wells in the series?_____

7. Replacement and decommissioned/modified well information.

a. Is this well a replacement well? ____Yes __X__No go to part 8 of this application

b. Registration number of original well _____ If not registered, date original well was constructed (m)___/(d___/(y)____

c. Original well last operated (m)____/(d)_____/(y)_____ d. Replacement well is _____ feet from original well.

e. Location of water use of original well _____

Please Select One:

f.1. ☐ Original water well decommissioned on (m)___/(d___/(y)___ **OR**

2. ☐ I hereby certify that the original water well will be decommissioned within 180 days after such construction of the replacement water well. **OR**

3. ☐ I hereby certify that the original water well will be modified and equipped to pump 50 gallons per minute or less within 180 days after such construction of the replacement water well. It will be used for one of the following: a. ☐ Livestock
b. ☐ Monitoring c. ☐ Observation
d. ☐ nonconsumptive or de minimus use approved by the applicable natural resources district. State use: _____

If 3d is chosen. NRD signature is required. (Signature can be submitted on NRD Approval form to DNR prior to registration)

NRD signature_____ Date_____ **OR**

4. ☐ Decommission/Modification Certification form is submitted by landowner. (Must be submitted before registering well)

8. Pump Information. (Pump information is required if registering a pit)

a. Is pump installed at this time _____Yes __X__No

Is pump installed by well owner in section 1? _____Yes _____No

Is pump installed by contractor in section 2? _____Yes _____No

Is this a free flowing well _____Yes(no pump to be installed) __X__No

If pump installed by pump installer, please fill out license number below

b. Pump Installer's License No._____ Pump Installer's Name_____

Pump Installer's Email Address_____

Pump Installer's Firm Name_____

Pump Installer's Firm Address_____

City_____ State _____Zip_____-0000_____ Telephone _____

Pump Installer's Firm Email Address_____

c. Measured Pumping rate _____ gallons per minute d. Pumping water level _____ feet

e. Drop pipe diameter _____ inches f. Length of drop pipe _____feet

g. Pumping equipment installed (m)___/(d___/(y)___

h. Pump Brand_____

i. This well is designed and constructed to pump less than 50 gpm __X__Yes ____No **(8H is required on ALL wells)**

9. Well Construction Information.

a. Total well depth ____21____ feet. b. Static water level ____15____ feet. **(required)**

c. Well Construction Began (m)____11/(d)06/2013/(y)_____ d.. Well Construction Completed (m)____11/(d)06/2013/(y)_____

Wells drilled prior to stays or moratoriums require NRD signature **NRD signature**_____ Date_____ (Signature can be submitted on NRD Approval form to DNR prior to registration)

e. Bore hole diameter in inches Top 8.25 Bottom 8.25

f. Casing and Screen Joints are Welded _____ Glued _____ Threaded ____X____Other _____

g. Capacity of Well _____ gallons per minute (to be used to determine sustainability of aquifer)

h. Pumping water level at this capacity _____ feet

10. Well Construction (Casing & Screen)- c, d, e, & f measurements should be in inches to three decimal places (From not less than zero)

a		b	c	d	e	f	g	h
Placement Depth in Feet		Casing or Screen or Open Hole	Inside Diameter	Outside Diameter	Wall Thickness	Screen Slot Size	Type of Material	Trade Name
From	To							

Additional information for Double cased or Nested wells:

a		b	c	d	e	f	g	h
Placement Depth in Feet		Casing or Screen or Open Hole	Inside Diameter	Outside Diameter	Wall Thickness	Screen Slot Size	Type of Material	Trade Name
From	To							

11. Grout and Gravel Pack (must start at zero)

Placement Depth in Feet		Grout/Gravel/ Open Hole	Material Description *See **Desc** for gravel	Quantity gravel *See **Desc**	Volume & Type Grout *See **Desc**
From	To				

Desc: Description of gravel pack i.e. engineered gravel pack, or gravel pit description (¼ down), or brand name (Best Sand), natural formation, drilling cuttings, soil backfill
Quantity #cubic yards, #tons, #sacks, - (for drilling cuttings and soil backfill estimate quantity) Calculation assistance available on web
Volume & Type: #gallons of a slurry, #barrels of a slurry, #sacks used in the slurry, #bags of non-slurry bentonite (chip-pellet –granular)
Additional information for Double cased or Nested wells:

Placement Depth in Feet		Grout/Gravel/ Open Hole	Material Description *See **Desc** for gravel	Quantity gravel *See **Desc**	Volume & Type Grout *See **Desc**
From	To				

WELL CONSTRUCTION LOG - 138679632229200

To -	From	Case/Screen	I.D.	O.D.	Thk.	Mat.	Slot	Trade Name
0.0 -	11.0	Casing	2.07	2.38	0.15400	PVC	0.000	Titan
11.0 -	21.0	Screen	2.07	2.38	0.15400	PVC	0.010	Titan

GROUT AND GRAVEL PACK - 138679632229200

From -	To	Grout/Gravel	Material Desc.	Qty Gravel	Volume/Type Grout
00.0 -	00.5	Grout	Concrete	0	0, NA
00.5 -	09.0	Grout	Bentonite grout	3 bags	3 bags, 3/8" chips
09.0 -	21.0	Gravel	#20-40 Sand	8 bags	8 bags, NA

GEOLOGICAL LOGS - 138679632229200

From -	To	Type	Hardness	Color	Other/Drilling Action
00.0 -	07.0	Clay		Brown	
07.0 -	13.0	Sand fine-med		Brown	
13.0 -	21.0	Fine Sand		Brown	

12. Geologic Materials Logged (must start at zero) - **Use only options provided below for Type, Hardness and Color**

From	To	Type	Hardness	Color	Other/Drilling Action

Type		**Hardness**	**Color**	
Clay	Sand fine-med	Cemented	Black	Pepper
Clay Stone	Sand med-coarse	Consolidated	Blue	Red
Cobbles	Sand with grave	Dense/Stiff	Brown	Tan
Fine Sand	Sandstone	Hard	Gray	White
Gravel	Shale	Soft	Green	Yellow
Limestone	Silt	Unconsolidated	Orange	
Loss Circulation	Siltstone	Very Hard		
Ochre (weathered shale)	Top Soil			
Sandy Clay	Other			
Sand with Clay/Silt				

(Additional sheets may be submitted)

13. I hereby certify that the information provided on this registration is true and accurate to the best of my knowledge.

DRAFT

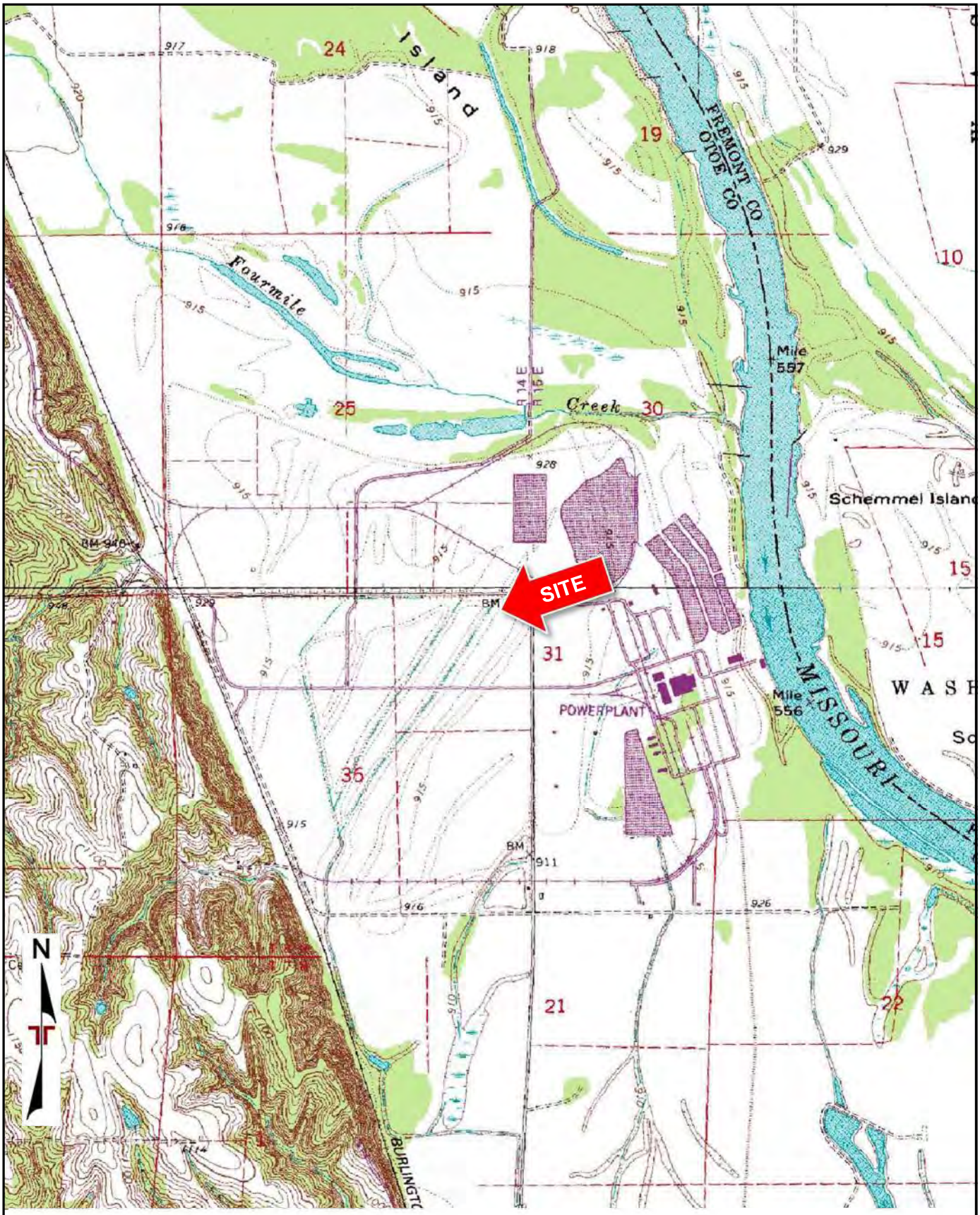
Water Well Contractor's Signature (not required for pits) — Date

Well Owner's Signature (if Contractor is unknown or Deceased or for pits) (Not required if signed by Contractor) — Date

Please note this document contains four pages.

Sections 9F, 9G, 10, 11 & 12 are not required if registering a pit.

Owner Registering well drilled prior to 2002: Minimum Required Sections - 1, 3(a,b,c,e,f), 5, 6, 7, 8(a,f,h), 9e



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: NEBRASKA CITY, NE (1/1/1984) and JULIAN, NE (1/1/1984).

Project Manager: MR	Project No. 05137163	Terracon 15080 A Circle Omaha, NE 68144	SITE LOCATION OPPD Nebraska City Station Unit 2 7264 L RD Nebraska City, NE	Exhibit A-1
Drawn by:	Scale: 1:24,000			
Checked by:	File Name:			
Approved by:	Date: 12/2013			

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager: MR	Project No. 05137163	Terracon 15080 A Circle Omaha, NE 68144	AERIAL PHOTOGRAPH OPPD Nebraska City Station Unit 2 7264 L RD Nebraska City, NE	Exhibit A-2
Drawn by:	Scale: AS SHOWN			
Checked by:	File Name:			
Approved by:	Date: 12/2013			

WELL LOG NO. MW-13

PROJECT: OPPD Nebraska City Station

CLIENT: Omaha Public Power District

SITE: 7264 L RD
Nebraska City, Nebraska

LOCATION -

Latitude: 40.6286073° Longitude: -95.7921889°

Surface Elev.: 915.5 (Ft.)

DEPTH	MATERIAL DESCRIPTION	ELEVATION (Ft.)
	LEAN CLAY (CL), with organics, brown, Grass at surface	
2.0		913.5
	LEAN CLAY (CL), light brown	
5.0		910.5
	SILTY CLAY WITH SAND (CL-ML), fine	
7.0		908.5
	SILTY SAND (SM), fine	
13.0		902.5
	Boring Terminated at 13 Feet	

INSTALLATION DETAILS

Top Casing Elev: 917.69

Well Completion: Aboveground

- **Concrete**
- **Seal** hydrated chip bentonite
- **Riser Pipe** 2" diameter schedule 40 PVC. Flush threaded to PVC Screen
- **Filter Material** silica sand. 16/30 grade
- **Screen** 2" diameter schedule 40 PVC slotted screen, 0.010" slot

DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SPT N-VALUE
	▽		10	2-2-2-3 N=4
			12	3-4-4-4 N=8
5	▽		18	2-2-2-2 N=4
			20	1-2-2-5 N=4
			18	2-5-7-5 N=12
10			20	2-1-2-2 N=3

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger, 8.25-inch diameter borehole

Abandonment Method:
NA - Well installed

See Appendices for explanation of symbols and abbreviations.

Notes:
Soil descriptions are based on visual observations made by the field crew. Actual conditions may vary.

WATER LEVEL OBSERVATIONS

▽ *5 ft while sampling*

▽ *1 ft bgs on 2/4/16*

Terracon
15080 A Circle
Omaha, Nebraska

Well Started: 1/26/2016 | Well Completed: 1/26/2016

Drill Rig: 770 | Driller: JM

Project No.: 05157663 | Exhibit: --1

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Well Registration or Area Permit

Fee Paid: $70.00 HHSS Fee: $30.00
DNR Cash Fund: $18.50 WWDF: 21.50
Billing ID: 53636

Source:	Nebraska On Line	Import Status:	Accepted	Use:	Monitoring (Ground Water Quality)	Owner ID:	49927
Import ID:	14551191495806	Status:	Active Registered Well	Decommission Date:	__	Registration Number:	G-178697
Well ID:	241806	NRD:	Nemaha			Registration Date:	2/19/2016
Last Change User:	hmcpherson	Call Up Code:	__	Call Up Date:	__	Last Change Date:	2/19/2016

Owner:

Select Contact

		ContactID	Type	SeqNum	Begin Date	End Date	Name	
Edit	Display	49927	Owner	1	2/19/2016		Omaha Public Power District,	Delete

Contractor:

Certificate ID	FirstName	LastName
39570	Michael B	Reif

Drilling Firm:

	EmployerID	Employer
Delete	159781	Terracon Consultants, Inc.

A. Well Location: NW1/4SE1/4 of Section 25
Township 8 North, Range 14 (East E/W), Otoe County

B. Natural Resource District: Nemaha

	Latitude	Longitude	
Well GPS Coordinates:	40° 37' 42.99''	-095° 47' 31.88''	GPS Required
Lat/Long DD	40.62861	-95.79219	

C. The well is: __ feet from the __ Section line and __ feet from the __ section line.

D. Street address or block, lot and subdivision: Addr/Sub Div 7264 L Road Block No __ Lot __

E. Location of water use, if applicable (give legal description): NWSE S25 T8 R14E

G. Well reference letter(s) if applicable: MW-13

Well In A Series

Well Part of a Series with Site Plan: Yes

Series	# of Wells Reg	Total # Wells	Acres	Acres Cert	NRD Appr	StartDate	EndDate	Comment	Series Reg Num (External Source)	Code	Description	Wells in the Series			
												WellID	RegCD	StartDate	EndDate
244881	1	2		No	No	1/26/2016			G-126717	DEQ	Part of a DEQ site plan for spill or underground storage	158167	G-126717	2/19/2016	
												241806	G-178697	1/26/2016	

Permits

		Aprvd Date(s)			Aprvd Date(s)
Area Permit	__ __	__	SWater App Code	__ __	__
GeoPermit	__ __	__	Industrial	__ __	__
MWF	__ __	__	Transfer	__ __	__
WSP	__ __	__	Swater Conduct Code	__ __	__
HHSS	__		Other	__	__
HHSS PWS ID	__		ITN	__	__
NDEQ	NE0054712, NE0204421				

5. Purpose of Well Monitoring (Ground Water Quality)
Other Use __
Notes __

7. Replacement well information.

Well Considered a replacement by NRD(WellID, RegCD)

A. Is this well a Replacement well? No Repl No __ NRD Approval Date __ Well Replacement Reg CD

B. Registration number of abandoned well: __ If not registered, date abandoned well was constructed __

C. Abandoned well last operated __ D. Replacement well is __ feet from abandoned well.

E. Original well pump column size: __ inches.

F. [ ] Original water well decommissioned __
[ ] I hereby certify that the original water well will be decommissioned within 180 days after such construction of the replacement water well.
[ ] I hereby certify that the original water well will be modified and equipped to pump 50 gallons per minute or less within 180 days after such construction of the replacement water well.
[ ] Livestock
[ ] Monitoring

[ ] Observation
[ ] Nonconsumptive or de minimus use approved by the applicable natural resources district. __
[ ] Decommission/Modification certification form is submitted by landowner (Must be submitted before registering well)

G. Location of water use of original well: __

Decommission Information
Decommission Date: __ By

8. Pump Information.

A. Is Pump installed at this time? No
Pump present but Well Inactive: No
Free Flowing Well: No
Well active, no pump installed: Yes
B. License No.
C. Pumping Rate __ gallons per minute.
D. Pumping water level __ feet.
E. Drop pipe diameter __ inches.
F. Length of pipe __ in feet.
G. Pump equipment installed: __
H. Pump Brand/Type __
I. Will this well be used to pump 50 gpm or less? Yes

9. Well Construction Information

A. Total well depth: 13 feet.
B. Static water level 1 feet.
C. Well Construction began: 1/26/2016
D. Well Construction Completed: 1/26/2016
E. Bore hole diameter in inches. Top 8.25 Bottom 8.25
F. Casing and Screen Joints are: Threaded
Other Joints description: __
H. Total Estimate Capacity of Well __ gallons per minute.
I. Pumping water level at capacity: __ feet.

10. Well Construction (Casing & Screen) - c, d, e & f measurements should be in inches to three decimal places
Record Count = 2

WellID	FromDepth*	ToDepth*	Case/Screen	InsideDiam	OutsideDiam	CaseThickness	ScrnSlotSize	Material	ScreenTname
241806	0	3	casing	2.07	2.38	0.154		PVC	EMI
241806	3	13	screen	2.07	2.38	0.154	0.01	PVC	EMI

* are in Feet, all else is in inches

11. Grout and Gravel Pack
Record Count = 3

WellID	FromDepth	ToDepth	Grout/Gravel	Material Description[1]	Quantity Gravel[2]	Volume &Type Grout[3]
241806	0	0.5	grout	Concrete and well vault		Concrete and well vault
241806	0.5	2	grout	non-slurry bentonite		1.5 bags
241806	2	13	gravel	#16-30 Silica sand	5 bags	

* are in Feet, all else is in inches
[1]Description of gravel pack, i.e. engineered gravel pack, or gravel pit description (1/4 down) or brand name (best sand) natural formation, drilling cuttings, soil backfill
[2]Quantity #cubic yards, #Tons, #Sacks - (for drilling cuttings and soil backfill estimate quantity) Calculation assistance available on web
[3]Volume & Type: #gallons of a slurry, #Barrels of a slurry, #sacks used in the slurry, #Bags of non-slurry bentonite (chip-pellet-granular)

12. Well Geologic Materials Logged

WellID	FromDepth*	ToDepth*	Type	Hardness	Color	Other/Drilling Action
241806	0	5	Other		Brown	Lean Clay
241806	5	7	Other		Brown	Sily Clay w/sand
241806	7	13	Other		Brown	Silty Sand

* are in Feet.

DRILLING LOG

Project Name: Omaha Public Power District - Nebraska City, Nebraska		Project Number: 08 94037.01	Boring Number: MW-7
Boring Location Description: N of fly ash disposal area	Boring Location: NE 1/4 NW 1/4 SEC 31, T8N, R15E		Page: 1 of 3
Ground Surface Elevation: ft above NGVD (surv.)	Top of Well Casing Elevation: 918.9 ft above NGVD (surv.)	Boring Location Coordinates: 4056.8 North 6694.9 East	Total Footage: 42.0 ft.

Drilling Method (s)	Borehole Size	Overburden Footage	Bedrock Footage	No. Of Samples	No. Core Boxes	Depth to Water
6 1/4" ID HSA	8	42.0 feet	0 feet	None	None	See Remarks

Drilling Co. Layne, Inc. Omaha, Nebraska	Driller (s) Lyle Porter, Rick Keith
Drilling Rig Acker Soilmax 80 Truck Mounted	Type of Sampler Continuous
Date Started 01/20/99 — Date Completed 01/20/99	Field Observer (s) JOHN BUCKLEY

Depth in Feet	Description	USCS Class.	Blow Count	Recovery	Depth in Feet	Sample No.	PID (ppm)	Remarks
1–3	SANDY SILT, brownish grey, loose, well graded, fine sand and silt, moist	ML			1–3			
4–5	SILTY SAND, brownish grey, well graded, medium density quartz and rock grains. moist.	SM			4–5			
6–10	SAME AS ABOVE	SM			6–10			AUGER CUTTINGS WET AT 9.0 feet
11–14	SAND. dark grey, med to fine grained, well graded, medium density, wet, mostly quartz with rock grains	SW			11–14			

Drilling Log, continued

Project Name	Project No.	Boring Number
Omaha Public Power District - Nebraska City, Nebraska	08 94037.01	MW-7
Boring Location Description	**Boring Location**	**Page**
N of fly ash disposal area	NE 1/4, NW 1/4, SEC 31, T8N, R15E	2 of 3

Depth in Feet	Description	USCS Class.	Blow Count	Recovery	Depth in Feet	Sample No.	PID (ppm)	Remarks
15	SAME AS ABOVE				15			
16					16			
17					17			
18					18			
19					19			
20					20			
21	SAME AS ABOVE				21			
22					22			
23					23			
24					24			
25					25			
26	SAND, light grey, medium to coarse grained, well graded, medium to loose, wet, quartz and rock grains with oval shaped, rounded pebble size rock grains				26			
27					27			
28					28			
29					29			
30					30			
31	SAME AS ABOVE				31			

Drilling Log, continued

Project Name	Project No.	Boring Number
Omaha Public Power District - North Omaha, Nebraska	08 94037.02	MW-7
Boring Location Description	**Boring Location**	**Page**
N of fly ash disposal area	NE 1/4, NW 1/4, SEC 31, T8N, R15E	3 of 3

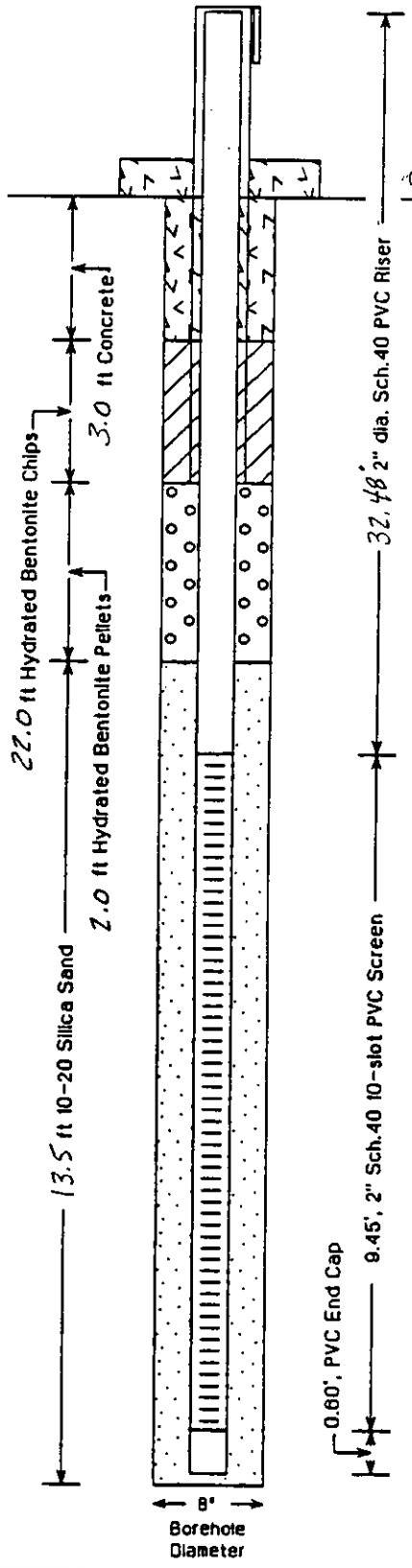
Depth in Feet	Description	USCS Class.	Blow Count	Recovery	Depth in Feet	Sample No.	PID (ppm)	Remarks
32	SAME AS ABOVE	SW			32			
33					33			
34					34			
35					35			
36	SAME AS ABOVE	SW			36			
37					37			
38					38			
39					39			
40					40			
41	SAME AS ABOVE	SW			41			
42	BOTTOM OF BORING				42			
43					43			
44					44			
45					45			
46					46			
47					47			
48					48			

MONITORING WELL CONSTRUCTION RECORD

Project Name	Project Number	Well Number
Omaha Public Power District - Nebraska City, Nebraska	08 94037.01	MW-7

Location Description	Location	Total Depth (TOC)
N of fly ash disposal area	NE 1/4, NW 1/4, SEC 31, T8N, R15E	42.53 feet

Ground Surface Elevation	Marker in Concrete Well Pad El.	Boring Location Coordinates	Date Installed
ft above NGVD		4056.8 North 6694.9 East	01/20/99



Elevation Top of Well Casing: 918.93 ft above NGVD

Elevation Top of Well Screen: 886.45 ft above NGVD

Elevation Bot. of Well Screen: 877.0 ft above NGVD

Total Depth of Boring: 42.0 ft below GS

Total Depth of Well: 40.5 ft below GS

Well Casing Above GS: 2.03 feet

MW-7

MW1

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

Registration Date 7-1-99 Sequence No. 118729 Registration No. G-101111A
Owner Code No. 40226 Reciept No. 102038 Nemaha NRD
102039

1. Well Owner Omaha Public Power District Telephone Number (402) 636-2304
   Address 444 South 16th Street Mall
   City Omaha State NE Zip Code 68102 + 2247

2. Drilling Firm Layne-Western Company Telephone Number (402) 359-2042
   Address 25450 Highway 275, P.O. Box 597 Contractor's License No. 39266
   City Valley State NE Zip Code 68064 + 0597

3. Permit Number(s)

4. Purpose of well(indicate one): ___ Dewatering (over 90 days) ___ Domestic ___ Geothermal ___ Ground Heat Exchanger
   ___ Ground Water Source Heat Pump ___ Industrial ___ Injection ___ Irrigation ___ Livestock X Monitoring
   ___ Observation ___ Public Water Supply (with spacing (49-838)) ___ Public Water Supply (without spacing) ___ Recovery ___ Aquaculture
   ___ Other ___ (Indicate use)

5. Replacement and abandoned well information.
   A. Is this well a replacement well? ___ Yes X No
   B. Registration number of abandoned well:
   C. Replacement well is ___ feet from abandoned well.
   D. Abandoned well last operated ___, 19___
   E. Original well pump column size: ___ inches.
   F. Completion of original well abandonment on ___, 19___
   G. Location of water use of abandoned well:

6. A. Well location: NE 1/4 of the NW 1/4 of Section 31, Township 8 North, Range 15 (East)/West, Otoe County.
   B. The well is 550 feet from the (North or South) section line and 1950 feet from the (East or West) section line
   C. Street address or block, lot and subdivision, if applicable: Omaha Public Power District Nebraska City Station
   D. Location of water use, if applicable (give legal descriptions): N/A
   E. If for irrigation, the land to be irrigated is N/A acres.
   F. Well reference letter(s), if applicable: Monitoring Well 1

7. Pump Information.
   Is pump installed at this time? ___ Yes X No
   If Yes, complete items A through F.
   If No, complete items A and D with estimated information for those wells in which pump will be installed.
   A. Actual pumping rate, if applicable: ___ gallons per minute. Measured ☐ Estimated ☐
   B. Pump column diameter: ___ inches. C. Length of pump column: ___ feet.
   D. Pumping equipment installed: ___, 19___ E. Brand/Type:
   F. Pump installed by: Contractor ☐ Owner ☐ Pump Installer ☐ License No.

MW-7

MW1

G-10111 A

8. Well Construction Information.

A. Total well depth: 40 feet. B. Static water level: 9 feet. C. Pumping water level: _____ feet.
☐ Estimated or ☐ Measured

D. Well Construction began: 20-Jan ,1999 E. Well Construction completed: 20-Jan 1999

F. Bore hole diameter: 8 inches.

G. Plain casing: Diameter 2.1 ID 2.4 OD inches. Type of Material: PVC
Wall thickness: 0.15 inches. Joints--Welded/Glued/Threaded/Other: _____
Length(s) and placement(s) depth from 0' to 30 feet. _____ feet to 0 feet.

H. Screen: 2.1 ID 2.4 OD inches. Type of Material: PVC
Screen openings (slot size): 0.010" Trade Name: Monoflex Guides at _____ feet.
Length(s) and placement(s) depth from 30 ft. to 40 feet from _____ feet to _____ feet.

I. Gravel pack interval(s) from 26 feet to 40 feet. _____ feet. to _____ feet. Grade size: 20--40

J. Grouted/Sealed from 0 feet to 4 feet with Cement Grout (type)
from 4 feet to 26 feet with Bentonite grout (type)

K. Drilling method: Hollow Stem L. Drilling fluid: None

M. Well development technique (total time and method): Surge, bail, pump --1 hours

N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? ___ Yes X No
If yes, what will be used: _____

9. Geologic Materials Logged

Depth in Feet From	To	DESCRIPTION	Depth in Feet From	To	DESCRIPTION
0	5	Topsoil			
5	10	Clay -- brown			
10	25	Fine Sand			
25	30	Fine Sand with gravel			
30	40	Fine Sand with medium gravel			

(Additional sheets may be submitted)

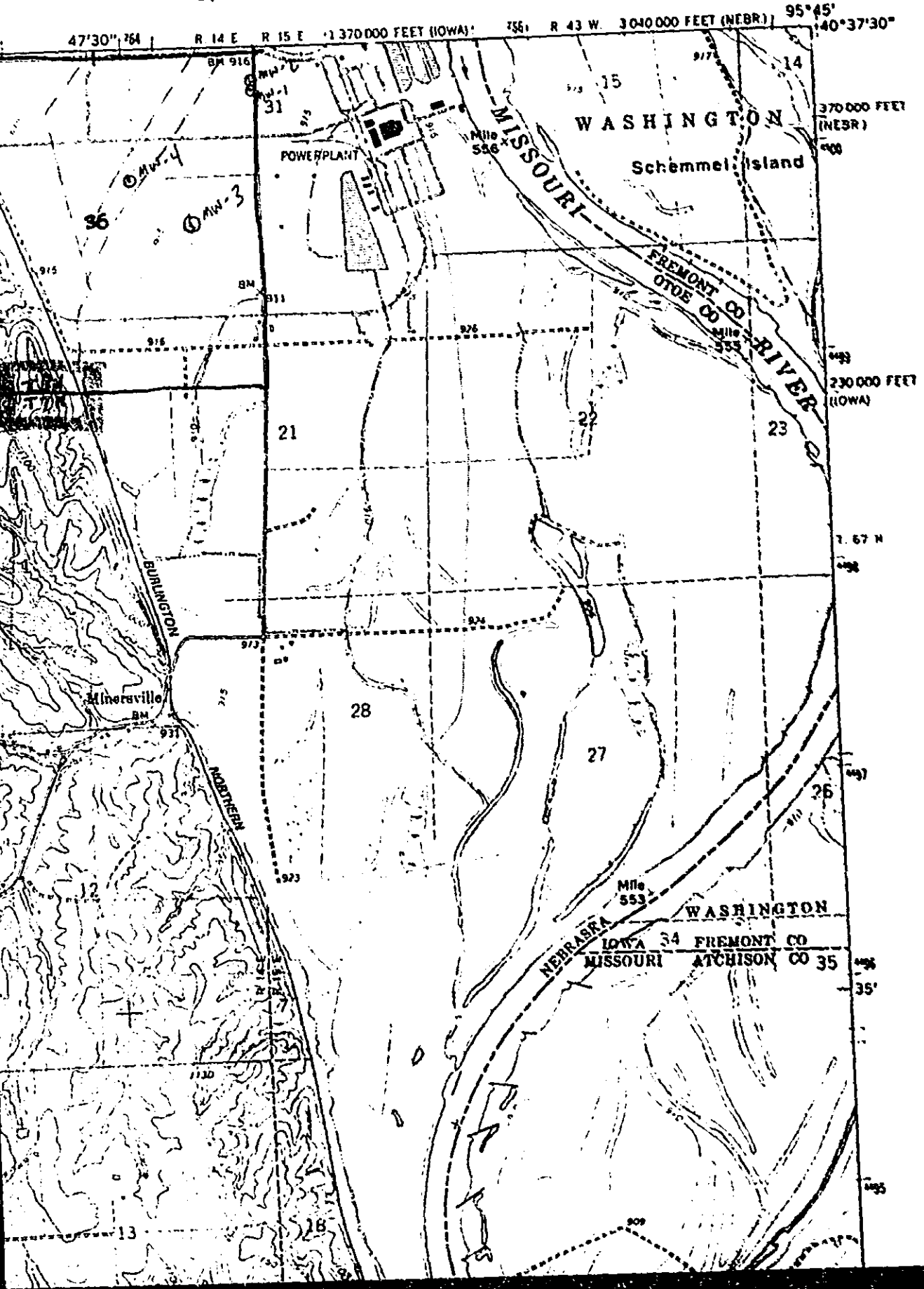
10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water well Contractor's Signature — Date: 3-1-99

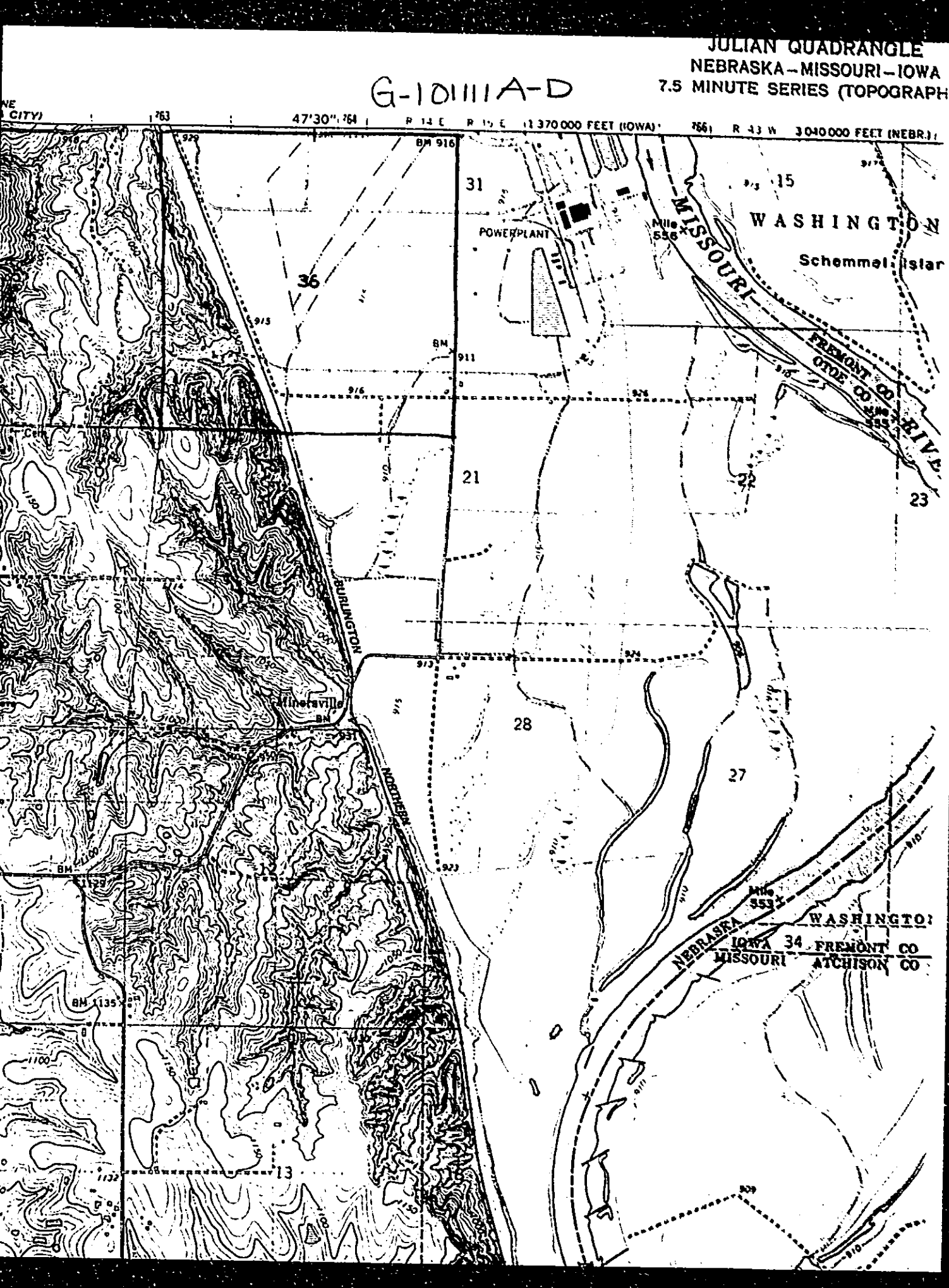
Water Well Owner's Signature — Date: 6-1-99

G-10111 A-D

JULIAN QUADRANGLE
NEBRASKA–MISSOURI–IOWA
7.5 MINUTE SERIES (TOPOGRAPHIC)



G-10111A-D


JULIAN QUADRANGLE
NEBRASKA–MISSOURI–IOWA
7.5 MINUTE SERIES (TOPOGRAPH
47'30"
R 14 E
R 15 E
370 000 FEET (IOWA)
R 43 W
3 040 000 FEET (NEBR.)
BM 916
31
15
WASHINGTON
POWERPLANT
Mile 556
MISSOURI
Schemmel Islar
36
FREMONT CO
OTOE CO
RIVER
BM 911
21
22
23
BURLINGTON
NORTHERN
Hillsdale
BM
28
27
Mile 553
WASHINGTO
NEBRASKA
IOWA
MISSOURI
34
FREMONT CO
ATCHISON CO
BM 1135
13

STATE OF NEBRASKA

G-101111 A-D

DEPARTMENT OF WATER RESOURCES
Roger K. Patterson
Director

Mike Johanns
Governor

June 10, 1999

IN REPLY REFER TO:

Omaha Public Power District
444 South 16th St. Mall
Omaha, NE 68102-2247

LOCATION OF THE WELLS:

Otoe County

The following items were submitted to register the four wells but are being returned to you:

- Water Well Registration Forms
- $120.00 Fee (State Auditors require that checks be returned for all unregistered wells.)
- Quadrangle map

The four wells have not been registered for the following reasons:

- The Water Well Registration form is incomplete. Please complete items 6A and 6B.
- Township 67 is not in Nebraska. The wells are either in Township 7 North or Township 8 North.
- Please mark the location of the wells on the map.
- The fee should be $240.00. Please refer to the enclosed instruction sheet.

Please resubmit the enclosures along with the items requested by July 12, 1999. As required by law, we are obligated to inform you that failure to register the well is a Class IV misdemeanor. If not promptly resolved, matters involving unregistered wells may be sent to the county attorney for possible prosecution. If you have any questions, please call me.

Sincerely,

Stacey Evans

Stacey Evans
Accounting Clerk, Ground Water
(402)471-4084

pjb

clrshare\ground water\returns

301 Centennial Mall South, 4th Floor • P.O. Box 94676 • Lincoln, Nebraska 68509-4676 • Phone (402) 471-2363 • Telefax (402) 471-2900

G-101111A-D

Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

June 29, 1999
99-EA-143

State of Nebraska
Department of Water Resources
P.O. Box 94676
Lincoln, NE 68509-4676

Please find enclosed Water Well Registration forms for four groundwater monitoring wells installed at our Nebraska City Station. Also enclosed are two checks, each for $120 for the registration fees.

If you have any questions regarding the enclosed material, please contact John Buckley at (402)636-2318 or me directly at (402)636-2313.

Sincerely,

D. C. Hutchens
Manager - Environmental Affairs
Environmental & Governmental Affairs

JEB:dn

Encl.

State of Nebraska
Department of Water Resources

WATER WELL REGISTRATION CORRECTION

FOR DEPARTMENT USE ONLY

Registration Number	G-101111A
Sequence Number	118729
Correction Date	September 13, 1999
Person Processing Correction	Wendy Evans

Information regarding the water well referenced above has been changed in the Department's water well registration records. Please note the following changes and the reason changes were made:

Well Location (Item 6A) and Footage (Item 6B): According to the marking on the quadrangle map, the well is estimated to be located in Range 14E, Section 36 in the NE¼ of the NE¼, 475 feet from the North section line, and 10 feet from the East section line (475S 10W).

This correction has modified section(s) 6A and 6B of DWR Registration Form #145.
If these changes are inaccurate, please contact the Department of Water Resources at P.O. Box 94676, Lincoln, NE, 68509-4676.
Phone (402)471-3458.

I certify that this Correction Form has been forwarded to the owner of the referenced water well and is now a part of the registration records.

Wendy Evans
Department of Water Resources

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DRILLING LOG

Project Name: Omaha Public Power District - Nebraska City, Nebraska		Project Number: 08 94037.01	Boring Number: MW-8
Boring Location Description: N of fly ash disposal area	Boring Location: NE 1/4, NW 1/4, SEC 31, T8N, R15E		Page: 1 of 2
Ground Surface Elevation: 916.8 ft above NGVD (surv.)	Top of Well Casing Elevation: 919.3 ft above NGVD (surv.)	Boring Location Coordinates: 4064.5 North 6695.7 East	Total Footage: 22.0 ft.

Drilling Method (s)	Borehole Size	Overburden Footage	Bedrock Footage	No. Of Samples	No. Core Boxes	Depth to Water
6 1/4" ID HSA	8	22.0 feet	0 feet	None	None	See Remarks

Drilling Co. Layne, Inc. Omaha, Nebraska	Driller (s) Lyle Porter, Rick Keith
Drilling Rig Acker Soilmax 80 Truck Mounted	Type of Sampler: Continuous
Date Started 01/21/99 — Date Completed 01/21/99	Field Observer (s): JOHN BUCKLEY

Depth in Feet	Description	USCS Class.	Blow Count	Recovery	Depth in Feet	Sample No.	PID (ppm)	Remarks
1–3	SANDY SILT, brownish grey, loose, well graded, fine sand and silt, moist	ML			1–3			
4–5	SILTY SAND, brownish grey, well graded, medium density quartz & rock grains	SM			4–5			
6–10	SAME AS ABOVE	SM			6–10			AUGER CUTTINGS WET AT 9.0 feet
11–14	SAND, dark grey, med. to fine grained, well graded, medium density, wet, mostly quartz with rock grains.	SW			11–14			

Drilling Log, continued

Project Name	Project No.	Boring Number
Omaha Public Power District – Nebraska City, Nebraska	08 94037.01	MW - 8

Boring Location Description	Boring Location	Page
N of fly ash disposal area	NE 1/4, NW 1/4, SEC 31, T8N, R15E	2 of 2

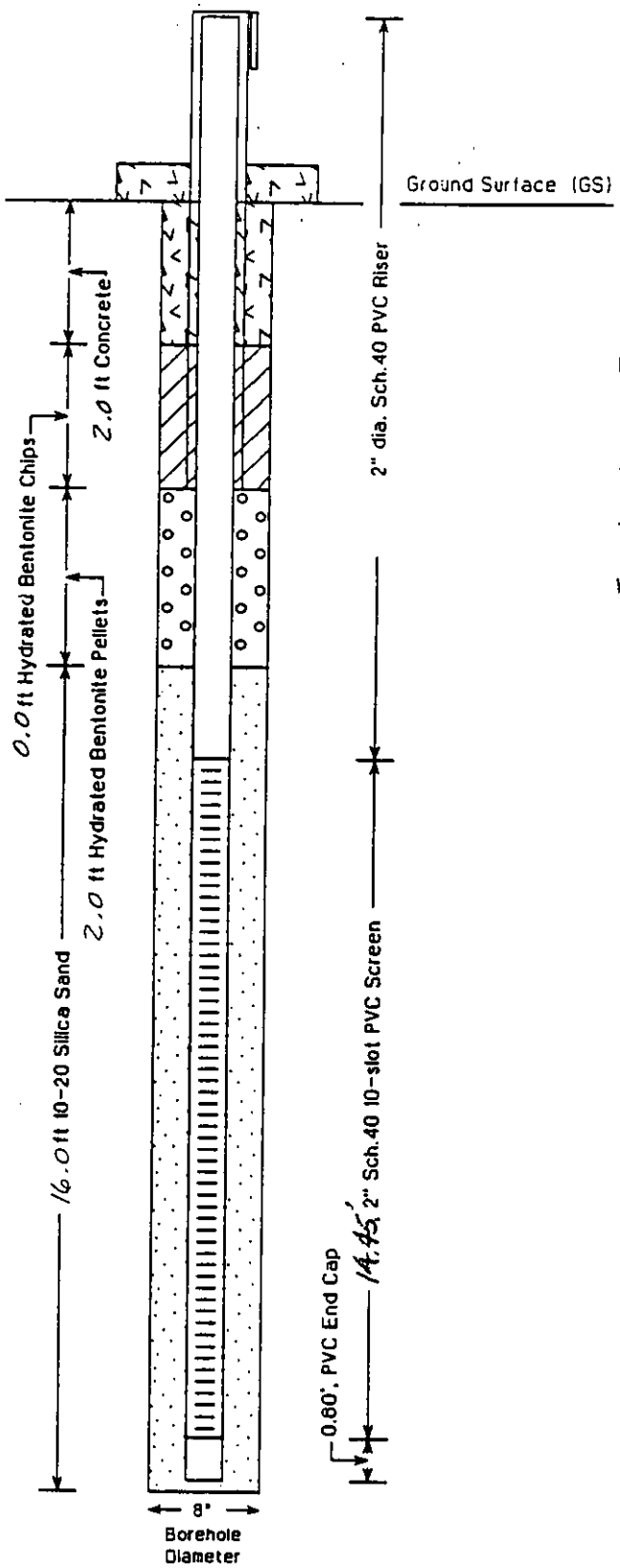
Depth in Feet	Description	USCS Class.	Blow Count	Recovery	Depth in Feet	Sample No.	PID (ppm)	Remarks
15	SAME AS ABOVE	SW			15			
16					16			
17					17			
18					18			
19					19			
20	SAME AS ABOVE	SW			20			
21					21			
22	BOTTOM OF BORING				22			
23					23			
24					24			
25					25			
26					26			
27					27			
28					28			
29					29			
30					30			
31					31			

MONITORING WELL CONSTRUCTION RECORD

Project Name	Project Number	Well Number
Omaha Public Power District - Nebraska City, Nebraska	08 94037.01	MW-8

Location Description	Location	Total Depth (TOC)
N of fly ash disposal area	NE 1/4, NW 1/4, SEC 31, T8N, R15E	22.46 feet

Ground Surface Elevation ft above NGVD	Marker in Concrete Well Pad El.	Boring Location Coordinates	Date Installed
		4064.5 North 6695.7 East	01/21/99



Elevation Top of Well Casing: 919.26 ft above NGVD

Elevation Top of Well Screen: 911.85 ft above NGVD

Elevation Bot. of Well Screen: 877.40 ft above NGVD

Total Depth of Boring: 22.0 ft below GS

Total Depth of Well: 20.0 ft below GS

Well Casing Above GS: 2.46 feet

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MW-8

MW 2

STATE OF NEBRASKA
DEPARTMENT OF WATER RESOURCES
WATER WELL REGISTRATION

Registration Date 7-1-99 Sequence No. 118730 Registration No. G-101111B
Owner Code No. 40226 Reciept No. 102038 & 102039 Nemaha NRD

1. Well Owner Omaha Public Power District Telephone Number (402) 636-2304
Address 444 South 16th Street Mall
City Omaha State NE Zip Code 68102 + 2247

2. Drilling Firm Layne-Western Company Telephone Number (402) 359-2042
Address 25450 Highway 275, P.O. Box 597 Contractor's License No. 39268
City Valley State NE Zip Code 68064 + 0597

3. Permit Number(s)

4. Purpose of well(indicate one): ___ Dewatering (over 90 days) ___ Domestic ___ Geothermal ___ Ground Heat Exchanger ___ Ground Water Source Heat Pump ___ Industrial ___ Injection ___ Irrigation ___ Livestock X Monitoring ___ Observation ___ Public Water Supply (with spacing (46-638)) ___ Public Water Supply (without spacing) ___ Recovery ___ Aquaculture ___ Other ___ (indicate use)

5. Replacement and ebandoned well information.
A. Is this well a replacement well? ___ Yes X No
B. Registration number of abandoned well: ___
C. Replacement well is ___ feet from abandoned well.
D. Abandoned well last operated ___, 19___
E. Original well pump column size: ___ inches.
F. Completion of original well abandonment on ___, 19___
G. Location of water use of abandoned well: ___

6. A. Well location: NE 1/4 of the NW 1/4 of Section 31, Township 8 North, Range 15 East/West, Otoe County.
B. The well is 545 feet from the (North or South) section line and 1950 feet from the (East or West) section line.
C. Street address or block, lot and subdivision, if applicable: Omaha Public Power District Nebraska City Station
D. Location of water use, if applicable (give legal descriptions): N/A
E. If for irrigation, the land to be irrigated is N/A acres.
F. Well reference letter(s), if applicable: Monitoring Well 2

7. Pump Information.
Is pump installed at this time? ___ Yes X No
If Yes, complete items A through F.
If No, complete items A and D with estimated information for those wells in which pump will be installed.
A. Actual pumping rate, if applicable: ___ gallons per minute. Measured ☐ Estimated ☐
B. Pump column diameter: ___ inches. C. Length of pump column: ___ feet
D. Pumping equipment installed: ___, 19___ E. Brand/Type: ___
F. Pump installed by: Contractor ☐ Owner ☐ Pump Installer ☐ License No. ___

MW-8

MW2

G-101111B

8. Well Construction Information.

A. Total well depth: 20 feet. B. Static water level: 9 feet. C. Pumping water level: _____ feet.
☑ Estimated or ☐ Measured

D. Well Construction began: 21-Jan ,1999 E. Well Construction completed: 21-Jan 1999

F. Bore hole diameter: 8 inches.

G. Plain casing: Diameter 2.1 ID 2.4 OD inches. Type of Material: PVC
Wall thickness: 0.15 inches. Joints--Welded/Glued/Threaded/Other: _____
Length(s) and placement(s) depth from 0' to 5 feet. _____ feet to 0 feet.

H. Screen: 2.1 ID 2.4 OD inches. Type of Material: PVC
Screen openings (slot size): 0.010" Trade Name: Monoflex Guides at _____ feet.
Length(s) and placement(s) depth from 15 ft. to 20 feet from _____ feet to _____ feet.

I. Gravel pack interval(s) from 4 feet to 20 feet. _____ feet. to _____ feet. Grade size: 20--40

J. Grouted/Sealed from 0 feet to 3 feet with Cement Grout (type)
from 3 feet to 4 feet with Bentonite (type)

K. Drilling method: Hollow Stem Auger L. Drilling fluid: None

M. Well development technique (total time and method): Surge, bail, pump --1 hours

N. Will chemicals, fertilizer or antifreeze be injected or utilized in the system? ____ Yes X No
If yes, what will be used: _____

9. Geologic Materials Logged

Depth in Feet From	Depth in Feet To	DESCRIPTION
0	5	Topsoil
5	10	Clay -- brown
10	20	Fine Sand

Depth in Feet From	Depth in Feet To	DESCRIPTION

(Additional sheets may be submitted)

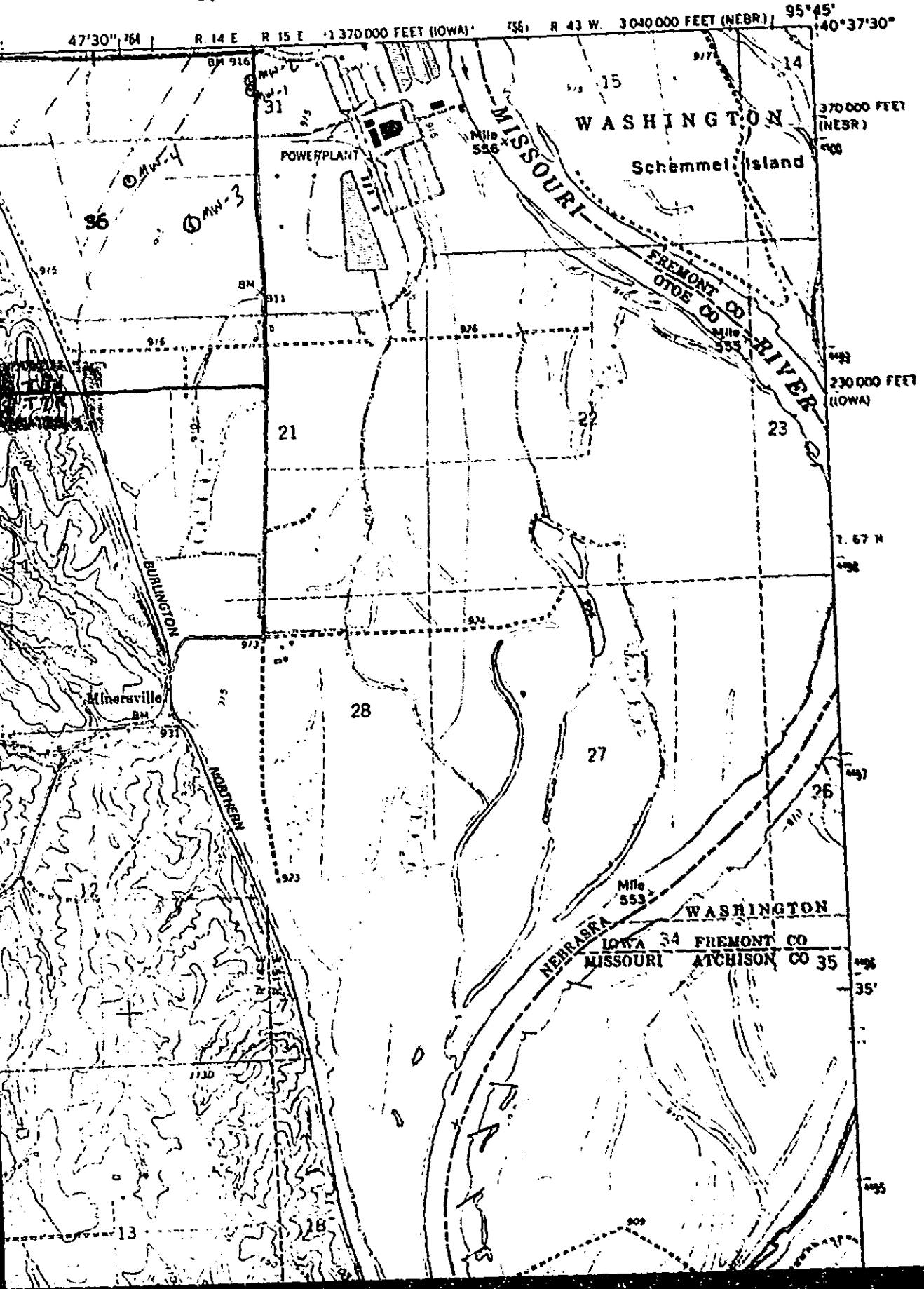
10. I am familiar with the information submitted on this registration, and to the best of my knowledge it is true.

Water well Contractor's Signature — Date: 3-1-99

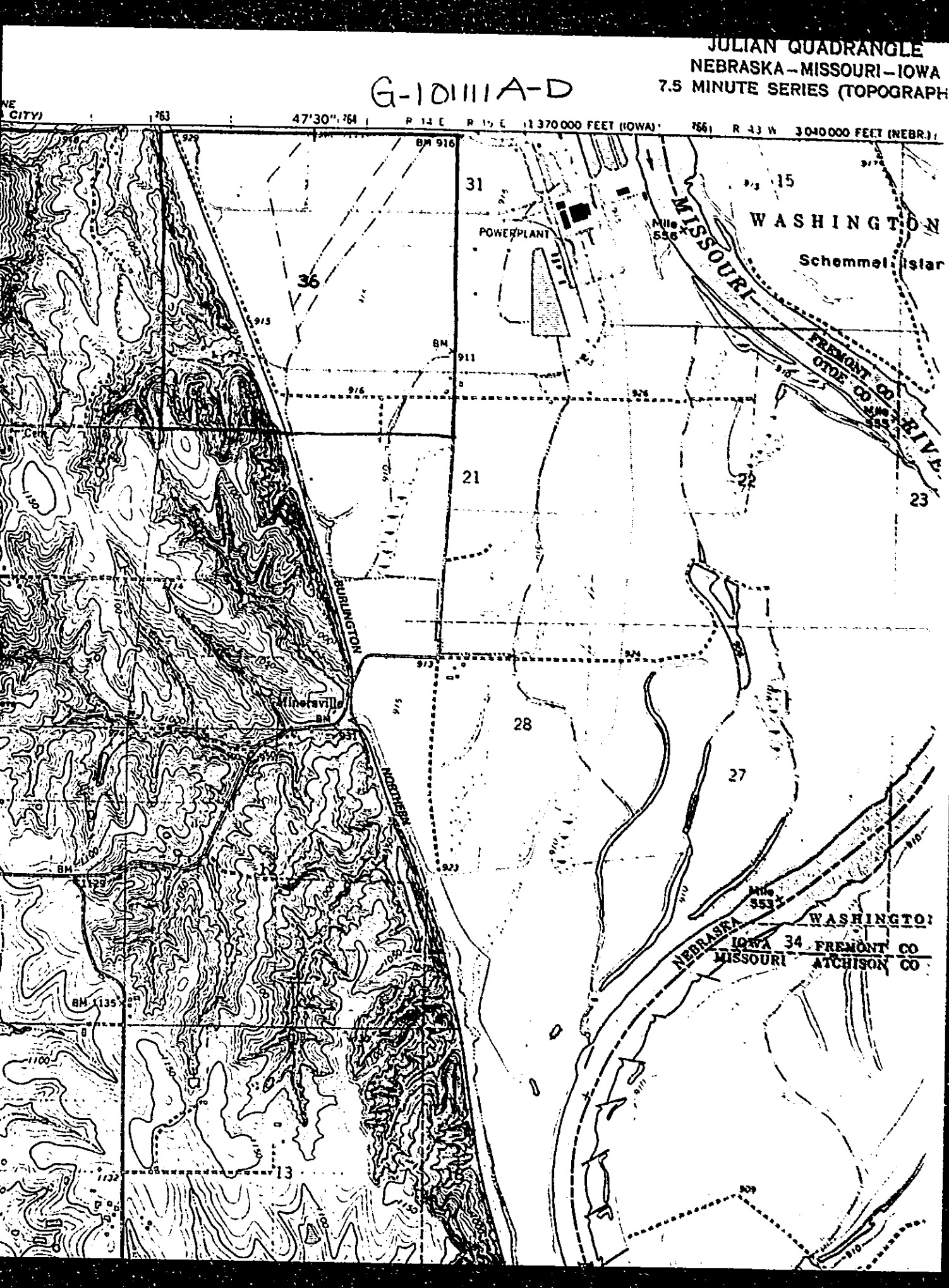
Water Well Owner's Signature — Date: 6-1-99

G-10111 A-D

JULIAN QUADRANGLE
NEBRASKA–MISSOURI–IOWA
7.5 MINUTE SERIES (TOPOGRAPHIC)



G-10111A-D


JULIAN QUADRANGLE
NEBRASKA–MISSOURI–IOWA
7.5 MINUTE SERIES (TOPOGRAPH
47'30"
R 14 E
R 15 E
370 000 FEET (IOWA)
R 43 W
3 040 000 FEET (NEBR.)
BM 916
31
15
WASHINGTON
POWERPLANT
Mile 556
MISSOURI
Schemmel Islar
36
FREMONT CO
OTOE CO
RIVER
BM 911
21
22
23
BURLINGTON
NORTHERN
Hillsdale
BM
28
27
Mile 553
WASHINGTO
NEBRASKA
IOWA
MISSOURI
34
FREMONT CO
ATCHISON CO
BM 1135
13

G-101111A-D

Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

June 29, 1999
99-EA-143

State of Nebraska
Department of Water Resources
P.O. Box 94676
Lincoln, NE 68509-4676

Please find enclosed Water Well Registration forms for four groundwater monitoring wells installed at our Nebraska City Station. Also enclosed are two checks, each for $120 for the registration fees.

If you have any questions regarding the enclosed material, please contact John Buckley at (402)636-2318 or me directly at (402)636-2313.

Sincerely,

D. C. Hutchens
Manager - Environmental Affairs
Environmental & Governmental Affairs

JEB:dn

Encl.

STATE OF NEBRASKA

G-101111 A-D

DEPARTMENT OF WATER RESOURCES
Roger K. Patterson
Director

Mike Johanns
Governor

June 10, 1999

IN REPLY REFER TO:

Omaha Public Power District
444 South 16th St. Mall
Omaha, NE 68102-2247

LOCATION OF THE WELLS:

Otoe County

The following items were submitted to register the four wells but are being returned to you:

- Water Well Registration Forms
- $120.00 Fee (State Auditors require that checks be returned for all unregistered wells.)
- Quadrangle map

The four wells have not been registered for the following reasons:

- The Water Well Registration form is incomplete. Please complete items 6A and 6B.
- Township 67 is not in Nebraska. The wells are either in Township 7 North or Township 8 North.
- Please mark the location of the wells on the map.
- The fee should be $240.00. Please refer to the enclosed instruction sheet.

Please resubmit the enclosures along with the items requested by July 12, 1999. As required by law, we are obligated to inform you that failure to register the well is a Class IV misdemeanor. If not promptly resolved, matters involving unregistered wells may be sent to the county attorney for possible prosecution. If you have any questions, please call me.

Sincerely,

Stacey Evans

Stacey Evans
Accounting Clerk, Ground Water
(402)471-4084

pjb

clrshare\ground water\returns

301 Centennial Mall South, 4th Floor • P.O. Box 94676 • Lincoln, Nebraska 68509-4676 • Phone (402) 471-2363 • Telefax (402) 471-2900

State of Nebraska
Department of Water Resources

WATER WELL REGISTRATION CORRECTION

FOR DEPARTMENT USE ONLY

Registration Number	G-101111B
Sequence Number	118730
Correction Date	September 13, 1999
Person Processing Correction	Wendy Evans

Information regarding the water well referenced above has been changed in the Department's water well registration records. Please note the following changes and the reason changes were made:

Well Location (Item 6A) and Footage (Item 6B): According to the marking on the quadrangle map, the well is estimated to be located in Range 14E, Section 36 in the NE¼ of the NE¼, 600 feet from the North section line, and 10 feet from the East section line (600S 10W).

Casing Length & Placement Depth (Item 8G): Based on the total well depth and the length and placement depth of the screen, the length and placement depth of the casing is estimated to be 0 feet to 15 feet.

This correction has modified section(s) 6A, 6B and 8G of DWR Registration Form #145. If these changes are inaccurate, please contact the Department of Water Resources at P.O. Box 94676, Lincoln, NE, 68509-4676.
Phone (402)471-3458.

I certify that this Correction Form has been forwarded to the owner of the referenced water well and is now a part of the registration records.

Wendy Evans
Department of Water Resources

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BORING LOG NO. NC2-MW-8

PROJECT: OPPD Nebraska City- Monitoring Well Installation

CLIENT: HDR Engineering, Inc. Omaha, NE

SITE: 7264 L Rd Nebraska City, NE

LOCATION: See Exhibit A-1

Latitude: 40.6242° Longitude: -95.7899°

Surface Elev.: 913.5 (Ft.)

DEPTH	ELEVATION (Ft.)	
		Grass at surface
		LEAN TO FAT CLAY (CL/CH), gray
4.5	909	
5.0	908.5	**SILTY CLAY (CL/ML)**, gray
		FINE SAND (SP), grayish brown
15.0	898.5	***Boring Terminated at 15 Feet***

INSTALLATION DETAILS

3' stick up

- **Concrete**
- **Seal** hydrated bentonite chips
- **Riser Pipe** 2" diameter schedule 40 PVC. Flush threaded to PVC Screen
- **Screen** 2" diameter schedule 40 PVC slotted screen, 0.010" slot
- **Filter Material** silica sand 16/30 grade

DEPTH (Ft.)	FIELD TEST RESULTS
	2-2-4-2 N=6
	2-3-3-3 N=6
5	2-6-6-5 N=12
	2-6-6-5 N=12
	2-1-1-2 N=2
10	1-2-2-3 N=4
	1-2-2-1 N=4
15	

WATER LEVEL OBSERVATIONS: ▽ 5 ft. after boring completion

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4¼-inch ID Hollow Stem Auger

Abandonment Method:
Well installed

Notes:

Bottom of well at depth of 14.9 feet.
Concrete pad, protector pipe, and 3 bollards installed at ground surface.
Top of casing elevation of 916.54 feet reported by client.
Energy Transfer Ratio 84.6%. Hammer Efficiency Correction = 1.41 (October, 2017).

Terracon
15080 A Cir
Omaha, NE

Boring Started: 07-09-2018 | Boring Completed: 07-09-2018

Drill Rig: 929 | Driller: K. Smithhisler

Project No.: D9185019

BORING LOG NO. MW-14

PROJECT: OPPD Nebraska City- Monitoring Well Installation

CLIENT: HDR Engineering, Inc. Omaha, NE

SITE: 7264 L Rd Nebraska City, NE

LOCATION: See Exhibit A-1

Latitude: 40.6248° Longitude: -95.7929°

Surface Elev.: 917 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	INSTALLATION DETAILS	FIELD TEST RESULTS
		Gravel at surface	Concrete	1-3-3-2 N=6
		SILTY CLAY (CL/ML), dark gray	Seal hydrated bentonite chips	4-7-7-11 N=14
4.0	913	**LEAN TO FAT CLAY (CL/CH)**, dark gray		3-5-5-7 N=10
			Riser Pipe 2" diameter schedule 40 PVC. Flush threaded to PVC Screen	3-5-8-8 N=13
8.0	909	**SILTY CLAY (CL/ML)**, gray		2-1-1-2 N=2
			Filter Material silica sand. 16/30 grade	1-1-1-1 N=2
				1-1-1-1 N=2
			Screen 2" diameter schedule 40 PVC slotted screen, 0.010" slot	0-0-0-0 N=0
18.0	899			0-0-0-0 N=0
		Boring Terminated at 18 Feet		

DEPTH (Ft.): 5, 10, 15

WATER LEVEL OBSERVATIONS: ▽

SAMPLE TYPE

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4¼-inch ID Hollow Stem Auger

Abandonment Method:
Well installed

Notes:

Bottom of well at depth of 18 feet.
Concrete pad, protector pipe, and 3 bollards installed at ground surface.
Ground elevation estimated using Google Earth.
Energy Transfer Ratio 84.6%. Hammer Efficiency Correction = 1.41 (October, 2017).

WATER LEVEL OBSERVATIONS

▽ *6 ft. while drilling*

Terracon
15080 A Cir
Omaha, NE

Boring Started: 07-12-2018 | Boring Completed: 07-12-2018

Drill Rig: 929 | Driller: K. Smithhisler

Project No.: D9185019