Appendix E

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-1A

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION	
BOREHOLE DIA.:	8.25 in
WELL DIA.:	2 in
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen
TOP OF CASING:	1007.05 ft
GROUND SURFACE ELEV.:	1004.6 ft

Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.

10		994.5
11	**MEDIUM SAND** Brown	993.5
11.5		993
12	**LEAN CLAY** Gray	992.5
14	**MEDIUM SAND** Gray	990.5
16	**LEAN CLAY**, with interbedded silt Gray	988.5
18	**LEAN CLAY** with fine very sand Gray	986.5
20	**SILT** with fine sand Gray	984.5
	FINE SAND with silt Grayish brown	
	FINE SAND Grayish brown	
24		980.5

BOTTOM OF BORING

Note: Soil classifications taken from the log of MW-1B.

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft				
WL	▽ 17	WD	▽ 17.3	9/10/2007
WL	▽		▽	
WL				

Terracon

BORING STARTED	8-27-07 09:50		
BORING COMPLETED	8-27-07 10:10		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2161

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-1B

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION	
BOREHOLE DIA.:	8.25 in
WELL DIA.:	2 in
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen
TOP OF CASING:	1007.04 ft
GROUND SURFACE ELEV.:	1004.5 ft

DEPTH, ft	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N BLOWS / ft	TESTS WATER CONTENT, %	TESTS FIELD VAPOR TEST (PPM)*	TESTS SAMPLE SENT TO LAB	Elevation
			HS						Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.
10									994.5
		1	SS	18	4				MEDIUM SAND, Brown
11.5									993
		2	SS	18					LEAN CLAY, Gray
14									990.5
		3	SS	18	4				MEDIUM SAND, Gray
16									988.5
		4	SS	18	6				LEAN CLAY, with interbedded silt, Gray
18									986.5
		5	SS	18	12				LEAN CLAY with fine very sand, Gray
20									984.5
		6	SS	18	7				SILT with fine sand, Gray
		7	SS	18	4				FINE SAND with silt, Grayish brown
24									980.5
		8	SS	16	11				FINE SAND, Grayish brown
		9	SS	18	10				FINE SAND with silt, Grayish brown
		10	SS	18	8				
30									974.5
		11	SS	16	12				FINE SAND, trace medium sand, Grayish brown

Continued Next Page

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 17.5	9/10/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-20-07 12:50		
BORING COMPLETED	8-20-07 15:45		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 (^^S.GPJ TERRACON.GDT 10/30/07

2162

LOG OF WELL NO. MW-1B

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
					12	SS	18	12			
			35		13	SS	16	8			
					14	SS	18	12			
	38 966.5				15	SS	18	14			
	FINE SAND with silt, trace medium sand Grayish brown 40 964.5		40		16	SS	18	18			
	FINE TO VERY FINE SILTY SAND Gray				17	SS	18	13			
			45		18	SS	18	21			
					19	SS	18	35			
	50 954.5				20	SS	18	15			
	BOTTOM OF BORING Note: Soil classifications were based on visual observations made by the field crew.		50								

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 17.5	9/10/2007
WL	▽	▼	
WL			

Terracon

BORING STARTED	8-20-07 12:50		
BORING COMPLETED	8-20-07 15:45		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2163

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-2A

CLIENT: Omaha Public Power District
LOCATION: Ft. Calhoun, Nebraska
SITE: Ft. Calhoun Nuclear Power Plant
PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION		WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N BLOWS / ft.	TESTS WATER CONTENT, %	TESTS FIELD VAPOR TEST (PPM)*	TESTS SAMPLE SENT TO LAB
BOREHOLE DIA.:	8.25 in										
WELL DIA.:	2 in										
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen										
TOP OF CASING:	1007.25 ft										
GROUND SURFACE ELEV.:	1004.9 ft										
Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.			5			HS					
10	995		10								
LEAN CLAY, trace very fine sand Grayish brown											
14.5	990.5		15								
FINE SAND with silt Grayish brown											
22	983		20								
FINE SAND Brownish gray											
24	981										
BOTTOM OF BORING Note: Soil classifications taken from the log of MW-2B.											

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▽ 17.1	9/10/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-23-07 14:45		
BORING COMPLETED	8-23-07 15:10		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2164

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-2B

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION	
BOREHOLE DIA.:	8.25 in
WELL DIA.:	2 in
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen
TOP OF CASING:	1007.25 ft
GROUND SURFACE ELEV.:	1004.9 ft

GRAPHIC LOG	DEPTH, ft	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N BLOWS / ft.	TESTS WATER CONTENT, %	TESTS FIELD VAPOR TEST (PPM)*	TESTS SAMPLE SENT TO LAB
				HS					
Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.	5								
	10		1	SS	20	4			
LEAN CLAY, trace very fine sand Grayish brown	995								
			2	SS	18	3			
	14.5								
FINE SAND with silt Grayish brown	990.5		3	SS	18	7			
	15		4	SS	18	6			
			5	SS	18	13			
	20		6	SS	20	7			
	22								
FINE SAND Brownish gray	983		7	SS	18	17			
	24								
FINE TO MEDIUM SAND Brownish gray	981		8	SS	18	14			
	25		9	SS	16	12			
	28								
FINE SAND, trace medium sand Brownish gray	977		10	SS	16	14			
	30		11	SS	18	11			

Continued Next Page

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 17.2	9/10/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-22-07 11:00		
BORING COMPLETED	8-23-07 11:00		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 0507...GS LOGS.GPJ TERRACON.GDT 10/30/07

2165

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-2B

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
			35		12	SS	18	12			
					13	SS	16	7			
	37 968				14	SS	18	3			
	38 **LEAN CLAY**, trace fine sand 967 Gray				15	SS	18	3			
	39 **FINE SAND** 966 39.5 Grayish brown, interbedded course 965.5		40								
	LEAN CLAY with sand Gray				16	SS	24	9			
	VERY FINE TO FINE SAND Grayish brown 3 inches of gray lean clay at 41.5 feet 1 inch of gray lean clay at 43 feet				17	SS	24	28			
	46 959				18	SS	24	16			
	FINE SAND, trace medium sand Grayish brown		45		19	SS	24	37			
	48 957										
	FINE SAND with silt, trace medium sand Grayish brown				20	SS	18	33			
	50 955		50								
	BOTTOM OF BORING Note: Soil classifications were based on visual observations made by the field crew.										

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 17.2	9/10/2007
WL	▽	▼	
WL			

Terracon

BORING STARTED	8-22-07 11:00		
BORING COMPLETED	8-23-07 11:00		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2166

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-3A

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION	
BOREHOLE DIA.:	8.25 in
WELL DIA.:	2 in
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen
TOP OF CASING:	1007.08 ft
GROUND SURFACE ELEV.:	1004.7 ft

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
	Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.		5, 10, 15, 20			HS					
	10 — 994.5										
	LEAN CLAY Gray and dark gray mottled										
	18 — 986.5										
	SILT with very fine sand, trace lean clay Gray										
	20.5 — 984										
	FINE SAND with silt Gray										
	22 — 982.5										
	23 — 981.5 **FINE SAND** Gray										
	BOTTOM OF BORING Note: Soil classifications taken from the log of MW-3B.										

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 16.9	9/11/2007
WL	▼	▼	
WL			

Terracon

BORING STARTED	8-24-07 13:45		
BORING COMPLETED	8-24-07 14:05		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 0507 I 35 LOGS.GPJ TERRACON.GDT 10/30/07

2167

LOG OF WELL NO. MW-3B

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION		WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N BLOWS / ft.	TESTS WATER CONTENT, %	TESTS FIELD VAPOR TEST (PPM)*	TESTS SAMPLE SENT TO LAB
BOREHOLE DIA.:	8.25 in										
WELL DIA.:	2 in										
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen										
TOP OF CASING:	1007.08 ft										
GROUND SURFACE ELEV.:	1005.2 ft										
Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.						HS					
10	995		5								
LEAN CLAY Gray and dark gray mottled			10		1	SS	16	7			
					2	SS	16	2			
			15		3	SS	18	3			
18	987				4	SS	18	3			
SILT with very fine sand, trace lean clay Gray					5	SS	18	2			
20.5	984.5		20		6	SS	20	4			
FINE SAND with silt Gray					7	SS	20	7			
22	983				8	SS	16	6			
FINE SAND Gray			25		9	SS	18	13			
24	981				10	SS	20	14			
MEDIUM TO COARSE SAND Gray					11	SS	20	25			
26	979		30								
FINE SAND Gray											
30	975										
FINE TO MEDIUM SAND with silt Grayish brown											
32	973										
Continued Next Page											

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft

WL	▽	▽ 17.3	9/11/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-24-07 09:00		
BORING COMPLETED	8-24-07 11:20		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2168

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-3B

CLIENT: Omaha Public Power District
LOCATION: Ft. Calhoun, Nebraska
SITE: Ft. Calhoun Nuclear Power Plant
PROJECT: OPPD Hydrogeologic Assessment

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
	FINE SAND with silt Gray		35		12	SS	18	27			
					13	SS	16	8			
36 969	**FINE TO MEDIUM SAND** Grayish brown Trace organic material				14	SS	18	7			
					15	SS	18	8			
40 966	**FINE SAND**, trace medium to coarse sand Grayish brown		40		16	SS	18	4			
42 963	**FINE SAND** Gray				17	SS	18	12			
44 961	**FINE SAND**, trace medium to coarse sand Gray		45		18	SS	18	18			
					19	SS	18	11			
50 955	**BOTTOM OF BORING** Note: Soil classifications were based on visual observations made by the field crew.		50		20	SS	16	7			

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 17.3	9/11/2007
WL	▽	▼	
WL			

Terracon

BORING STARTED	8-24-07 09:00		
BORING COMPLETED	8-24-07 11:20		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2169

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-4A

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION	
BOREHOLE DIA.:	8.25 in
WELL DIA.:	2 in
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen
TOP OF CASING:	1005.80 ft
GROUND SURFACE ELEV.:	1003.4 ft

Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted 0 and 10 feet.

10 — 993.5

FINE SAND with lean clay
Brown

12 — 991.5

LEAN CLAY with very fine sand
Grayish brown

16 — 987.5

LEAN CLAY
Grayish brown

21.5 — 982

22 — 981.5

FINE SAND with silt
Gray

BOTTOM OF BORING

Note: Soil classifications taken from the log of MW-4B.

GRAPHIC LOG	WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
		5			HS					
		10								
		15								
		20								

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▽ 15.1	9/6/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-16-07 12:50		
BORING COMPLETED	8-16-07 13:05		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2170

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-4B

CLIENT: Omaha Public Power District
LOCATION: Ft. Calhoun, Nebraska
SITE: Ft. Calhoun Nuclear Power Plant
PROJECT: OPPD Hydrogeologic Assessment

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
	BOREHOLE DIA.: 8.25 in WELL DIA.: 2 in CASING AND SCREEN: PVC (sch. 40); 0.01 slotted screen TOP OF CASING: 1005.76 ft GROUND SURFACE ELEV.: 1003.3 ft										
	Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted 0 and 10 feet.					HS					
	10 — 993.5		10								
	FINE SAND with lean clay Brown				1	SS	18	16			
	12 — 991.5										
	LEAN CLAY with very fine sand Grayish brown				2	SS	18	4			
			15		3	SS	18	4			
	16 — 987.5										
	LEAN CLAY Grayish brown				4	SS	18	4			
					5	SS	18	3			
	21.5 — 982		20		6	SS	18	2			
	FINE SAND with silt Gray				7	SS	18	5			
	24 — 979.5										
	FINE SAND Grayish brown		25		8	SS	18	3			
					9	SS	18	11			
	28 — 975.5										
	FINE TO MEDIUM SAND Grayish brown				10	SS	18	21			
	30 — 973.5		30								
	LEAN CLAY with fine sand Gray				11	SS	10	8			

Continued Next Page

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 15.0	9/6/2007
WL	▽	▼	
WL			

Terracon

BORING STARTED	8-15-07 09:50		
BORING COMPLETED	8-15-07 12:30		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2171

LOG OF WELL NO. MW-4B

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
	33 — 970.5 **FINE TO MEDIUM SAND** Gray				12	SS	18	19			
	35 — 968.5 Grayish brown		35		13	SS	18	12			
	35.5 — 968 **LEAN CLAY** Gray				14	SS	18	9			
	38 — 965.5 **FINE TO MEDIUM SAND** Gray				15	SS	18	28			
	FINE TO MEDIUM SAND with silt		40		16	SS	18	6			
					17	SS	18	29			
	45.5 — 958		45		18	SS	18	10			
	46 — 957.5 **COARSE SAND** Grayish brown				19	SS	18	15			
	FINE TO COARSE SAND with gravel Grayish brown				20	SS	18	12			
	50 — 953.5 **BOTTOM OF BORING** Note: Soil classifications were based on visual observations made by the field crew.		50								

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 15.0	9/6/2007
WL	▽	▼	
WL			

Terracon

BORING STARTED	8-15-07 09:50		
BORING COMPLETED	8-15-07 12:30		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2172

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-5A

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION	
BOREHOLE DIA.:	8.25 in
WELL DIA.:	2 in
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen
TOP OF CASING:	1006.00 ft
GROUND SURFACE ELEV.:	1003.5 ft

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
	Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.		5			HS					
	10 — 993.5		10								
	LEAN CLAY Dark gray Trace organic material — 12 — 991.5										
	LEAN CLAY Gray — 15 — 988.5		15								
	SILT with very fine sand Gray — 16 — 987.5										
	SILTY FINE SAND Gray — 20 — 983.5		20								
	FINE SAND with silt Gray — 22 — 981.5										
	BOTTOM OF BORING Note: Soil classifications taken from the log of MW-5B.										

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 13.8	9/6/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-16-07 15:45		
BORING COMPLETED	8-16-07 16:00		
RIG	CME-75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2173

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-5B

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION		
BOREHOLE DIA.:	8.25 in	
WELL DIA.:	2 in	
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen	
TOP OF CASING:	1005.95 ft	
GROUND SURFACE ELEV.:	1003.5 ft	

DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N BLOWS / ft.	TESTS WATER CONTENT, %	TESTS FIELD VAPOR TEST (PPM)*	TESTS SAMPLE SENT TO LAB
10			HS					
10		1	SS	18	6			
12		2	SS	18	5			
14		3	SS	18	6			
15		4	SS	18	4			
16		5	SS	20	5			
20		6	SS	20	7			
22		7	SS	18	7			
25		8	SS	18	16			
28		9	SS	18	20			
30		10	SS	18	18			
		11	SS	18	15			

Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.

10 — 993.5

LEAN CLAY
Dark gray
12 Trace organic material — 991.5

LEAN CLAY
Gray
14 — 989.5

15 **LEAN CLAY** — 988.5
Gray
16 **SILT** with very fine sand — 987.5
Gray

SILTY FINE SAND
Gray
20 — 983.5

FINE SAND with silt
Gray
22 — 981.5

MEDIUM SAND, trace fine to coarse sand
Gray

28 — 975.5

FINE TO MEDIUM SAND
Gray

Continued Next Page

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 15.1	9/6/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-17-07 08:50		
BORING COMPLETED	8-17-07 11:45		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2174

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-5B

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	TYPE	RECOVERY, in.	SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	FIELD VAPOR TEST (PPM)*	SAMPLE SENT TO LAB
	36 967.5 **FINE SAND** Gray		35		12	SS	18	14			
					13	SS	18	13			
					14	SS	18	28			
					15	SS	18	5			
			40		16	SS					
					17	SS	18	4			
			45		18	SS	18				
	46 957.5 Not sampled / No recovery				19	NR					
					20	NR					
	50 953.5 **BOTTOM OF BORING** Note: Soil classifications were based on visual observations made by the field crew.		50								

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft

WL	▽	▼ 15.1	9/6/2007
WL	▽	▼	
WL			

Terracon

BORING STARTED	8-17-07 08:50		
BORING COMPLETED	8-17-07 11:45		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2175

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-6

CLIENT: Omaha Public Power District

SITE: Ft. Calhoun Nuclear Power Plant

LOCATION: Ft. Calhoun, Nebraska

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION			DEPTH, ft	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N BLOWS / ft	TESTS WATER CONTENT, %	TESTS FIELD VAPOR TEST (PPM)*	TESTS SAMPLE SENT TO LAB
BOREHOLE DIA.:	8.25 in									
WELL DIA.:	2 in									
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen									
TOP OF CASING:	1006.24 ft									
GROUND SURFACE ELEV.:	1003.8 ft									
Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.					HS					
10	994		10							
LEAN CLAY Grayish brown	993			1	SS	18	4			
12 **SILT** with very fine sand	992			2	SS	18	5			
FINE SAND with silt Brown				3	SS	18	4			
14 **VERY FINE TO FINE SAND** with silt Brown	990		15	4	SS	18	4			
17.5	986.5			5	SS	18	4			
18 **MEDIUM SAND** Brown	986			6	SS	18	4			
FINE TO MEDIUM SAND with silt Brown			20							
22	982									
BOTTOM OF BORING Note: Soil classifications were based on visual observations made by the field crew.										

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft

WL	▽	▽ 15.8	9/11/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-27-07 13:50		
BORING COMPLETED	8-27-07 14:3		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

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Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-7

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

TE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION		GRAPHIC LOG	WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, in.	SAMPLES SPT - N BLOWS / ft	TESTS WATER CONTENT, %	TESTS FIELD VAPOR TEST (PPM)*	TESTS SAMPLE SENT TO LAB
BOREHOLE DIA.:	8.25 in											
WELL DIA.:	2 in											
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen											
TOP OF CASING:	1005.41 ft											
GROUND SURFACE ELEV.:	1002.9 ft											
Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.							HS					
10	993			5								
FINE SAND with silt Gray				10		1	SS	18	8			
13	990					2	SS	18	2			
LEAN CLAY, trace fine sand Gray						3	SS	18				
16	987			15		4	SS	16	7			
FINE SAND with silt Gray						5	SS	16	1			
19	984											
20 **MEDIUM SAND**, trace coarse sand	983			20		6	SS	16	12			
MEDIUM TO COARSE SAND Gray												
22	981					7	SS		28			
MEDIUM TO COARSE SAND, trace fine sand Gray												
24	979											
BOTTOM OF BORING Note: Soil classifications were based on visual observations made by the field crew.												

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

ATER LEVEL OBSERVATIONS, ft			
WL	▽	▼ 14.7	9/7/2007
WL	▽	▽	
WL			

Terracon

BORING STARTED	8-20-07 09:50		
BORING COMPLETED	8-20-07 10:40		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

2177

Security-Related and/or Personal Information Redacted

LOG OF WELL NO. MW-8

CLIENT: Omaha Public Power District

LOCATION: Ft. Calhoun, Nebraska

SITE: Ft. Calhoun Nuclear Power Plant

PROJECT: OPPD Hydrogeologic Assessment

DESCRIPTION	
BOREHOLE DIA.:	8.25 in
WELL DIA.:	2 in
CASING AND SCREEN:	PVC (sch. 40); 0.01 slotted screen
TOP OF CASING:	1009.58 ft
GROUND SURFACE ELEV.:	1007.3 ft

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY, in.	SAMPLES: SPT - N BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: FIELD VAPOR TEST (PPM)*	TESTS: SAMPLE SENT TO LAB
	Hydro-jetting was performed to remove soil from the upper ten feet of the well boring. No sampling was conducted between 0 and 10 feet.		5			HS					
	10 997.5		10								
	LEAN CLAY Gray and dark gray, mottled				1	SS	10	11			
	12 995.5										
	LEAN CLAY Grayish brown				2	SS	18	16			
			15		3	SS	18	4			
	17 990.5				4						
	BOTTOM OF BORING Note: Soil classifications were based on visual observations made by the field crew.										

The stratification lines represent the approximate boundaries between soil and rock types: actual transitions may be gradual.

WATER LEVEL OBSERVATIONS, ft

WL	Dry	WD	Dry	9/7/2007
WL				
WL				

Terracon

BORING STARTED	8-27-07 12:07		
BORING COMPLETED	8-27-07 12:4[illegible]		
RIG	CME 75	DRILLER	W. Cameron
LOGGED	R. Layman	JOB #	05077135

WELL 05077135 LOGS.GPJ TERRACON.GDT 10/30/07

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STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
WATER WELL REGISTRATION

Fee Paid	$110.00	DNR Cash Fund	$16.50		
HHSS Fee	$70.00	HHSS-DNR Cash Fun	$0.00		
			14746		

FOR DEPARTMENT USE ONLY

NOL ID	115040108816604	NOL Status	Accepted	Well Status	A	Registration Code	G-140336
Owner ID	80450	NOL Date	06/16/2006	Call Up Code		Registration Date	06/19/2006
Seq Num	177042			Call Up Date			

06162006 - 177042 -WWRF

1a Owner's Name

b Company Name: OPPD - Fort Calhoun Station

c Correspondent Name: Attention Name:

Address: 9750 Power Lane

City: Blair State: NE Zip Code: 68008 Phone: 402 - 533-7390

2a HHSS Contractor Lic ID: 185058 Contractor's Name: David L. Johnson

Contractor's License No: 39252 Contractor's Email Address: dcornish@jensenwell.com

b Drilling Firm Name: Jensen Well Co., Inc.

Address: 767 Iowa Street

City: Blair State: NE Zip Code: 68008 Phone: 402 - 426-2585

Drilling Firm Email Address:

3a Location: NENE of Section: 20 Township: 18 North, Range: 12 E (E/W), Washington County

b Natural Resource District: Papio-Missouri River

c The well is: 938 feet from the N (N/S) section line and 238 feet from the E (E/W) section line

GPS: or Latitude: 41 31' 12.20" Longitude: -096 04' 46.20"

d Street address or block, lot and subdivision, if applicable: 9750 Power Lane Block No: Lot:

e Location of water use, if applicable (give legal descriptions): same

f If for irrigation, the land to be irrigated is: Acres

g Well Reference Item(s), if applicable:

4 Permits

Permits	Permits Number	Date	Permits	Permits Number	Date
Management Area Permit			Transfer Out-Of-State		
Surface Water			Well Spacing		
Geothermal			Conduct Water		
Industrial			Municipal		
Industrial Transfer Notice			Other		

5 Purpose of Well: Commercial/Industrial Other:

Notes:

6 Wells in a Series

a Is this well a part of a series? ☐

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

c How many wells in the series are you registering at this time?

7 Replacement and abandoned well information Replacement Number:

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06162006 - 177042 -WWRF

a Is this well a replacement well? ☐ b Registration number of abandoned well

If not registered, date abandoned well was constructed

c Replacement well is feet from abandoned well. d Abandoned well last operated

e Original well pump column size: inches. f Completion of original well abandonment on

g Location of water use of abandoned well

8 Pump Information

a Is pump installed at this time? ☑

Is pump installed by well owner in section 1? ☐ Is pump installed by contractor in section 2? ☑

Else installed by pump installer.

b HHSS Installer's License ID.

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 Code -0000 Phone

Pump Installer's Firm Email Address

c Pumping Rate 500 gallons per minute E measured or estimated

d Drop pipe diameter 6 inches e Length of drop pipe 40 . feet.

f Pumping equipment installed 03 / 06 / 2006 g Pump Brand Goulds

h This well will be used to pump less than 50 gpm ☐

9 Well Construction Information

a Well depth 70 . feet. b Static Water Level 18 . feet.

c Pumping Water Level 20 . feet. d Well construction began: 12 / 09 / 2005

e Well construction completed: 12 / 13 / 2005 f Bore hole diameter in inches. Top 30 . Bottom 30 .

g Casing and Screen Joints Glued Other

10 Well Construction (Casing and Screen)

From Depth	To Depth	Case/Scr	Slot	Outside Dia	Thickness	Scr Slot Size	Material	Manufacturer	ASTM Notation
0	50	casing	15	16	.50		sch40 pvc	Jet Stream	115040108818
50	70	screen	15	16	.50	.085	sch40 pvc	Jet Stream	115040108818

11 Well Construction (Grout and Gravel)

Seq No	From Depth	To Depth	Grout/Gravel	Material
115040108818604	5	10	grout	bentonite grout
115040108818604	10	70	gravel	road gravel

12 Geolog Material Logged

Seq No	From Depth	To Depth	Description
115040108818604	0	5	Brown Silt
115040108818604	5	15	Fine Sand w/Silt lens
115040108818604	15	48	Fine Sand and Silt
115040108818604	48	68	Fine to Medium Sand
115040108818604	68	70	Light Gray Clay

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