POST CLOSURE CARE PLAN ASH PONDS 2 & 3 CLOSURE VENICE POWER STATION VENICE, ILLINOIS

Aquaterra Project Number 4923.10 November 2012

Prepared For:

Ameren Missouri 3700 South Lindbergh Boulevard St. Louis, Missouri 63127

**AQUATERRA** 

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### POST CLOSURE CARE PLAN ASH PONDS 2 & 3 CLOSURE VENICE POWER STATION NOVEMBER 2012

### 1.0 INTRODUCTION

Aquaterra Environmental Solutions, Inc. (Aquaterra) was retained by Ameren Missouri (Ameren) to provide construction quality assurance (CQA) services during the construction of the final cover system and closure of Ash Ponds 2 & 3 at Ameren's Venice Power Station located in Venice, Illinois, and prepared a closure report. Additionally, a post closure care plan is to be submitted to the Illinois Environmental Protection Agency (IEPA) within 90 days of completion of the cover construction. The construction completion date is October 31, 2012.

### 1.1 Background

Ash Ponds 2 & 3 occupied a total of approximately 59 acres. Ash Ponds 2 & 3 were used to manage coal fly and bottom ash, oil fly ash, and low-volume wastes associated with generation of electric power at the Venice Power Plant. The ponds average approximately 25 to 30 feet deep and are unlined. Closure of Ash Ponds 2 & 3 included dewatering of the ponds and construction of final cover that included the following components:

- A 40-mil linear low-density polyethylene (LLDPE) geomembrane liner over the graded ash.
- Installation of a double-sided geocomposite drainage layer of a high-density polyethylene (HDPE) geonet laminated between geotextile layers on top of the 40mil geomembrane liner.
- Placement of a 3-foot thick protective cover layer consisting of 2.5 feet of protective cover soil and 6 inches of topsoil on the HDPE geonet.
- Installation of pump stations.

The Closure Plan for Ash Ponds 2 & 3 was approved by the IEPA's Bureau of Water in correspondence dated May 6, 2011. As part of the Closure Plan, the IEPA required that a Post Closure Care Plan be included as part of the Closure Report. This Post Closure Care Plan is intended to meet the IEPA requirements. A copy of the IEPA's approval letter is included in Appendix A.

### 2.0 POST CLOSURE CARE

Aquaterra reviewed the components of the Post Closure Care Plan outlined in the IEPA-approved Closure Plan. The Closure Plan was approved by the IEPA's Bureau of Water in correspondence dated May 6, 2011 for the groundwater management zone described in the referenced plan. Per Section 5 of the Closure Plan, the following items are included as part of the Closure and Post Closure care:

- Construction of the final cover and other engineering structures.
- Documenting the construction of the final cover and other engineering structures in the Construction Quality Assurance (CQA) and Closure Report submitted under separate cover.
- Description of the post closure care activities identified in the Post Closure Maintenance of Cover System section of the Closure Plan.
- Description of the groundwater monitoring system included in the Closure Plan, as well as a description of the maintenance plan for the groundwater monitoring system.
- Description of the groundwater monitoring program described in the Closure Plan.
- Identification of the location of the monitoring wells used for the trend analyses.
- Description of the groundwater trend analysis methods.
- Proposal for maintenance and monitoring of a groundwater management zone as indicated in the Closure Plan.
- Description of the actions proposed to mitigate statistically significant increasing trends and the operations and maintenance program as indicated in the Closure Plan.
- Submittal of annual inspection, maintenance, and hydrogeologic reports.
- Submittal of a completion of post closure care activities report.

The post closure requirements include conducting quarterly final cover inspections and quarterly groundwater monitoring at the frequency listed in Table 3-3 of the approved Closure Plan. After five years of quarterly final cover inspections, groundwater monitoring, and required maintenance, the inspection and monitoring frequency may revert to semi-annual inspections and sampling for the next five years if the final cover is not compromised and no increasing groundwater concentrations attributable to the ash ponds are detected in the groundwater. After this second five year inspection and monitoring period, the inspection and monitoring frequency may be conducted on an annual basis provided that the final cover is not compromised and no increasing groundwater concentrations attributable to the ash ponds are detected. Annual inspections and monitoring will be conducted until the groundwater concentrations in the groundwater management zone

(GMZ) described in the Closure Plan meet the conditions described in Section 3.3 of the Closure Plan, and the IEPA approves a post closure care report releasing Ameren from further groundwater monitoring. A minimum of four years of monitoring are required after the sampling frequency is reduced to an annual basis per the Closure Plan.

Following completion of closure, the post closure inspections, monitoring and required maintenance will be summarized and included in the annual reports to the IEPA. Because groundwater monitoring under the approved Closure Plan began mid-year 2011, the first annual report will consist of six quarterly samples and be submitted by March 31, 2013, per the IEPA's June 2012 letter approving the later submittal date. A copy of the IEPA's letter is provided in Appendix A. The first annual report to be submitted by March 31, 2013 will include the first quarterly post closure inspection report covering the fourth quarter 2012 inspection and any maintenance activities. Subsequent annual reports will be provided by March 31 of each following year as required in Section 5.4 of the approved Closure Plan.

### 2.1 Final Cover Maintenance

The conditions requiring active maintenance are described in Section 5.2 of the Closure Plan and include:

- Filling of rills, gullies, and crevices six inches in depth or deeper.
- Recontouring areas susceptible to erosion.
- Repairing eroded and scoured drainage channels in the final cover and replacing damaged flexible membrane as needed.
- Filling and recontouring of low areas and depressions caused by settling to prevent ponding of water.
- Reseeding areas with more than 100 square feet of failed or eroded vegetation.
- Repairing any tears, rips, punctures or other damage to the flexible membrane.
- Removal of any woody species (i.e., trees and shrubs over 18-inches tall) that establish in the final cover.

Any areas needing repair will be documented on the quarterly inspection forms. A copy of an inspection form that contains the required information is provided in Appendix B. The inspection form, or a form with the comparable information, should be used during the cover inspections to note conditions that need maintenance. Any areas deemed to require maintenance will be corrected as soon as reasonably possible after identifying the area and type of repair needed. Any repairs to the final cover will be documented in the annual report, and the report will include the type of repair, surface area repaired, repair methods and materials, and photographic documentation of the repaired area(s).

### 2.2 Post Closure Groundwater Monitoring Network

The groundwater monitoring network will use the 12 monitoring wells listed in Section 2.3 and Table 3-1 of the Closure Plan. The 12 monitoring wells for the post closure monitoring are:

- MW-2
- MW-2D
- MW-3
- MW-3D
- MW-5
- MW-6

- MW-6D
- MW-8
- MW-9
- MW-10
- MW-11
- MW-11D

Monitoring wells MW-8 and MW-9 are considered upgradient monitoring wells for the ash ponds, and are further considered to be representative of background, off-site, groundwater quality. The other 10 monitoring wells are considered on-site monitoring wells, and will be used to demonstrate compliance within the GMZ. The approximate locations of the monitoring wells in the monitoring network are shown on Figure 3-1 of the Closure Plan. Six monitoring wells (MW-2D, MW-3D, MW-6D, MW-10, MW-11, and MW-11D) were installed in June 2011 to complete the groundwater monitoring network. Copies of the boring logs, monitoring well as-built diagrams, and development forms are provided in Appendix C. Additionally, 8 monitoring wells (MW-1, MW-2P, MW-4, MW-5P, MW-7, MW-7P, MW-8P, and MW-9P) were abandoned as part of the closure and final cover construction. The approximate locations of the abandoned monitoring wells are shown on Figure 1-2 and Figure 2-6 of the Closure Plan. A copy of the monitoring well location map is provided in Appendix C and a summary of monitoring well coordinates and elevations is provided in Table 1. Copies of the abandonment forms are also provided in Appendix C.

### 2.3 Post Closure Groundwater Monitoring Procedure and Monitoring Well Inspection

The post closure groundwater monitoring wells will be sampled on a quarterly basis for the first five years after closure of the ash ponds. The samples collected from the monitoring wells will be monitored for the parameters listed in Section 3.2 and in Table 3-2 of the Closure Plan. The list of parameters includes the constituents listed in 35 IAC 620410 for Class I Potable Resource Groundwater, except the radio nuclides. The samples will be collected following the procedures described in the Closure Plan, preserved according to proper preservation methods and described in the Closure Plan. The samples will be submitted to Ameren's laboratory under standard chain of custody procedure for analysis of

the required parameters. A consistent sampling procedure should be used for each sampling event to reduce the potential for false statistical increases.

As part of the sampling procedure, the monitoring wells will be visually inspected prior to sampling to evaluate the integrity of the monitoring wells and that the groundwater samples collected are representative of groundwater conditions. The following items will be noted on the monitoring well inspection form:

- Presence of clearly visible sign of well name.
- · Condition of protective casing.
- Condition of concrete well pad around protective casing.
- Presence of locks on protective casing.
- · Presence of inner well cap.
- Condition of inner piping.
- Internal obstructions.
- Total depth of well.
- Any items requiring maintenance.

A copy of the well inspection form is provided in Appendix D. Copies of the inspection forms will be included in the annual report. Any maintenance performed to maintain the function of the monitoring wells will be included in the annual report.

### 2.4 Applicable Groundwater Quality Standards

As described in Section 3.3 and Section 3.4 of the Closure Plan, the off-site groundwater quality standards are the Groundwater Quality Standards for Class I potable resource groundwater listed in 35 IAC 620.410, and the on-site groundwater quality standards will be the statistically derived upper prediction limits based on four quarters of groundwater sampling at each on-site monitoring well. To obtain a release from monitoring, the on-site groundwater quality must meet the Class I Groundwater Quality Standards listed in 35 IAC 620.410, or have stable concentrations with no statistically significant increasing trends, and an institutional control or other legal mechanisms are present to prohibit potable use of groundwater within the GMZ.

### 2.5 Compliance Evaluation

An evaluation of statistically significant trends will be conducted on an annual basis and included in the annual report of monitoring and maintenance activities. Trend analysis will be conducted on a minimum of four consecutive samples for each parameter at each

monitoring well. Trends will be evaluated using Sen's Slope Estimator or the Mann-Kendall Trend Analysis methods depending on the amount of groundwater data available as described in Section 3.4.2 of the Closure Plan.

If a statistically significant trend is verified for any of the parameters at any of the monitoring wells within the GMZ (i.e., on-site monitoring wells), an investigation to the cause of the statistically significant increase will be conducted. Investigation activities may include the following:

- · More frequent cap inspections.
- · Site reconnaissance for changes to the surrounding area.
- Evaluations of upgradient groundwater monitoring data.
- Possible increase in sampling frequency for the impacted monitoring well
- Possible hydrogeologic investigation if a cause of the statistically significant increasing trends cannot be determined.

The steps to investigate and mitigate statistically significant increases are presented in Section 3.4.2 of the Closure Plan.

### 2.6 Demonstration of Compliance

Compliance with post closure requirements will be demonstrated when four consecutive sampling events show stable or decreasing concentrations within the GMZ after switching the sampling frequency to an annual basis. Once the groundwater impacts within the GMZ either meet the Class I Groundwater Quality Standards in 35 IAC 620.410, or the impacts display decreasing or stable trends combined with an institutional control or other legal mechanisms to restrict groundwater use within the GMZ, Ameren may prepare a Post Closure Report requesting release from monitoring.

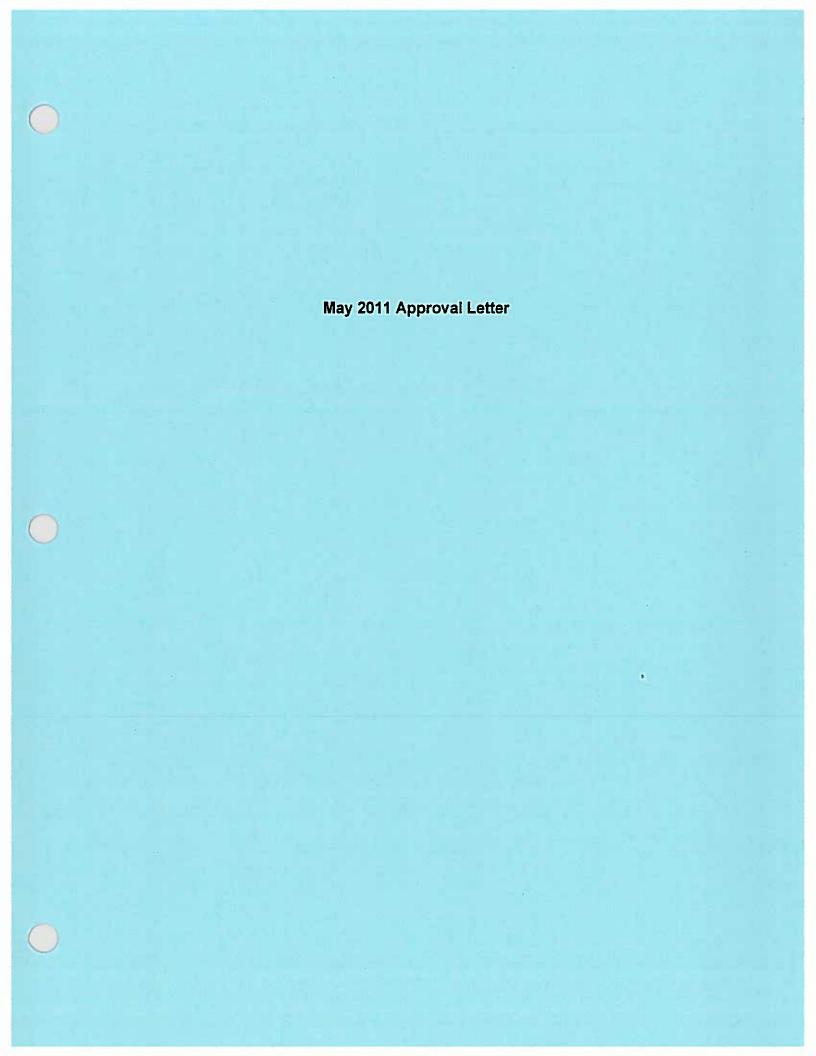
# Monitoring Well Elevation Summary Ameren Venice Power Plant Venice, Illinois Table 1

				Elevati	Elevations in feet MSL	MSL		Depth in fe	Depth in feet below Top of Riser	p of Riser
	obitition)	Chi tii ca C	, and a	Top of Well	Top of	Bottom of	Bottom of	Top of	Bottom of	Bottom of
Well		Longitude	Dinois	Pipe	Screen	Screen	Well	Screen	Screen	Well
MW-2	38-39-12.84	90-10-28.39	412.75	412.31	393.80	383.80	383.80	18.5	28.5	28.5
MW-2D	38-39-12.83	90-10-29.09	412.61	412.36	369.60	364.60	364.60	42.8	47.8	47.8
MW-2P	38-39-12.89	90-10-28.42	411.83		ABANDONED	ONED		4	ABANDONED	
MW-3	38-39-03.34	90-10-30.0	411.41	410.91	396.60	386.60	386.60	14.3	24.3	24.3
MW-3D	38-39-03.40	90-10-30.0	411.70	411.48	369.70	364.70	364.70	41.8	46.8	46.8
MW-5	38-39-08.97	90-10-11.93	433.16	432.93	393.50	383.50	383.50	39.4	49.4	49.4
MW-5P	38-39-08.92	90-10-11.89	433.19		ABANDONED	ONED		٩	ABANDONE	
MW-6	38-39-02.24	90-10-18.17	433.56	433.09	391.80	381.80	381.80	41.3	51.3	51.3
MW-6D	38-39-02.24	90-10-18.09	433.85	433.55	369.90	364.90	364.90	63.7	68.7	68.7
MW-7	38-39-08.92	90-10-11.89	424.11		ABANDONED	ONED		٩	ABANDONED	
MW-8	38-39-14.68	90-10-08.46	416.50	416.27	383.40	373.40	373.40	32.9	42.9	42.9
MW-9	39-39-27.23	90-10-15.93	413.65	413.40	381.80	371.80	371.80	31.6	41.6	41.6
MW-10	38-39-34.84	90-10-33.78	422.11	424.99	391.10	381.10	381.10	33.9	43.9	43.9
MW-11	38-39-22.64	90-10-32.25	413.04	412.74	394.00	384.00	384.00	18.7	28.7	28.7
MW-11D	38-39-22.58	90-10-32.24	412.84	412.50	368.80	363.80	363.80	43.7	48.7	48.7

Notes: Survey data provided by Ameren UE Screen elevations from monitoring well construction diagrams and previous reports

# APPENDIX A IEPA CLOSURE PLAN APPROVAL







### **ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217) 782-2829 James R. Thompson Center, 100 West Randolph, Suite 11-300, Chicago, IL 60601 • (312) 814-6026

PAT QUINN, GOVERNOR

**DOUGLAS P. SCOTT, DIRECTOR** 

May 6, 2011

John C. Pozzo Managing Supervising Engineer I Ameren Plaza 1901 Chouteau Ave. St. Louis, Missouri 63103

Dear Mr. Pozzo:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Closure Plan Venice Power Plant Ash Ponds 2 & 3 (Closure Plan) dated February 14, 2011, submitted by Ameren, which contains a proposal to establish a Groundwater Management Zone (GMZ) at the Venice site.

The February 14, 2011 submission was amended by letter and revised Closure Plan pages dated March 25, 2011. The amendments reflect a reduction is size of the proposed GMZ that will limit the GMZ's extent to Ameren's property. Upon review of the Amended submittal, the depth to which the GMZ was to extend was not clear. In a letter dated April 25, 2011 Ameren clarified the intended depth of the GMZ, as discussed in the "Geology" Section (Section 2.2.1) of the amended Closure Plan. Ameren also corrected a 2011 date, which had erroneously been listed as 2010.

The Illinois EPA concurs that the Closure Plan, with the amendments and clarifications as discussed above, meets the conditions of 35 Ill. Adm. Code 620.250(a). Therefore, a GMZ is hereby established at the Venice Power Plant within the three dimensional area described in the Closure Plan. Ameren should initiate the Closure Plan at its earliest convenience.

If you have any question concerning this letter, please contact me or Lynn Dunaway of my staff at 217/785-4787.

Sincerely,

William E Buscher, P.G.

Manager, Hydrogeology and Compliance Unit

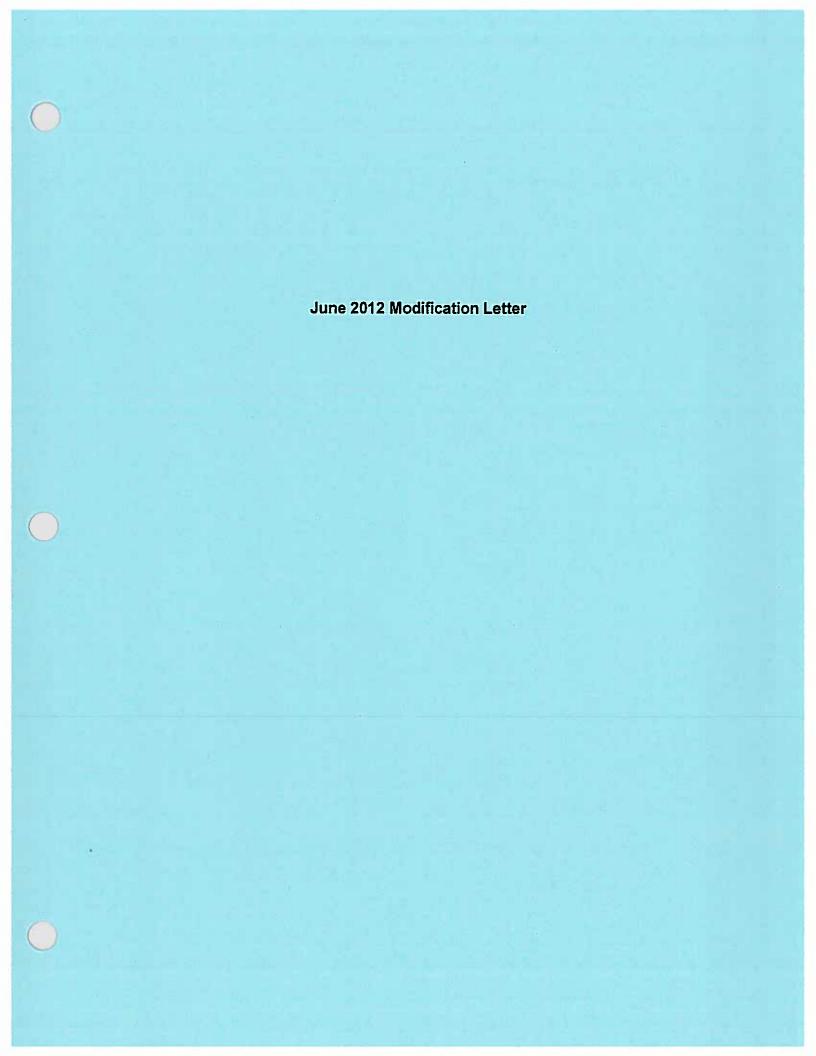
**Groundwater Section** 

Division of Public Water Supplies

Willian 9, Buschen

Bureau of Water

CC: Rick Cobb
Alan Keller
Darin LeCrone
Lynn Dunaway
Records Unit





### **ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

PAT QUINN, GOVERNOR

JOHN J. KIM, INTERIM DIRECTOR

June 1, 2012

John C. Pozzo Managing Supervising Engineer 1 Ameren Plaza 1901 Chouteau Ave. St. Louis, Missouri 63103

Dear Mr. Pozzo:

The purpose of this letter is to confirm discussions between Ameren and the Illinois Environmental Protection Agency (Illinois EPA) regarding minor revisions to the Closure Plan Venice Power Plant Ash Ponds 2 & 3 (Closure Plan) and Groundwater Management Zone (GMZ), dated February 14, 2011, which the Illinois EPA approved May 6, 2011.

Specifically the changes to the Venice Closure Plan are as follows:

- 1) Section 3.2.7 is modified such that Bill Buscher and Lynn Dunaway will be notified via e-mail of the availability of data following Ameren's receipt of analytical results from each quarter's sampling event. Upon notice of availability the data may be requested by the Illinois EPA, otherwise it will be submitted with the annual trend analysis described in Section 3.4.2.
- 2) Section 3.4.2 describes the method that will be used to demonstrate compliance under the GMZ. This Section states that the compliance demonstration will be "...based on a minimum of four consecutive samples...". Due to changes in the monitoring program pursuant to the GMZ, the first four consecutive samples will be completed mid-year instead of the end of the calendar year in coordination with the annual reporting requirement of March 31. To synchronize the annual reports and calendar years, the first annual report will include six consecutive sample results with the annual report to be submitted by March 31, 2013. Subsequent annual reports will be provided by March 31 of the following year as required in Section 5.4 of the Venice Closure Plan.

The Illinois EPA considers the modifications above to be part of the approved Venice Closure Plan as of the date of this letter.

If you have any question concerning this letter, please contact me or Lynn Dunaway of my staff at 217/785-4787.

Sincerely,

William E Buscher, P.G.

Manager, Hydrogeology and Compliance Unit

Groundwater Section

Division of Public Water Supplies

Welling Basiler

Bureau of Water

CC: Rick Cobb

Alan Keller Darin LeCrone Lynn Dunaway

Records Unit

## APPENDIX B SITE MAINTENANCE INSPECTION FORM

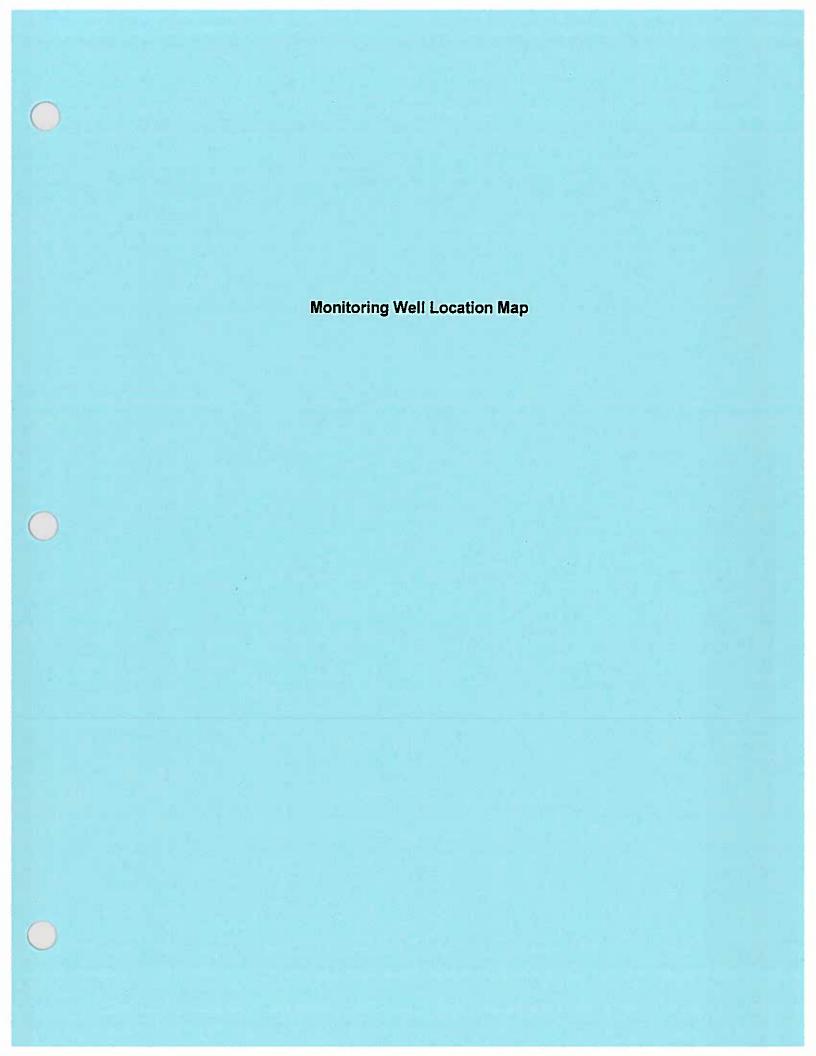


### Ameren UE Fly Ash Pond Final Cover Site Inspection

1. Is access controlled? 2. Are "No Trespassing" signs posted? 3. Is there evidence of trespassing?  COVER & VEGETATION  4. Is cover in acceptable condition?	comments
SECURITY & ACCESS  YES NO N/A Controlled?  1. Is access controlled?  2. Are "No Trespassing" signs posted?  3. Is there evidence of trespassing?  COVER & VEGETATION  4. Is cover in acceptable condition?	comments
1. Is access controlled? 2. Are "No Trespassing" signs posted? 3. Is there evidence of trespassing?  COVER & VEGETATION  4. Is cover in acceptable condition?	comments
2. Are "No Trespassing" signs posted? 3. Is there evidence of trespassing?  COVER & VEGETATION  4. Is cover in acceptable condition?	
Is there evidence of trespassing?      COVER & VEGETATION  4. Is cover in acceptable condition?	
4. Is cover in acceptable condition?	
4. Is cover in acceptable condition?	
5. Is vegetation in acceptable condition?	
6. Is there any woody species of plant growing (i.e., trees and shrubs taller than 18")?	
7. Is there any area with more than 100 square feet of failed or eroded vegetation?	
Is there any erosion or sloughing of embankment slopes?	
DRAINAGE	
Are appropriate temporary runoff controls in place?	
10. Are there any rills, gullies, or crevices that are 6" or deeper?	
11. Are drainage channels in acceptable condition?	
12. Are there any low areas or depressions that could facilitate the	
ponding of water for extended periods of time?	
GEO-MEMBRANE	SILVER
13. Is there any exposed flexible membrane?	
14. If so is the flexible membrane damaged?	
PUMP STATION	
15. Are the pump station inlets free of debris?	
16. Are there any structural deficiencies at the pump station?	
N/A = Not Applicable	nle
Item # Comment	10
Additional Comments:	
Inspector Signature: Date:	

# APPENDIX C MONITORING WELL DOCUMENTATION





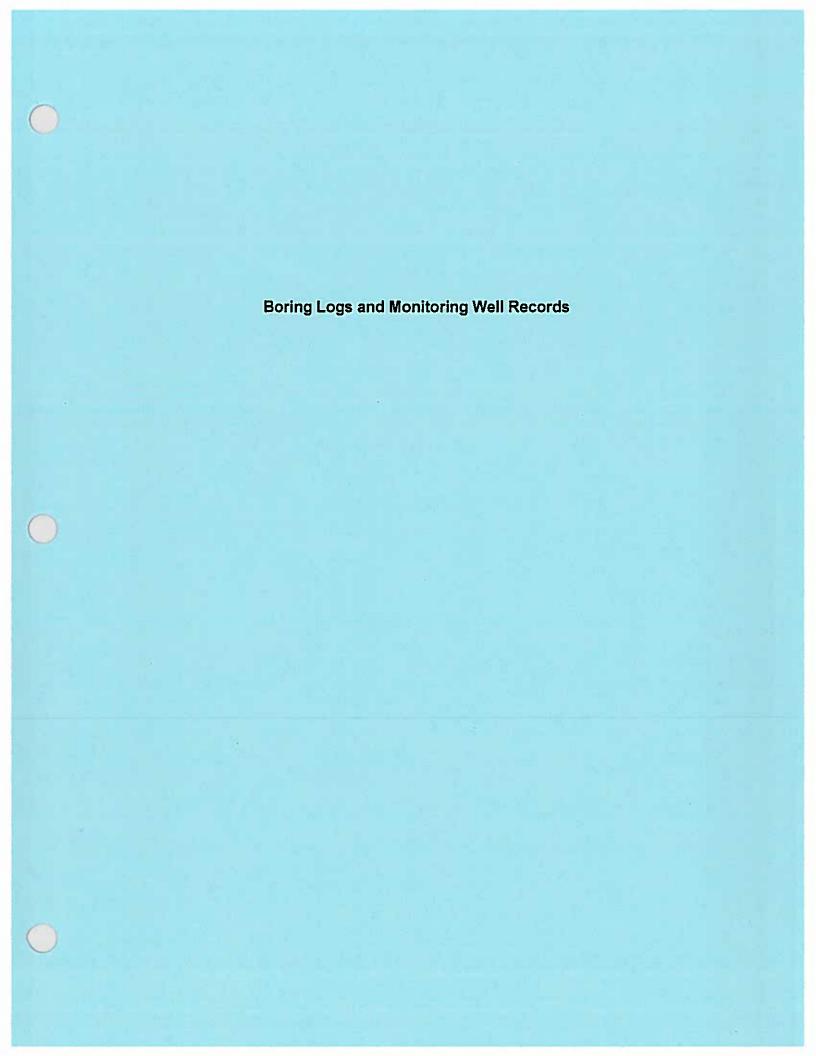


GROUNDWATER MONITORING PROGRAM WELL LOCATIONS AMEREN VENICE ASH PONDS

Upgradent Monitoring Well

On Site Compliance Well

Proposed Groundwater Management Zone (approximate), see Appendix L of Closure Plan for exact Location



### SOIL BORING LOG INFORMATION



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	% (i.)	ম	<u></u>	Soil/Rock Description						ے و					
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Number and Type	Len	Blo	Def			n s	Grapl Log Well	Diagram		Compressive Strength (1sf)	Moisture Content	35	Plastic Index	P 200	RQD/ Comments
			-	0 - 1.6' SILT: ML, Blind Drilled to 20'. Soil be information presented from 0 to 20' is from M	oring W-2			N							
			F.	See Boring Log MW-2 for details.	***-2.	ML		Ø		·					
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	l			1.6 - 4.2 LEAN CLAY: CL, See Boring Log	MW-2.			X							
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Firm Natural Resource Technology Tel: 262.523.9000
23713 W. Paul Road, Suite D, Pewaukee, WI 53072 Fax: 262.523.9001
Template: SOIL BORING - Project Signature

Template: SOIL BORING - Project: 1949 GINT.GPJ



1	-				Boring Number MW-2D						ge 2	of	3
	San	nple							Soil	Prope	erties		
	Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	CS	Graphic Log Well Diagram	Compressive Strength (1sf)	Moisture Content	it it	Plasticity Index	9	RQD/ Comments
	N Pind	Reco	Blov	Dep		usc	Grapl Log Well Diagr	Con		Liquid Limit	Plas	P 200	Com
	Za	L	B	13 -14 -15 -16 -17	4.2 - 20' POORLY-GRADED SAND: SP, See Boring Log MW-2. (continued)	SP		S	20		1	a.	20
	ss V	24 24	17 14 16 12	-20 -21 -22	20 - 22' POORLY-GRADED SAND: SP, brown (7.5YR 4/3), moist, mostly fine-grained sand. trace silt. 21' brown (10YR 5/3).  22 - 25' No Sample.	SP			ONE				
	2 SS	24 22	4 3 8 5	-24 -25 -26 -27	25 - 26' POORLY-GRADED SAND: SP, brown (7.5YR 4/3), moist, mostly fine-grained sand. trace silt.  26 - 27' ELASTIC SILT: MH, brown (10YR 4/3), slow dilatency, low to medium toughness, low to medium plasticity, mostly silt. trace fine-grained and.  27 - 30' No Sample.	SP							
)	3 55	24 24	4 5 9 19	-30 -31	30 - 30.8' SILTY SAND: SM, brown (10YR 4/3), fine-grained sand. some silt (30-45%).  30.8 - 32' POORLY-GRADED SAND WITH SILT: SP-SM, brown (10YR 4/3), fine to medium-grained sand (mostly fine-grained sand). trace to few silt.	SM SP-SM							



Boring Number MW-2D Page 3 of 3 Soil Properties Sample Length Att. & Recovered (in) Soil/Rock Description Compressive Strength (tsf) Depth In Feet Blow Counts RQD/ Comments And Geologic Origin For Number and Type Plasticity Moisture Diagram Content Graphic Liquid Limit Each Major Unit P 200 Well Log 32 - 35' No Sample. -33 34 35 WCH 4 16 19 35 - 37' WELL-GRADED SAND: SW, brown WOH = 24 18.5 SS Weight of (10YR 4/3), moist, fine to medium-grained sand. no Hammer 36 SW 36.3' gray (2.5Y 5/1). 37 37 - 40' No Sample. 38 39 40 5 SS 40 - 42' WELL-GRADED SAND: SW, brown 24 24 (10YR 4/3), moist, fine to medium-grained sand. no 41 SW 41.1' - 41.4 laminated colors brown (10YR 4/3) and greenish gray (Gley 1 5/1). 41.4' greenish gray (Gley 1 5/1). 42 42 - 45' No Sample. 43 44 45 45 - 49' WELL-GRADED SAND: SW, grayish brown (10YR 5/2), rounded grains. fine to 20 27 34 38 24 SS 20 coarse-grained quartz sand ( trace coarse-grained 46 feldspar and mafic minerals), no silt. 46.2' greenish gray (Gley 1 5/1). WOH 20 30 50 7 47' grayish brown (10YR 5/2). SW 24 SS 24 48 48.5' greenish gray (Gley 1 5/1). 49 49' End of Boring.

### SOIL BORING LOG INFORMATION



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Template: SOIL BORING - Project: 1949 GINT.GPJ



Boring Number MW-3D 2 of 3 Soil Properties Sample Recovered (in) Soil/Rock Description 엉 Compressive Strength (tsf) Depth In Feet Blow Counts Length Att. RQD/ Comments And Geologic Origin For Number and Type Moisture Plasticity Diagram Content Graphic USC Liquid Each Major Unit Limit P 200 Well 29 11.1 - 13' SILT: ML, See Boring Log MW-3. (continued) ML 13 13 - 14' ELASTIC SILT: MH, brown (10YR 4/3), 0.5 WOH = SS Weight of 18 slow dilatency, low toughness, medium plasticity, мн 0.25 dry, soft, homogeneous. Hammer 14 14 - 15' POORLY-GRADED SAND: SP, brown (10YR 4/3), moist, very fine-grained sand (sugar SP sand). little silt. homogeneous. 15 15 - 18' No Sample. 16 17 18 - 18.5' POORLY-GRADED SAND: SP, brown 3 3 4 SP SS 20 (10YR 4/3), moist, very fine-grained sand (sugar sand), little silt, homogeneous. (MH) 0.3 19 18.5 - 19' ELASTIC SILT WITH SAND: (MH)s, very dark gray (10YR 3/1), slow dilatency, low toughness, medium plasticity, moist, some very fine-grained sand (sugar sand). homogeneous. soft. SF 20 19 - 20' POORLY-GRADED SAND: SP, dark grayish brown (10YR 4/2), moist, very fine-grained Isand, trace silt, homogeneous, trace fine muscovite. 21 20 - 23' No Sample. 22 WOH WOH 1 2 23 - 25' POORLY-GRADED SAND: SP, dark grayish brown (10YR 4/2), moist, very fine-grained sand, trace silt, homogeneous, trace fine muscovite. 24 23.5' - 24.5' few root fibers. SP 24.5' very dark gray (10YR 3/1). 25 - 28' No Sample. 26 27 28 4 SS 28 - 30' POORLY-GRADED SAND: SP, very dark 16 gray (10YR 3/1), wet, very fine-grained sand (sugar sand), some silt, trace root fibers, homogeneous, 29 SP 29' - 30' fine-grained sand, trace black wood 30 - 33' No Sample. -31



Boring Number MW-3D Page 3 of 3 Soil Properties Sample Length Att. & Recovered (in) Soil/Rock Description Compressive Strength (tsf) Depth In Feet Blow Counts Comments And Geologic Origin For Number and Type Moisture Plasticity Graphic Diagram Content Liquid Each Major Unit Limit Index P 200 Well Log 30 - 33' No Sample. (continued) 33 5 SS 33 - 35' POORLY-GRADED SAND: SP, very dark 24 gray (10YR 3/1), wet, fine-grained sand, trace black wood pieces, homogeneous. 34 SP 35 35 - 38' No Sample. 36 37 38 WOR WOH 2 4 38 - 40' WELL-GRADED SAND: SW, dark gray WOR = (10YR 4/1), wet, fine to medium-grained sand SS Weight of (mostly medium, trace coarse sand and very fine gravel (subrounded to subangular grains)), rounded Rod 39 sand grains, homogeneous, no silt. 40 40 - 43' No Sample. 41 42 3 6 9 11 43 - 47 WELL-GRADED SAND: SW, dark gray SS 15 (10YR 4/1), wet, fine to medium-grained sand (mostly medium, trace coarse sand and very fine gravel (subrounded to subangular grains)). rounded sand grains. homogeneous. no silt. SW 24 24 8 1 4 8 12 45' - 46' few coarse-grained sand. SS 46 47 - 47.5' No Sample. 47.5' End of Boring.

### SOIL BORING LOG INFORMATION



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Boring Number MW-6D

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	San	nple				131			Soil	Prope	rties		
	Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	uscs	Graphic Log Well Diagram	Compressive Strength (1sf)			Plasticity Index	P 200	RQD/ Comments
))				13 14 15 16 17 18 19 120 21 22 23 24 25 26 27 28 29	9 - 33' POORLY-GRADED SAND: SP, See Boring Log MW-6. (continued)	SP	Graphic    Camphic						



Boring Number MW-6D 3 of 4 Soil Properties Sample Length Att. & Recovered (in) Soil/Rock Description Compressive Strength (Isf) Blow Counts Depth In Fect RQD/ Comments Length Att. And Geologic Origin For Number and Type Moisture Diagram Plasticity Graphic Content Liquid Limit Each Major Unit usc P 200 Well Log 9 - 33' POORLY-GRADED SAND: SP, See Boring Log MW-6. (continued) SP 33 33 - 41' LEAN CLAY: CL, See Boring Log MW-6. 34 -35 -36 -37 CL -38 39 40 41 - 46' SILTY SAND: to CLAYEY SAND: SM, See Boring Log MW-6. 43 SM 45 46 46 - 48' POORLY-GRADED SAND: SP, See Boring Log MW-6. SP 48 - 50' POORLY-GRADED SAND: SP, very dark 1 SS 24 9 gray (10YR 3/1), moist, fine to medium-grained sand. trace coarse sand and fine gravel, rounded sand grains, homogeneous, trace silt. SP 50 XX///XX///XX 50 - 53' No Sample. -51



Boring Number MW-6D 4 of 4 Soil Properties Sample Length Att. & Recovered (in) Soil/Rock Description Compressive Strength (tsf) Depth In Feet Blow Counts And Geologic Origin For Moisture and Type SCS Plasticity Diagram Graphic Content Liquid Limit Each Major Unit Index P 200 Well S<sub>g</sub> 50 - 53' No Sample. (continued) 53 2 SS 4 5 11 10 53 - 55' POORLY-GRADED SAND: SP, very dark 12 gray (10YR 3/1), moist, very fine-grained sand. rounded grains, little silt, trace fine muscovite. 54 homogeneous. SP 55 55 - 58' No Sample. 56 57 58 58 - 59' POORLY-GRADED SAND: SP, very dark 3 SS 24 5 gray (10YR 3/1), moist, very fine-grained sand. SP rounded grains. little silt. trace fine muscovite. 59 homogeneous. 59 - 60' POORLY-GRADED SAND: SP, very dark \$P gray (10YR 3/1), moist, medium to coarse-grained sand, rounded sand, trace silt, homogeneous, trace 60 fine subangular gravel. 60 - 63' No Sample. 61 62 63 7 6 10 15 63 - 64' WELL-GRADED SAND: SW, very dark 24 gray (10YR 3/1), wet, medium to coarse-grained SW sand (mostly coarse sand, trace rounded fine gravel). homogeneous. no silt. 64 - 65' POORLY-GRADED SAND: SP, very dark SP gray (10YR 3/1), moist, medium to coarse-grained sand, rounded sand, trace silt, homogeneous, trace fine subangular gravel. 65 - 67' No Sample. 66 67 67 - 69' POORLY-GRADED SAND: SP, very dark 24 SS 12 gray (10YR 3/1), moist, medium to coarse-grained sand, rounded sand, trace silt, homogeneous, trace 68 fine subangular gravel. SP 69 69 - 69.6' No Sample. 69.6' End of Boring.

### SOIL BORING LOG INFORMATION



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7000	-		-	line graver-sized pieces or arruin	acite coal.			ŀ. ↓\ \	<b>a</b> 1						posthole
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			<u> </u>	\ 2.2' gravel sized piece of highly	weathered ce	ement /	1		Ĭ						
- 11			F .	containing green medium sand g					4						
3	24	4	-4	3 - 9' POORLY-GRADED SAN grayish brown (10YR 3/2), dry, v											
ss //	24	4 6 10 11	E	sand, trace silt, homogeneous, s					<b>∮</b>						
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Template: SOIL BORING - Project: 1949 GINT.GPJ



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	San	nple							Soil	Prop	erties		hr
	Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	uscs	Graphic Log Well Diagram	Compressive Strength (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	7 SS	24 24	1	13	fine-grained sand. trace silt. homogeneous. no cementation.  10 - 12' POORLY-GRADED SAND: SP, very dark   gray (10YR 3/1), wet, fine-grained sand. trace silt.   homogeneous.  12 - 15' No Sample.  15- 15-5' POORLY-GRADED SAND: SP, very dark gray (10YR 3/1), wet, fine-grained sand. trace silt. homogeneous.  15- 17' SILT WITH SAND: (ML)s, black (2.5Y 2.5/1), rapid dilatency, low plasticity, very fine-grained sand. soft. homogeneous. very low toughness.  17 - 20' No Sample.	SP (ML)s	Graphic Log Log	0.1					24" split spoon push on first hammer blow.
)	8 SS	24 24	1 1 4 3	21 -22 -23	20 - 21' ELASTIC SILT WITH SAND: (MH)s, brown (10YR 4/3), slow dilatency, low toughness, medium plasticity, wet, very fine-grained sand (sugar sand). trace fine muscovite. homogeneous.  21 - 22' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand). trace fine muscovite. homogeneous.  22 - 25' No Sample.	(MH)s							
	9	24 24	WOH 1	-24 -25 -26 -27 -28	25 - 27 ELASTIC SILT WITH SAND: (MH)s, dark gray (10YR 4/1), slow dilatency, low toughness, medium plasticity, wet, very fine-grained sand (sugar sand). trace fine muscovite. homogeneous.  27 - 30' No Sample.	(MH)s		0.5 0.5 0.25 0.25					WOH = Weight of Hammer, 12" split spoon push on second hammer blow.
)	10 SS	24 24	3 2 7 8	-30 -31 -32	30 - 32' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand), trace fine muscovite, homogeneous, decreasing silt with depth from few silt at 30' to trace silt at 31'.	SP							



Boring Number MW-10 Page 3 of 3 Soil Properties Sample Length Att. & Recovered (in) Soil/Rock Description Compressive Strength (tsf) Depth In Feet Blow Counts RQD/ Comments And Geologic Origin For Number and Type Plasticity Diagram Moisture USCS Graphic Content Liquid Limit Each Major Unit P 200 Well Log 32 - 35' No Sample, 33 34 35 35 - 37' POORLY-GRADED SAND: SP, brown 3 2 5 (10YR 4/3), wet, very fine-grained sand (sugar sand). little silt. trace fine muscovite. homogeneous. SS 36 SP 37 - 39' No Sample. 38 39 39 - 41'POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand). little sitt. trace fine muscovite. homogeneous. 12 SS 24 21 1 3 2 40 SP 41 - 41.5' No Sample. 41.5' End of Boring.

### SOIL BORING LOG INFORMATION



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				of crew chief (first, last) and Firm	Date Dri	lling St	arted		Date Drill	ing Cor			Drill	ing Method
Jeffire	y Cn	ank											ho	llow stem
Robe	rts E	nviro	nmer	tal Drilling, Inc.			/2011			7/22/	2011			ger
				Common Well Name	Final Sta				Surface Eleva		A 5 27%	107		Diameter
Local G	=10-	oi.	N (	MW-11 stimated: ☑ ) or Boring Location ☐	406.5	Feet	(NAV	(D)	413.0 F	et (N. Grid Lo		1	8.3	inches
State Pi		ığııı	<b>Ы</b> (	N, E S/C/N	La	t	°	<u>'</u>		JIIU EU	I 🖾	ŧ		⊠E
	1/4	of		1/4 of Section , T N, R	Long	2	٥	<u> </u>	" 140499	10.4 Fe			742.2	Feet W
Facility				County	State				y or Village	-				
	-		-	Madison	IL		Venic	æ				595		
Sam	ple									Soil	Prop	erties		
	શ્ર 🗐	ts	i i	Soil/Rock Description					e ⊆					
_ 2	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	And Geologic Origin For		S	<sub>n</sub>	ᇀ	essiv h (ts	e _		≥		suts
~ ~~	igth Ove	Š	臺	Each Major Unit		scs	Graphic Log	Well Diagram	npre	istu	Liquid	Plasticity Index	8	) D
Number and Type	2 S	310	Det		4	n s	Grap Log		Compressive Strength (1sf)	Moisture Content	Liquic Limit	Plastic Index	P 200	RQD/ Comments
			}	0 - 5' No Sample. Blind Drilled to 29.5'. Soil information presented from 0 to 29.5' is from	boring									
			ŧ.	MW-11D. See Boring Log MW-11D for details	S.									
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	- 1		ţ Ĩ	5 - 5.5' SILTY SAND: SM, See Boring Log MW-11D.		SM								
			Ė,	5.5 - 7' SILTY SAND: SM, See Boring Log										
			F 6	MW-11D.		SM								
	- 1		E											
	- 1		<b>├</b> -7	7 - 10' No Sample. See Boring Log MW-11D.			****							
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	- 1		<u>-8</u>											
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			<u>_9</u>					8						
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	1		F	10 - 12 POORLY-GRADED SAND: SP, See Boring Log MW-11D.	e									
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Signatur		y utat	ine ini	ormation on this form is true and correct to the bes				,		45		505.51		
aignatui			2	I late	ral Reso				kee, WI 530			2.523.9( 2.523.9(		
					, 11. Faul	.coau,	Juile D	, i cwau						949 GINT.GPJ

#### SOIL BORING LOG INFORMATION SUPPLEMENT



Boring Number MW-11 Page 2 of 2 Soil Properties Sample Length Att. & Recovered (in) Soil/Rock Description Compressive Strength (Isf) Depth In Feet Blow Counts RQD/ Comments And Geologic Origin For Number and Type Moisture Content Plasticity SCS Diagram Graphic Liquid Limit Each Major Unit P 200 Well Log 12 - 15' No Sample. See Boring Log MW-11D. -13 -14 15 - 17' POORLY-GRADED SAND: SP, See Boring Log MW-11D. -16 SP 17 - 20' No Sample. See Boring Log MW-11D. -18 -19 20 20 - 22' POORLY-GRADED SAND: SP, See Boring Log MW-11D. 21 SP 22 22 - 25' No Sample. See Boring Log MW-11D. 23 24 25 25 - 26.8' POORLY-GRADED SAND: SP, See Boring Log MW-11D. 26 SP 26.8 - 27' SILTY SAND: SM, See Boring Log 27 SM MW-11D. 27 - 29.5' No Sample. See Boring Log MW-11D. -28 29 29.5' End of Boring.

#### **SOIL BORING LOG INFORMATION**

Template: SOIL BORING - Project: 1949 GINT.GPJ



Ameren - Venice Power Plant  Boring Drilled By: Name of crew chief (first, last) and Firm  Date Drilling Started  Date Drilling Completed  Drilling Method  hollow stem  7/21/2011  7/22/2011  Auger  Common Well Name  MW-11D  Auger  Final Static Water Level  405.7 Feet (NAVD)  August  August  Lat  Lat  Lat  Lat  Lat  1/4 of 1/4 of Section , T N, R Long  1/4 of 1/4 of Section , T N, R Long  1/4 of 1/4 of Section , T N, R Long  MW-11D  August  Drilling Completed  hollow stem  Surface Elevation  412.8 Feet (NAVD)  8.3 inches  Lat  Lat  1/4 of 1/4 of Section , T N, R Long  1/4 of 1/4 of Section , T N,					90,000	decimen a		- 4		Pag	111-00-000	to	3	
Boding Drilled By: Name of crew chief (first, last) and Firm    Date Drilling Completed   Date Drilling Completed   Date Drilling Completed   Date Drilling Method	Ameren - Venice Power Plant		License	Permil/	Monito	nng Num	ber	1				)		
Jeffirey Crank   Roberts Environmental Drilling, Inc.   T/21/2011   T/22/2011   Documental Drilling, Inc.   Common Well Name   M/W-11D   Hollow stem auger   M/W-11D   4/05.7 Feet (NAVD)   Surface Elevation   412.8 Feet (NAVD)   Satisfied   Sat		id Firm	Date Drilling Started Date Drilling					rillin					ling Method	
Roberts Environmental Drilling, Inc.   Common Well Name   Final Static Water Level   Surface Elevation   Borrhole Dameter   MW-I1D   405.7 Feet (NAVD)   412.8 Feet (NAVD)   8.3 inches   State Plane   I.4 of Section   N, E S/C/N   Lat				-								ho	hollow stem	
Local Grid Origin   State Plane   Settinated   Settinated   N   E   S   C   N   Lat   S   Lat   S   N   E   S   C   N   E   S   C   N   E   S   C   N   E   S   C   N   E   S   C   N   E   S   C   N   E   S   C   N   E   S   C   N   E   S   C   N   E   S   E   E   E   E   E   E   E   E	Roberts Environmental Drilling, Inc.													
Local Grid Crigin   Mailson   Local Grid Location   N. E S / C/N   Lat			1			. 1				4 T 7770				
Size Plane    1/4 of   1/4 of Section   T   N, R   Size   Madison   Size   Civil TownCity or Village   Venice	Local Caid Ominia M. (actimated M.) or Por		405.	./ Feet	(NAV	(עי						8.3	inches	
14 of   1/4 of Section   T   N, R   Long			L	.at	<u> </u>	<u>'</u>	_" "	Lai Oi	IG LO		,		⊠ c	
Sample   Soil/Rock Description   Soil/Rock Description   Soil/Rock Description   Soil/Rock Description   And Geologic Origin For   Each Major Unit   Soil/Rock Description   Soil/Rock Description   Soil/Rock Description   Soil/Rock Description   And Geologic Origin For   Each Major Unit   Soil/Rock Description   Soil/Rock Description   Soil/Rock Description   Soil/Rock Description   And Geologic Origin For   Each Major Unit   Soil/Rock Description   Soil/Ro	in the second of		Lo	ng	0	1	_" 140	49904	l.3 Fe			743.4		
Sample  Soil Rock Description And Geologic Origin For Each Major Unit  Soil Properties  Signature  Soil Properties  Signature  Soil Properties   Facility ID County		State			-				10 10					
Soil/Rock Description And Geologic Origin For Each Major Unit  Soil/Rock Description And Geol			IL		Venic	e	-			_				
1 SS	Sample								Soil	Prope	rties			
1 SS	ا الله Soil/Re على الله الله الله الله الله الله الله ال	ock Description					- E	<u>.</u>						
1 SS	And Ge	ologic Origin For		,,	,		1.5	l (S	e _		<u>5</u>		strts	
1 SS	Page Page Page Page Page Page Page Page	n Major Unit		U	jeg "	ELECTRIC		118	istul Iten	uid it	stici	8	20 11	
1 SS	Num and and Blo Rec Blo Blo Blo Blo Blo Blo Blo Blo Blo Blo			n s		Ş ĕ S	5	Sir	င့် 🖁	Liq Lin	Plas Ind	P 2	So Cor	
SS 24 24 20 25 25 25 SILTY SAND: SM, dark grayIsh brown (10YR 4/2), dry, some roots.  To - 12' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, poorly graded very fine-grained sand (sugar sand). homogeneous.  To - 10' No Sample.  SM WOH = Weight of Hammer  WOH = Weight of Hammer  10 - 12' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand). homogeneous. trace silt. trace very fine muscovite. 11' - 11.5' little silt.  Signature Firm Natural Resource Technology Tel: 262.523.9000	0 - 5' No Sample.													
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2	-4												2	
2														
2	1 24 WOH 5 5-5.5 SILTY SAND	SM. dark gravish bro			415115								WOH =	
24 20 2 3 10 10 10 - 12' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand).  I hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature   Firm   Natural Resource Technology   Tel: 262.523.9000	SS 19 19 (10YR 4/2), dry, some	roots.		SM										
homogeneous.  7 - 10' No Sample.  10 10 - 12' POORLY-GRADED SAND: SP, brown (10'/R 4/3), wet, very fine-grained sand (sugar sand), homogeneous. trace silt. trace very fine muscovite. 11 11: - 11.5' little silt.  I hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature  Firm Natural Resource Technology  Tel: 262.523.9000													riammer	
24 SS 20 24 20 23 2 23 23 24 20 24 20 25 23.9000  I hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature Firm Natural Resource Technology Tel: 262.523.9000	homogeneous.	gramou sona (sogar	ouria).	SM				- 1						
2 24 29 20 20 23 10 10 - 12' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand). homogeneous. trace silt. trace very fine muscovite.  11' - 11.5' little silt.  I hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature Firm Natural Resource Technology Tel: 262.523.9000	4   1-7				11444									
24 20 2 24 20 2 2 2 2 2 2 2 2 2 2 2 2 2	7 - 10 No Sample.													
24 20 2 24 20 2 2 2 2 2 2 2 2 2 2 2 2 2														
24 20 2 2 10 10 10 - 12' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand). homogeneous. trace silt. trace very fine muscovite.  11 - 11.5' little silt.  1 hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature Firm Natural Resource Technology Tel: 262.523.9000														
24 20 2 2 10 10 10 - 12' POORLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand). homogeneous. trace silt. trace very fine muscovite.  11 - 11.5' little silt.  1 hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature Firm Natural Resource Technology Tel: 262.523.9000														
SS 20 20 2 2 10 - 12 POURLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand), homogeneous, trace silt, trace very fine muscovite.  11 - 11.5' little silt.  1 hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature Firm Natural Resource Technology Tel: 262.523.9000	F'													
SS 20 20 2 2 10 - 12 POURLY-GRADED SAND: SP, brown (10YR 4/3), wet, very fine-grained sand (sugar sand), homogeneous, trace silt, trace very fine muscovite.  11 - 11.5' little silt.  1 hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature Firm Natural Resource Technology Tel: 262.523.9000												3		
I hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature  Firm Natural Resource Technology  Tel: 262.523.9000	2 24 3 10 10-12 POORLY-GE				17									
I hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature  Firm Natural Resource Technology  Tel: 262.523.9000	SS 20 3 C (10YR 4/3), wet, very to sand) homogeneous	ne-grained sand (sug trace silt, trace very fir	ar ne		177									
I hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature Firm Natural Resource Technology Tel: 262.523.9000	11   muscovite.	,		SP										
I hereby certify that the information on this form is true and correct to the best of my knowledge.  Signature  Firm Natural Resource Technology  Tel: 262.523.9000	W   E   IT - IT.5 intide slit.				1							3		
Signature Firm Natural Resource Technology Tel: 262.523.9000				<u> </u>	-45.5-6	13 17				c		2		
Translative Technology			est of my	knowled	ge.		_							
	Signature	1 1641					****	£20=						

#### SOIL BORING LOG INFORMATION SUPPLEMENT



Boring Number MW-11D 2 of 3 Soil Properties Sample Length Att. & Recovered (in) Soil/Rock Description In Feet Compressive Strength (tsf) **Blow Counts** Length Att. And Geologic Origin For RQD/ Comments **Plasticity** Moisture USCS Diagram Graphic Content Liquid Limit Depth ] Each Major Unit Index P 200 Well Log 12 - 15' No Sample. -13 14 3 SS 15 - 17' POORLY-GRADED SAND: SP, brown 24 12 (10YR 4/3), wet, very fine-grained sand (sugar sand), homogeneous, trace to few silt, trace very fine 16 muscovite. 17 - 20' No Sample. 18 -19 20 4 SS 20 - 22' POORLY-GRADED SAND: SP, dark 24 yellowish brown (10YR 4/4), moist, very fine-grained sand (sugar sand), some fine sand, homogeneous. 21 no silt. trace very fine muscovite. SP 22 22 - 25' No Sample. 23 24 25 24 25 - 26.8' POORLY-GRADED SAND: SP. dark yellowish brown (10YR 4/4), moist, very fine-grained sand (sugar sand), some fine sand, homogeneous. SS 15 26 SP no silt. trace very fine muscovite. 26.8 - 27' SILTY SAND: SM, gray (10YR 5/1), wet, SM poorly graded very fine-grained sand (sugar sand). homogeneous. 27 - 30' No Sample. 28 29 24 16 30 - 32 POORLY-GRADED SAND: SP, dark greenish gray (5GY 4/1), wet, very fine-grained sand (sugar sand), trace to little silt, trace fine muscovite. SS homogeneous. SP

#### SOIL BORING LOG INFORMATION SUPPLEMENT



Boring Number MW-11D 3 of 3 Soil Properties Sample Length Att. & Recovered (in) Soil/Rock Description Compressive Strength (tsf) Depth In Feet Blow Counts Length Att. And Geologic Origin For Moisture Content Number and Type Diagram Plasticity Graphic Liquid Limit USC Each Major Unit Index P 200 Well Log 32 - 35' No Sample. 33 34 35 35 - 35.4' POORLY-GRADED SAND: SP, dark 24 SP greenish gray (5GY 4/1), wet, very fine-grained sand (sugar sand), trace to little silt, trace fine muscovite. SS 16 (MH)s 36 homogeneous. 35.4 - 35.6' ELASTIC SILT WITH SAND: (MH)s, SP dark greenish gray (5GY 4/1), slow dilatency, low toughness, medium plasticity, very fine-grained sand 37 (sugar sand), very soft. 35.6 - 37 POORLY-GRADED SAND: SP, dark Igreenish gray (5GY 4/1), wet, very fine-grained sand (sugar sand), sand grain size increases with depth (very fine to fine to medium), trace to little silt, trace fine muscovite. homogeneous. 39 37 - 40' No Sample. 40 40 - 42 WELL-GRADED SAND: SW, dark 8 24 greenish gray (5GY 4/1), wet, fine to medium-grained SS 14 sand, no silt, homogeneous, 41 SW 42 42 - 45' No Sample 43 44 45 45 - 47 WELL-GRADED SAND: SW, dark 9 24 No greenish gray (5GY 4/1), wet, fine to medium-grained Recovery. SS 0 sand. no silt. homogeneous. Trace 46 Amount of SW Identifiable Material in Tip of Split 47 - 49' WELL-GRADED SAND: SW, gray (10YR 10 24 Spoon. SS 21 5/1), wet, fine to coarse-grained sand (mostly medium rounded sand), no silt, trace very fine gravel 48 (lithics). SW 49 49 - 49.5' No Sample. 49.5' End of Boring.

A 3 4	CDEN	CEDY	"ACEC	,	BODIN	C V	W D				CHE	ET 1	- f	1
	EREN E STAR			DATE COMPLETED	BORIN		LOGGE		RDC			EL. 41		/f+ \
			ACTOR: WE		, ,,2,3.	·1-	LOUGE	_	ILL MI					(111)
Opph (f) Solf/kock DESCRIPTION							sobut	CON ylene ivalen	CENT Calib t Uni	[RAT protic	ION	СОММЕ	ENTS	Depth (ft)
10-			SAND; obur frags; tr. c Brown v.f. cinders. Olive gray moist; mas Brown v.f. massive. Brown v.f. SAND; dry. SAME; wet	sandy SILT; layer of brown clayey SILT; ssive. sandy SILT w/ so. cla SAND grading to fn at 11.5 ft. ey SILT w/ so. v.f. so	oy;	100								-10
20-		٠	Brown clayer obundant in fractures & Brown fn seam of classond.	ey SILT w/ so, v.f. so ron staining along k as nodules. n. SAND; wet; 4 in. th layey silt w/ so, v.f.									İ	-20 -
30-			SAME; tr. c turns oll gi SAME; groy	organic rich lamination roy at base.	s;									-30
40-			SAME w/ o	organics. Boring = 43.5'	•									-40 -
50-														-50
	S	HAH	ISON	RING DATA	22-99 DATE	I	HYDR	VEN:	CE PO IEREN	WER SER	PLAI	rigatio NT	N S	
		ENG	INEERS		22 99 L	OB N	O. 958		ENICE	, ILLII	1010	APPEN	IDIX	A-14

AM	EREN	SERV	/ICES	10	BORII	NG I	MW-	- 9				SHI	EET	1 of	1
DA	TE STAR	TED 7/	2/99 [	DATE COMPLETE	D 7/2/9	9	LOC	GED	BY I	BDC	S	URFA	CE EL.	413.8	(ft.)
	ILLING	CONTR.	ACTOR: WE	SI					DRIL	L N	ETH	OD: I	I.S.A.		
Depth (ft)	Graphic Log	< N	Gc	Isob	outyio quivo	ene	Cali Un	brat its (	TION ion ppm	)  COM	IMENTS	Depth (ft)			
		N-Value	cinders & Brown cloy gravel; brick from cloy; brick from cloy; so. or cinders, zones (up lainders.)  Brown v.f. wet at 8.1  Brown v.f. iwet at 8.1  Brown silty at 21.4 ft. remains; b.  Brown f.—n  SAME: SAME:  SAME: SO. and 16.2—  rust staining w/ iron no Brown silty at 21.4 ft. remains; b.  Brown f.—n  SAME: S	n silty v.f. SAND w/ ust brown mottling; to 2 in. thick) w/ sandy SILT w/ tr. cl ft.  SAND w/ so. silt; w clay from 14.5-15.1 16.7 ft.; bedding visi ng along bedding; zo. dules.  v.f. SAND; becomes ; disseminated plant ecomes coarse at bo n. SAND; wet; mossiv	tr. tr. fl. ble; nes gray ose.						2		.V.	8.1 ft. 10.12 ft. 6 days.	0
-	9/	711 /12/	TOK BOT	SING DATA	Т		_ <u></u> <b></b>		CEO	UC!	CAL		TICAT	ION	-
SOIL/ROCK BORING DATA  HYDROGEOLOGICAL INVESTIGATION VENICE POWER PLANT AMEREN SERVICES VENICE, ILLINOIS															
		inci i		APPROVED		JOB	NO. S	5830	085B				APF	ENDIX	A-16

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Facility/Project Name	Local Grid Location of		DIE	Well Name
Ameren - Venice Power Plant	14048926.2 ft.	N. 2447023.5 ft.	DW.	
acility License, Permit or Monitoring No.	Local Grid Origin 🛛	(estimated: 🔯 ) or V		
	Lat	Long	or	MW-2D
Facility ID	St. Plane	fl. N,	_ ft. E. S/C/N	Date Well Installed
T 6317.11	Section Location of Wa	ste/Source		07/21/2011
Type of Well	1/4 of1/-	4 of Sec, T	N.R D.E.	Well Installed By: (Person's Name and Firm)
Well Code 12/pz  Distance from Waste/   State	Location of Well Relati	ve to Waste/Source	Gov. Lot Number	Chris Hebel
Source	u 🗆 Upgradient	s 🗆 Sidegradient	30	Roberts Environmental Drilling, Inc.
A. IL	d ⊠ Downgradient  2.61 ft. MSL  2.36 ft. MSL	n Not Known	. Cap and lock?	Yes □ No
A. Protective pipe, top elevation4	Z.UI II. MSL		. Cup and lock:  2. Protective cover pi	
B. Well casing, top elevation41	2.36 ft. MSL		a. Inside diameter:	
C. Land surface elevation	12.6 ft. MSL <		b. Length:	1.0 ft.
	_		c. Material:	Steel 🖾
D. Surface seal, bottom 410.6 ft. MSL	or ft.			Other
12. USCS classification of soil near screen:	300		d. Additional prote	
	V⊠ SP□		If yes, describe:	
SM SC ML MH C	. 🗆 CH 🗆	<b>₩</b> ₩ <b>₩</b> \ \ <sub>3</sub>	. Surface seal:	Bentonite
13. Sieve analysis attached?	a MNo			Concrete 🖾
· ·		3		Other 🗆
14. Drilling method used: Rotar	· —	4	. Material between v	vell casing and protective pipe:
Hollow Stem Aug			Re	Bentonite □ ntonite Chips Other ☑
Othe	r 🗆			
15 Dillion Guid word: Woter 1202		5	•	: a. Granular/Chipped Bentonite
				ud weight Bentonite-sand slurry 🔲
Drilling Mud □ 0 3 Nor	¢ 🗀	- <b>₩</b> ₩ '	cLbs/gal m	
16. Drilling additives used?	« 区I	- <b>3 3</b> · ·	i. <u>30</u> % Bentoni	
	· •			volume added for any of the above
Describe			f. How installed:	Tremie 🗵
17. Source of water (attach analysis, if required	):			Tremie pumped
	<i>''</i>			Gravity 🗆
Potable Water		<b>₩</b> ₩ ,6	. Bentonite seal:	
201.6			b. 1/4 in. 3	
E. Bentonite seal, top 381.6 ft. MSL	or <u>31.0</u> ft.			k-Gel; Bentonite Slurry Other 🗵
				Manufacturer, product name & mesh size
F. Fine sand, top ft. MSL	or ft. \		a	-1
7755	27.1			ft <sup>3</sup>
G. Filter pack, top 375.5 ft. MSL	orft.		-	l: Manufacturer, product name & mesh size
260.6	47.0			Filtration Sand and Gravel, 4-200 mesh
H. Screen joint, top 369.6 ft. MSL	or <u>43.0</u> ft		b. Volume added	2.5 ft <sup>3</sup>
3646	49.0	9	. Well casing:	Flush threaded PVC schedule 40 🛮
I. Well bottom 364.6 ft. MSL	or 48.0 ft.			Flush threaded PVC schedule 80
3646 0 200	100 -			Other 🗆
J. Filter pack, bottom 364.6 ft. MSL	or 48.0 ft.	<u></u>	. Screen material: _	Schedule 40 PVC
763.6 0 247	40.0		a. Screen Type:	Factory cut
K. Borehole, bottom 363.6 ft. MSL	or 49.0 ft.			Continuous slot
7 P	`		- 14C	Other
L. Borehole, diameter 8.3 in.			b. Manufacturer .	
2.38			c. Slot size:	5.0 ft.
M. O.D. well casing 2.38 in.		,,	d. Slotted length: Backfill material (b	
N. I.D. well casing 2.07 in.		11.		iolidated Native Material Other
N. I.D. well casing 2.07 in.				Oulet M
I hereby certify that the information on this form	is true and correct to the	a heet of my knowledge		Date Modified: 8/1/2011
Ci	1991		-1	8/2 502 0000
Signature	14	atural Resource Techn		Tel: 262.523.9000
	1 23	713 W. Paul Road Pewaul	cc, W1 330/2	Fax: 262.523.9001



Facility/Project Name	Local Grid Location		52.5	Well Name
Ameren - Venice Power Plant	14047970.4 <sub>1</sub>	1. S. 2446981.2	n. 🖺 tv.	
acility License, Permit or Monitoring No.		(estimated: (X)) or		
	Lat	+ * Long °	or	MW-3D
Facility ID	St. Plane	ft. N,	fl. E. S/C/N	Date Well Installed
TC337-H	Section Location of	f Waste/Source		07/20/2011
Type of Well	1/4 of	1/4 of Sec T	N.R E	Well Installed By: (Person's Name and Firm)
Well Code 12/pz Distance from Waste/   State	Location of Well R	telative to Waste/Source	Gov. Lot Number	Jeffrey Crank
Source	u 🔲 Upgradien	_		Roberts Environmental Drilling, Inc.
ft. IL	d ⊠ Downgrad	lient n   Not Known	- 1. Cap and lock?	✓ Yes □ No
A. Protective pipe, top elevation41	1.70 R. MSL —		<ol> <li>Cap and lock?</li> <li>Protective cover p</li> </ol>	
B. Well casing, top elevation 41	1.48 ft. MSL —		a. Inside diameter	-
C. Land surface elevation	111.7 ft. MSL 🔍		b. Length:	1.0 ft.
			c. Material:	Steel 🖾
D. Surface seal, bottom 409.7 ft. MSL	or n.		<del></del>	Other 🗆
12. USCS classification of soil near screen:	[ ] ·	THE PROPERTY OF THE PARTY OF TH	d. Additional prot	
	W⊠ SP□		If yes, describe	:
Bedrock	LO CHO		3. Surface seal:	Bentonite
13. Sieve analysis attached?	s 🛭 No			Concrete ⊠  Other □
14. Drilling method used: Rotar			4 Material hetareen	well casing and protective pipe:
Hollow Stem Auge	•		4. Macrial Detween	Bentonite
1			Be	entonite Chips Other
		₩ ₩		il: a. Granular/Chipped Bentonite
15. Drilling fluid used: Water ≥ 0 2 A	ir 🗆			nud weight Bentonite-sand slurry
Drilling Mud □ 0 3 Non	e 🗆		cLbs/gal m	
	_		d. 30 % Benton	ite Bentonite-cement grout 🖾
16. Drilling additives used?	s 🖾 📗		e. 10.3 Ft <sup>3</sup>	volume added for any of the above
Deserte			f. How installed:	Tremie 🗵
Describe	n.			Tremie pumped
				Gravity 🗆
Potable Water			6. Bentonite seal:	_
390.7	31.0 -		b. □ l/4 in. □ : Barnid: Oui	3/8 in. □ 1/2 in. Bentonite chips □ ck-Gel; Bentonite Slurry Other ⊠
E. Bentonite seal, top 380.7 ft. MSL	or <u> </u>			l: Manufacturer, product name & mesh size
F. Fine sand, top ft. MSL	0.		a	i. Mandiacturer, product hame & mesh size
r. Pine said, top	Ji II.			ft³
G. Filter pack, top 375.7 ft. MSL	or 36.0 ft.			al: Manufacturer, product name & mesh size
5, 1 paris, up				; Filtration Sand and Gravel, 4-200 mesh
H. Screen joint, top 369.7 ft. MSL	or <u>42.0</u> ft		b. Volume added	2.5ft³
			9. Well casing:	Flush threaded PVC schedule 40 🖾
I. Well bottom 364.7 ft. MSL of	or <u>47.0</u> ft.			Flush threaded PVC schedule 80
	.= -			Other 🗆
J. Filter pack, bottom 364.7 ft. MSL	or <u>47.0</u> ft.		<ol><li>Screen material: .</li></ol>	Schedule 40 PVC
264.2	47.5		<ol> <li>a. Screen Type:</li> </ol>	Factory cut
K. Borehole, bottom 364.2 ft. MSL of	or <u>47.5</u> ft.			Continuous slot
L. Borehole, diameter 8.3 in.			b. Manufacturer	Other
L. Borehole, diameter 8.3 in.			c. Slot size:	
M. O.D. well casing 2.38 in.			d. Slotted length:	
W. O.D. Well casing		\	1 [ Backfill material (	
N. I.D. well casing 2.07 in.				solidated Native Material Other
			20.2	
I hereby certify that the information on this form				Date Modified: 8/1/2011
Signature	Firm	Tratulal Resource Tee		Tel: 262.523.9000
		23713 W. Paul Road Pewi	aukee, WI 53072	Fax: 262.523.9001



Facility/Project Name	Local Grid Loc			ED E	Well Name
Ameren - Venice Power Plant	14047882.1	_ft. □ S244	17928.4 ft.	Ŭ W.	
	Local Grid Orig	gin 🛛 (estimated:		Vell Location	
	Lat		ng °	<u>'</u> or	MW-6D
E		ft. N,			Date Well Installed
1/2	Section Location	on of Waste/Source		_ II. E. 3/C/N	07/19/2011
Type of Well				ΠE	Well Installed By: (Person's Name and Firm)
	1/4 of _	1/4 of Sec	, T	N, R, W	
Well Code 12/pz  Distance from Waste/   State	Location of We	ell Relative to Waste/S	Source	Gov. Lot Number	Jeffrey Crank
Source	u 🗆 Upgrad		degradient		Roberts Environmental Drilling, Inc.
it.   IL	d Downs	radient n 🗆 N			<u> </u>
A. Protective pipe, top elevation 433	3.85 ft. MSL			l. Cap and lock?	⊠ Yes □ No
	3.55 ft. MSL	!!	PS / 2	2. Protective cover pi	pe:
<i>J</i> , 1		11 1		a. Inside diameter:	
C. Land surface elevation 4:	33.9 ft. MSL	<		b. Length:	
D. Surface seal, bottom 431.9 ft. MSL	- 2.0 A		क्रम्बर	c. Material:	Steel 🗵
D. Surface sear, bottom it. [vist.]	or <u></u>	TOTAL !	A STATE		Other 🗆
12. USCS classification of soil near screen:		and the second	- CHEMEN	d. Additional prote	ection?
GP□ GM□ GC□ GW□ SW	/□ SP 🖾	<u> </u>		If yes, describe:	
	□ CH□	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	# \ \.	3. Surface seal:	Bentonite
Bedrock □			8 \ <sup>3</sup>	s. Surface seal:	Concrete 🖾
13. Sieve analysis attached?	s 🗵 No		8 \		Other 🗆
14. Drilling method used: Rotary	, П		8 \4	l. Material between v	well casing and protective pipe:
Hollow Stem Auger		l 🟻 🔯 🕏	Š.		Bentonite 🗆
Other			8	Ве	ntonite Chips Other
Outc			8	-	
15. Drilling fluid used: Water ≥ 02 Air			3		l: a. Granular/Chipped Bentonite
_			8 <sup>1</sup>		ud weight Bentonite-sand slurry
Drilling Mud □ 0 3 None	: 🗆		8		ud weight Bentonite slurry □
16. Drilling additives used? ☐ Yes	. 🖂		8 '	d	
To. Drining auditives useu:	. 🖂		8	e. 18.8 Ft <sup>3</sup>	volume added for any of the above
1 5				f. How installed:	
Describe		ft.	8		Tremie pumped
17. Source of water (attach analysis, if required)	):		8		Gravity 🗆
Potable Water			8 6	. Bentonite seal:	a. Bentonite granules
		ft.	8 /	b. □ 1/4 in. □ 3	3/8 in. □ 1/2 in. Bentonite chips □
E. Bentonite seal, top381.1 ft. MSL o	r 52.8	n. 👪 🛭	8 /	c. Baroid: Quid	ck-Gel; Bentonite Slurry Other
E. Denomic Seni, top 1c 11100 0		" <b>\</b>	8 / 7	. Fine sand material	: Manufacturer, product name & mesh size
F. Fine sand, top ft. MSL o		n. 🔪 📓 🖁		a,	**
r. rine said, top it wise o		"\\ <b>\</b>	8//	h. Volume added	#3
G. Filter pack, top 376.1 ft. MSL o	- 57.8		<b>4</b> / .		d: Manufacturer, product name & mesh size
G. Filter pack, top 376.1 ft. MSL o	F	/ 用	٩/ ٧/		Filtration Sand and Gravel, 4-200 mesh
360.0	64.0	n.			
H. Screen joint, top 369.9 ft. MSL o	r04.0	n	Ĭ /	b. Volume added	
			9	. Well casing:	Flush threaded PVC schedule 40 🖾
I. Well bottom 364.9 ft. MSL o	69.0	n. <	ă		Flush threaded PVC schedule 80
		n.			Other 🗆
J. Filter pack, bottom364.9 ft. MSL o	r <u>69.0</u>	n	10	. Screen material: .	Schedule 40 PVC
• '		viiiii		a. Screen Type:	Factory cut
K. Borehole, bottom 364.3 ft. MSL o	69.6	n. ~			Continuous slot
20		`` <b>\</b> \/////			Other 🗆
L. Borehole, diameter8.3 in.			묓	b. Manufacturer	
L. Borenote, traineter in.				c. Slot size:	
238				d. Slotted length:	
M. O.D. well casing 2.38 in.			,,	Backfill material (1)	
2.07			11		solidated Native Material Other
N. I.D. well casing 2.07 in.					Other M
I hereby certify that the information on this form	1-	41			Date Modified: 8/1/2011
Signature	<sup> </sup>   <sup>1</sup>	irm Natural Reso			Tel: 262.523.9000
		23713 W. Paul	Road Pewau	kee, WI 53072	Fax: 262.523.9001



Facility/Project Name	Local Grid Location of Well	ER F		Well Name
Ameren - Venice Power Plant	14051141.2 _ft. □ S.	2446582.8 ft. □ W		
	Local Grid Origin 🛛 (estin	nated: 🛛 ) or Well Lo	cation	
	Lat. °			MW-10
Engilier ID		•		Date Well Installed
·	St. Plane ft.	N, ft. E	. S/C/N	
	Section Location of Waste/Sor	irce	DΕ	07/21/2011
Type of Well	1/4 of 1/4 of Se	c T NR	뭄퉶	Well Installed By: (Person's Name and Firm)
Well Code 12/pz	1/4 of 1/4 of Se Location of Well Relative to V	/aste/Source Gov	Lot Number	Jeffrey Crank
Distance from Waste/   State	u 🗆 Upgradient s	Sidegradient     Sidegradient		
Source ft. IL	d Downgradient n	□ Not Known —	]	Roberts Environmental Drilling, Inc.
A. Protective pipe, top elevation 42	5.21 ft. MSL	1. Cap	and lock?	⊠ Yes □ No
		2. Prot	ective cover pi	
B. Well casing, top elevation 42	4.99 ft. MSL		side diameter:	·
G 7 1 6 1 .: A	22 1 . n. xer		ength:	
C. Land surface elevation 4.	22.1 ft. MSL	II Ib.	laterial:	Steel 🖾
D. Surface seal, bottom 420.1 ft. MSL	or 2.0 ft 3.0 cm	ASSES	aterial:	—
	New York	्रेटक्टकर्टा −		Other 🗆
12. USCS classification of soil near screen:	276276278			ction?   Yes   No
	/ □ SP 🗵   🖊 \`		yes, describe:	Three steel bumper posts.
	. СН СН СН		ace seal:	Bentonite
Bedrock □		3. Suri	ace sear:	Concrete 🖾
13. Sieve analysis attached?	s ⊠ No	<b>8 8 \</b>		Other □
14. Drilling method used: Rotary	, -,	A Mate	erial between v	vell casing and protective pipe:
1		8 8 · · · · · · · · · · · · · · · · · ·	IIIAI DELWEEII Y	Bentonite
Hollow Stem Auge		8 ⊠		
Othe		## —		Sand Other ⊠
	1 8	5. Anni	ular space seal	: a. Granular/Chipped Bentonite
15. Drilling fluid used: Water ⊠ 0 2 Ai	r 🗆 📗	XI 🔀 b	Lbs/gal mu	ad weight Bentonite-sand slurry
Drilling Mud □ 0.3 None		8 8 €		ıd weight Bentonite slurry □
		8 8 d 3	0 % Bentoni	
16. Drilling additives used? ☐ Yes	; ⊠	₩ "		olume added for any of the above
3		f. 1		
Describe		I. 1	Iow installed:	Tremie 🗵
17. Source of water (attach analysis, if required	<u>,                                    </u>	8 8		Tremie pumped
17. Comoc or water (atment atmiy 313, 11 required)	' ! B	₿ 🐯		Gravity 🗆
Potable Water	i 🛮 🖟	6. Bent	onite seal:	a. Bentonite granules
		3. Surfi  4. Mate  4. Mate  5. Anni b c d30 e f. F  6. Bent b. C c 7. Fine a b. Ve 8. Filte	□ 1/4 in. □ 3.	/8 in. □ 1/2 in. Bentonite chips □
E. Bentonite seal, top 402.1 ft. MSL o	r <u>20.0</u> ք	8 18 / c	Baroid: Quic	k-Gel; Bentonite Slurry Other 🛛
a. semente sen, top in those	· ——— ··· \	8 8 / 7. Fine		Manufacturer, product name & mesh size
F Fig. and to A MCI -				Trimination, product main or freely
F. Fine sand, top ft. MSL o	r —— ft. \ \	å		ft³
207.1	25.0	6 Kg/ b. Vo		
G. Filter pack, top 397.1 fl. MSL o	rft.	A MA OF LINE		: Manufacturer, product name & mesh size
	<u> </u>	a.Un	imin: Filtersil;	Filtration Sand and Gravel, 4-200 mesh
H. Screen joint, top 391.1 ft. MSL o	r <u>31.0</u> ft.	引 剧 / b. Vo	olume added _	3.7 ft <sup>3</sup>
		9. Well	casing:	Flush threaded PVC schedule 40 ⊠
I. Well bottom 381.1 ft. MSL o	г <u>41.0</u> ft.			Flush threaded PVC schedule 80
1. Well bollom	' — " \			Other
3911 0 200	410 0			
J. Filter pack, bottom 381.1 ft. MSL o	r <u>41.0</u> ft.	97074 9704	en material: 🔔	Schedule 40 PVC
***		7///// a. So	creen Type:	Factory cut
K. Borehole, bottom 380.6 ft. MSL o	r <u>41.5</u> ft			Continuous slot
		<i>///////</i> /////////////////////////////		Other
L. Borehole, diameter8.3 in.	No.	/////// b. M	lanufacturer .	
		\	ot size:	0.100 in.
M. O.D. well casing 2.38 in.		,	lotted length:	10.0
M. O.D. well casing 2.38 in.		(	_	
0.05				elow filter pack):  None  Other  Other
N. I.D. well casing 2.07 in.			nough. Offcolls	olidated Native Malenal Other
	<u></u>			
I hereby certify that the information on this form		of my knowledge.		Date Modified: 9/1/2011
Signature	Firm Natural	Resource Technology	v	Tel: 262.523.9000
		. Paul Road Pewaukee, W		Fax: 262.523.9001
				1 6/2 202/202/202/



Facility/Project Name Lo	ocal Grid Location of Well	Well Name
Ameren - Venice Power Plant	14049910.4 ft. S. 2446742.2 ft. W.	4
	ocal Grid Origin 🛛 (estimated: 🔲 ) or Well Locat	
	at * " Long o	orMW-11
Facility ID St	t. Plane ft. N. ft. E.	S/C/N Date Well Installed
Se	t. Plane ft. N, ft. E. ection Location of Waste/Source	07/22/2011
Type of Well	1/4 of 1/4 of Sec, T N, R ocation of Well Relative to Waste/Source   Gov. Lot	☐ E   Well Installed By: (Person's Name and Firm)
Well Code 12/pz	ocation of Well Relative to Waste/Source Gov. Lot	Wumber Jeffrey Crank
Distance from Waste/   State   1	Upgradient s ☐ Sidegradient	Number
Source ft. IL C	d ⊠ Downgradient n □ Not Known	Roberts Environmental Drilling, Inc.
A. Protective pipe, top elevation 413.	04 A. MSL 1. Cap and	lock? ⊠ Yes □ No
~ · · · · · · · · · · · · · · · · · · ·	d ⊠ Downgradient n □ Not Known □ 1. Cap and 1. Cap and 2. Protection 2. Protection 2. Protection 2.	e cover pipe:
B. Well casing, top elevation 412.	74 ft. MSL a. Inside	diameter: $8.0$ in.
C. Land surface elevation 413	b. Length	h: <u>1.0</u> ft.
D. S	2.0 c. Mater	ial: Steel ⊠
D. Surface seal, bottom 411.0 ft. MSL or		Other
12. USCS classification of soil near screen:		ional protection?
GP □ GM □ GC □ GW □ SW (	□ SP 🗵   If yes	, describe:
SM SC ML MH CL (	CH 🗆 3. Surface	Bentonite
	5. Surface	Concrete 🖾
13. Sieve analysis attached?	⊠ No	Other 🗆
14. Drilling method used: Rotary	□ X X Material	between well casing and protective pipe:
Hollow Stem Auger		Bentonite
Other	□   📓 🕷	Bentonite Chips Other ☑
	5. Annular	space seal: a. Granular/Chipped Bentonite
15. Drilling fluid used: Water ⊠ 0 2 Air	□   X X b	Lbs/gal mud weight Bentonite-sand slurry
Drilling Mud □ 0 3 None	□	Lbs/gal mud weight Bentonite slurry
16 Delline addision mad?	d. 30	% Bentonite Bentonite-cement grout ⊠
16. Drilling additives used?	e. 4.:	Ft <sup>3</sup> volume added for any of the above
) Describe	f. How	installed: Tremie ☑
Describe		Tremie pumped □
17. Source of water (attach analysis, if required):		Gravity 🗖
Potable Water	6. Bentonit	e seal: a. Bentonite granules
		4 in. □ 3/8 in. □ 1/2 in. Bentonite chips □
E. Bentonite seal, top 401.0 ft. MSL or	12.0 ft. 8 c. Bi	roid: Quick-Gel; Bentonite Slurry Other
	7. Fine san	d material: Manufacturer, product name & mesh size
F. Fine sand, top 398.0 ft. MSL or	15.0 ft. \	Fine Sand
	b. Volun	ne added ft <sup>3</sup>
G. Filter pack, top396.0 ft. MSL or	17.0 ft. 8. Filter pa	ck material: Manufacturer, product name & mesh size
	a Unimir	: Filtersil; Filtration Sand and Gravel, 4-200 mesh
H. Screen joint, top 394.0 ft. MSL or		ne added 2.8 ft <sup>3</sup>
	9. Well cas	ing: Flush threaded PVC schedule 40
I. Well bottom 384.0 ft. MSL or		Flush threaded PVC schedule 80
		Other 🗆
J. Filter pack, bottom 384.0 ft. MSL or		aterial: Schedule 40 PVC
	a. Scree	n Type: Factory cut ⊠
K. Borehole, bottom 383.5 ft. MSL or		Continuous slot □
		Other
L. Borehole, diameter8.3 in.	<b>\</b>	facturer
_	c. Slot s	
M. O.D. well casing 2.38 in.	`	d length:ft.
		material (below filter pack): None
N. I.D. well casing $\frac{2.07}{}$ in.	Sloup	th: Unconsolidated Native Material Other 🗵
2		
I hereby certify that the information on this form is		Due Modified: 8/1/2011
Signature	Firm Natural Resource Technology	Tel: 262.523.9000
The state of the s	23713 W. Paul Road Pewaukee, WI 53	



	cal Grid Location of Well	Well Name
Ameren - Venice Power Plant	14049904.3 ft. S. 2446743.4 ft. W.	
	cal Grid Origin 🔯 (estimated: 🗵 ) or Well Lo	
	t, Long	
Facility ID St.	Plane ft. N, ft. E. ction Location of Waste/Source	S/C/N Date Well Installed
Type of Well Sec	ction Location of Waste/Source	07/22/2011  ☐ E Well Installed By: (Person's Name and Firm)
	1/4 of 1/4 of Sec, T N, R.	WI
Well Code 12/pz Lo	cation of Well Relative to Waste/Source Gov. I	ot Number Jeffrey Crank
Source	Upgradient s ☐ Sidegradient ☐ Downgradient n ☐ Not Known ——	Roberts Environmental Drilling, Inc.
A. Protective pipe, top elevation 412.8	1. Cap	
B. Well casing, top elevation 412.5	OD A MCI	ctive cover pipe: side diameter: 8.0 in.
C. Land surface elevation 412.	.8 ft. MSL b. Le	ngth: <u>1.0</u> ft.
D. Surface seal, bottom 410.8 ft. MSL or	c. Ma	aterial: Steel
12. USCS classification of soil near screen:		
GP GM GC GW SW SW		yes, describe:
SM SC ML MH CL		Pi □
Bedrock □	3. Surfa	ce seal:  Concrete
13. Sieve analysis attached? ☐ Yes	⊠ No	Other
14. Drilling method used: Rotary	□	rial between well casing and protective pipe:
Hollow Stem Auger		Bentonite 🗆
Other	-   <b>             </b>	Bentonite Chips Other
	5. Annu	llar space seal: a. Granular/Chipped Bentonite
15. Drilling fluid used: Water 🖾 0 2 Air	□   📓 🗑 ь	Lbs/gal mud weight Bentonite-sand slurry
Drilling Mud □ 0 3 None	□	Lbs/gal mud weight Bentonite slurry
16. Drilling additives used? ☐ Yes	M d. <u>30</u>	8 Bentonite Bentonite-cement grout ⊠
10. Dinning additives used:	~	Ft <sup>3</sup> volume added for any of the above
Describe	. н	ow installed: Tremie
17. Source of water (attach analysis, if required):		Tremie pumped
		Gravity 🗆
Potable Water	6. Bento	onite seal:  a. Bentonite granules
E. Bentonite seal, top380.8 ft. MSL or	32 0 a B B C	] 1/4 in. □ 3/8 in. □ 1/2 in. Bentonite chips □ Baroid: Quick-Gel; Bentonite Slurry Other ☑
E. Bentonite seal, top	7. Fine	sand material: Manufacturer, product name & mesh size
F. Fine sand, top ft. MSL or		
275 0	b. Vo	olume added ft <sup>3</sup>
G. Filter pack, top 375.8 ft. MSL or	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	pack material: Manufacturer, product name & mesh size
368 8 0 100	S E E E E E E E E E E E E E E E E E E E	min: Filtersil; Filtration Sand and Gravel, 4-200 mesh
H. Screen joint, top 368.8 ft. MSL or	n	
I. Well bottom 363.8 ft. MSL or	49.0 n. 9. Well	casing: Flush threaded PVC schedule 40  Flush threaded PVC schedule 80  Flush threaded PVC schedule 80
I. Well bottom 363.8 ft. MSL or		Plush threaded PVC schedule 80
J. Filter pack, bottom 363.8 ft. MSL or		n material: Schedule 40 PVC
	A CONTRACTOR OF THE CONTRACTOR	reen Type: Factory cut
K. Borehole, bottom 363.3 ft. MSL or		Continuous slot □
F		Other 🗆
L. Borehole, diameter8.3 in.	b. M	anufacturer
		ot size: in.
M. O.D. well casing 2.38 in.		otted length:
V.		fill material (below filter pack):  None
N. I.D. well casing		ough: Unconsolidated Native Material Other
I handle annife that the information on this family	true and compat to the best of any linearised as	Date Modified: 8/1/2011
I hereby certify that the information on this form is Signature	16'	
Signature	Natural Resource Technology 23713 W. Paul Road Pewaukee, W	
	ZJ/1J W. Laut Made I Cwaukee, W	- 204.343.70 <u>01</u>

LOCKABLE PROTECTIVE STEEL CASING

PROTECTIVE CONCRETE SEAL .

2" DIA. P.V.C. SCH. 40

GROUND SURFACE

2.0

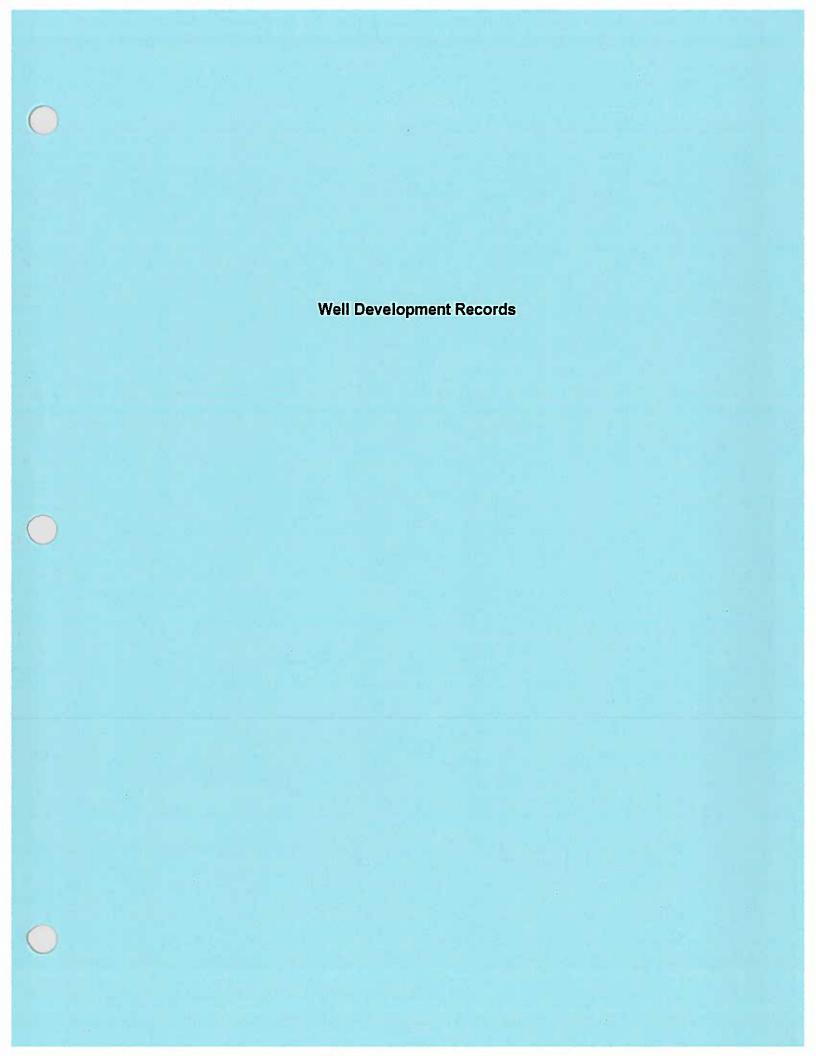
ELEV. 416.25

PEROLONG 12/20/99 10:37 API

1.05.085 St.

A EZOLONG IZ/DO/39 IR 48 .RT

|seas||seea emo





Facility/Project Name			County			Wei	Name						
Ameren - Venice Power Plant			•			MW-2D							
Facility License, Permit or Monitoring Number			State	Ųn	ique Well Number	r		Well Num		_			
			肛						_				
1. Can this well be purged dry?		Yes	⊠ No			Bef	ore Devel	opment	Afte	r Developm	ent		
2. Well development method:					Depth to Water (from top of	a.		7.22 ft.		7.4	16 ft.		
surged with bailer and bailed		4	l		well casing)								
surged with bailer and pumped		6	l				0144			014/00			
surged with block and bailed		4:			Date	b.	8/4/	2011		8/4/201	11		
surged with block and pumped		62											
surged with block, bailed, and pumped		7 (							ı.m.	0.7.4	a.m		
compressed air	$\boxtimes$	2 (	_		Time	c.	C	)4:38 ⊠ p	o.m.	05:2	8 🛭 р.п		
bailed only		1 (											
pumped only		5		12.	Sediment in well			inches		i	nches		
pumped slowly		5 (	)		bottom			_					
other			<u>#</u>	13.	Water clarity	Clear Turb	id 🔯 I		Clear Turbid	□ 20 図 25			
3. Time spent developing well		80	).0 min.			(Desc	ribe) rk Grayi	sh	(Describ	e) t Light Ta	n		
4. Depth of well (from top of well casing)		4	7.5 ft.			Bro	wn with	n Fine	Cloud				
5. Inside diameter of well		2.0	67 in.			mir		Purging					
6. Volume of water in filter pack and well casing		12	2.6 gal.										
				Fill	l in if drilling fluid	s were us	ed and w	ell is at sol	id waste f	facility:			
7. Volume of water removed from well		130	0.0 gal.	14.	Total suspended			mg/l			mg/l		
8. Volume of water added (if any)		(	),0 gal.		solids			_					
9. Source of water added not applicable				15.	COD			mg/l			mg/l		
				16.	Well developed by	/: Person	's Name a	and Firm		•			
10. Analysis performed on water added?		Yes	⊠ No	1.51	• •								
(If yes, attach results)					Jacob V	vaiczak							
					Natural	Resour	ce Tech	nology					
Additional comments on development:     Turbidity in well was initially dark gratan. After approximately 40 minutes of											udy		
Facility Address or Owner/Responsible Party Addr	ess		· · ·	ļ.,	1		٠,	. *. *	1				
Name:					ereby certify that the control owiedge.	he above	informati	on is true a	und correc	et to the besi	of my		
Firm: Ameren				_ Sie	nature:								
Street: 701 Main Street					nt Name: Jacob	Walcza	ak		24				
77 . A. COOO					<b>₹</b> 7-4			hnology					
City/State/Zip: Venice, IL 62090				_ Fin	m: <u>110000</u>	mt 17000	mee Ice	Julology					



Facility/Project Name		County			Well Name						
Ameren - Venice Power Plant					MW-3D						
Facility License, Permit or Monitoring Number		State IL	Unique Well	Number		Well Nun	nber				
Can this well be purged dry?	☐ Yes				Before De	velopment	After	Development			
A 177 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			11. Depth to (from tor			0.04 -		201 -			
2. Well development method:			well casi		a,	8.04 ft.		8.04 ft.			
surged with bailer and bailed	<u> </u>	· ·									
surged with bailer and pumped		-	Date		b. 7/2	2/2011		7/22/2011			
surged with block and bailed		2	Date		D. 112	.2/2011		1/22/2011			
surged with block and pumped		2				-	a.m.	T			
surged with block, bailed, and pumped		0	Time		c.	01:41 ⊠ 1		□ a.n 02:19 ⊠ p.n			
compressed air		0	Thic		·.	VI.71 6	p.iii.	02.17 @ p.n			
bailed only		-	12. Sediment	in well		inches		inches			
pumped only		0	bottom	ill well		11164163		lifeties			
pumped slowly other		armer .	13. Water cla	ırity	Clear □ Turbid ⊠	1 0 1 5	Clear Turbid	⊠ 20 □ 25			
3. Time spent developing well	3	8.0 min.			(Describe)		(Describe				
3. Time spein developing wen					Dark Ta	nnish	Cloud	lv			
4. Depth of well (from top of well casing)	4	7.3 n.			Brown		Imme	diately After than Clear			
5. Inside diameter of well	2.0	067 in.						dani Cica			
6. Volume of water in filter pack and well			0								
casing	1	4.8 gal.									
	-	, , , , , , , , , , , , , , , , , , ,	Fill in icadili	na fluide	were used an	l well is at sol	lid waste fi	acility:			
7. Volume of water removed from well	4	0.0 gal.	1	ng nara	Well asea ain	1 Well 13 dt 301	IIG WESTE II	acinty.			
7. Volume of water femoved from wen	7	o.o gai.	14. Total sus	nended		mg/l		mg/l			
8. Volume of water added (if any)		0.0 gal.	solids	,				·			
9. Source of water added <u>not applicable</u>			15. COD			mg/l		mg/l			
			16. Well deve	loped by	Person's Nar	ne and Firm					
10. Analysis performed on water added?	☐ Yes	⊠ No			/alczak						
(If yes, attach results)											
17. Additional comments on development:				vaturai	Resource Te	cunology					
						- 2					
Facility Address or Owner/Responsible Party Addre	:SS		1,1 , ,2	e a ca			1 .				
			knowledge.	ly that th	e above inform	nation is true	and correc	t to the best of my			
Name:				( v		· · · · · ·		<del></del>			
Firm: Ameren			. Signature: .								
Street: 701 Main Street			Print Name: .	Jacob	Walczak						
City/State/Zip: Venice, IL 62090			. Firm: .	Natura	l Resource	<b>Fechnology</b>	7				



Facility/Project Name		County			Well Name						
Ameren - Venice Power Plant				. <u>.</u>	MW-6D						
Facility License, Permit or Monitoring Number		State IL	Un	ique Well Number	•	Well Nun	nber				
1. Can this well be purged dry?	☐ Yes	⊠ No			Bef	ore Development	After 1	Development			
			111.	Depth to Water (from top of							
2. Well development method:				well casing)	a.	30.95 ft.		30.95 ft.			
surged with bailer and bailed	O 4										
surged with bailer and pumped	D 6	-		Date	ъ.	7/22/2011		7/22/2011			
surged with block and bailed	□ 4 □ 6	_		Date	U.	772272011		112212011			
surged with block and pumped							a.m.	П а е			
surged with block, bailed, and pumped	⊠ 2	_		Time	c.	02:42 ⊠ j		a.m 03:10 ⊠ p.m			
compressed air		_		111110		V2.12 B	Pilli	OD. TO ES P.M.			
bailed only		_	12	Sediment in well		inches		inches			
pumped only	D 5			bottom		111111111111111111111111111111111111111		menes			
pumped slowly other			13.	Water clarity	Clear	□ 10	Clear 🛭	1 20			
		_			Turbi	_	Turbid [				
3. Time spent developing well	2	8.0 min.			(Desci	ibe)	(Describe)				
5. Tittle spent developing wen	2	o.o nun.			Ver	y Light Tan		mmediately			
4. Depth of well (from top of well casing)	6	8.6 n.				<i>y 231,414 1 1411</i>	After S				
5. Inside diameter of well	2.0	)67 in.									
6. Volume of water in filter pack and well											
casing	1	8.6 gal.									
		J	Fill	in if drilling fluids	s were us	ed and well is at sol	id waste fac	ility			
7. Volume of water removed from well	2	0.0 gal.				77011 10 00 00		, -			
7. Volume of water removed from well	2	0.0 gai.	14.	Total suspended		mg/l		mg/l			
8. Volume of water added (if any)	(	0.0 gal.		solids							
9. Source of water added not applicable			15.	COD		mg/l		mg/l			
			16.	Well developed by	: Person	s Name and Firm					
10. Analysis performed on water added?	☐ Yes	⊠ No		Jacob V	Valczak						
(If yes, attach results)				Matan	Danner	o Toskeologi					
17 Additional assessments on developments				Naturai	Resour	ce Technology					
17. Additional comments on development:											
Facility Address or Owner/Responsible Party Addres	PCC		1								
racing radices of Ownerraceposition rang radar	C33				ie above i	nformation is true a	and correct (	to the best of my			
Name: _			kno	wledge.							
Firm: Ameren			. Sign	nature:							
Street: 701 Main Street			. Prir	nt Name: Jacob	Walcza	k					
City/State/Zip: Venice, IL 62090			. Fin	n: Natura	al Resou	rce Technology	<u>,                                      </u>				
			-  * ***								



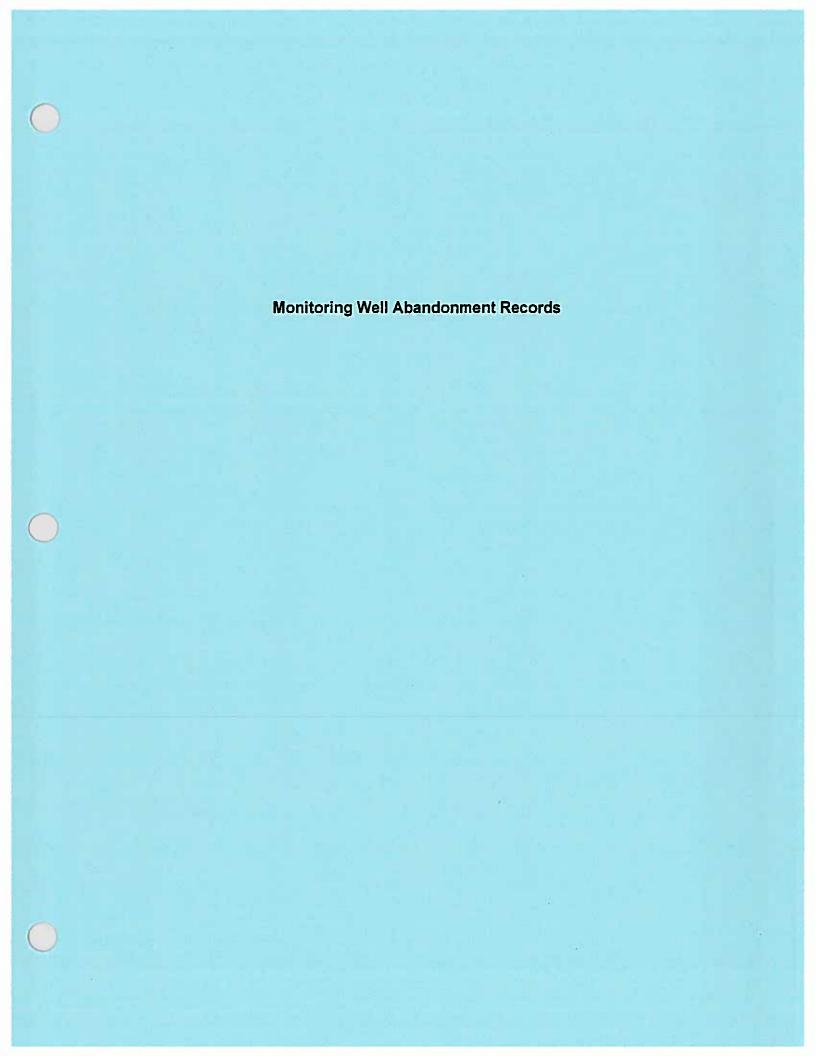
Facility/Project Name		County			Well Name					
Ameren - Venice Power Plant					MW-10					
Facility License, Permit or Monitoring Number		State IL	Unique Well Numl			Well Number				
1. Can this well be purged dry?		_			Befo	re Development	After I	Development		
2. Well development method:  surged with bailer and bailed	4	1	11. Depth to (from to well cas	p of	a.	18.63 ft.		20.02 ft.		
surged with bailer and pumped surged with block and bailed	6	1 2	Date		b.	8/4/2011		8/4/2011		
surged with block and pumped  surged with block, bailed, and pumped  compressed air	6 7 2	0	Time		c.	□ 12:56 ⊠	a.m. p.m.	□ а.п 01:36 ⊠ р.п		
bailed only pumped only pumped slowly	1 5 5	1	12. Sedimer	nt in well		inches		inches		
other   3. Time spent developing well	4	0.0 min.	13. Water c	larity	Clear Turbio (Descri		Clear ⊠ Turbid □ (Describe)			
4. Depth of well (from top of well casing)	44.0 1				Dark Grayish Brown		Slighty Cloudy Immediately After			
5. Inside diameter of well	2.6	)67 in.	5				Surge 1	hen Clear		
Volume of water in filter pack and well casing	1	4.0 gal.	F111 1 16 da11	line Anide		ed and well is at so	lidata Casi			
7. Volume of water removed from well	1	8.0 gal.	14. Total su	-	were use	mg/l	iiu waste iac	mg/l		
8. Volume of water added (if any)	1	0.0 gal.	solids							
9. Source of water added not applicable			15. COD			mg/l		mg/l		
10. Analysis performed on water added?	Yes	⊠ No	I6. Well developed by: Person's Name and Firm     Jacob Walczak     Natural Resource Technology							
<ol> <li>Additional comments on development:         Water slowly recharges when purging is dis lift method. 7/22/2011 - First attempt was a 8/4/2011 - Second attempt whaler pump ma prior to pump failure).</li> </ol>	not	successful (13	gallons of	water rer	noved 1	then stopped pro	oducing w	ater).		
Facility Address or Owner/Responsible Party Address			I hereby cert	ify that the	above i	nformation is true	and correct to	o the best of my		
Name: _ Ameren								3		
701 Main Street			Signature: Print Name:	Jacob V	Walczal	k				
Street: //OT Main Street  City/State/Zip: Venice, IL 62090			Firm:			rce Technology	/			



Facility/Project Name	C	County			Well Name					
Ameren - Venice Power Plant						MW-11				
Facility License, Permit or Monitoring Number	S	tate IL	Un	ique Well Number	<u>-</u>	Well Nun	nber			
Can this well be purged dry?	☐ Yes				Befo	Before Development After Development				
			11.	Depth to Water		•		•		
2. Well development method:				(from top of	a.	6.28 ft.		6.42 ft.		
surged with bailer and bailed	□ 41			well casing)						
surged with bailer and pumped	□ 61					01110011		0111000		
surged with block and bailed	□ 42			Date	b.	8/4/2011		8/4/2011		
surged with block and pumped	□ 62									
surged with block, bailed, and pumped	□ 70			_			a.m.	□ a.r		
compressed air	⊠ 20			Time	C.	02:54 ⊠ ₁	p.m.	03:24 🛭 p.i		
bailed only								.=.		
pumped only	□ 51 -		12.	Sediment in well		inches		inches		
pumped slowly	D 50			bottom						
other	0 11		13.	Water clarity	Clear Turbid		Clear ©	25		
3. Time spent developing well	30.	0 min.			(Descri	-	(Describe			
4. Depth of well (from top of well casing)	29.	О п.			Tan	to Brown	Clear I After S	mmediately Surge		
5. Inside diameter of well	2.06	7 in.								
			1		00					
6. Volume of water in filter pack and well casing	19.	7 gal.								
			Fill	in if drilling fluids	s were use	d and well is at sol	lid waste fa	cility:		
7. Volume of water removed from well	20.	0 gal.								
			14.	Total suspended		mg/l		mg/l		
8. Volume of water added (if any)	0.	0 gal.		solids						
9. Source of water added <u>not applicable</u>			15.	COD		mg/l		mg/l		
	•		16.	Well developed by	: Person's	Name and Firm		<del></del>		
10. Analysis performed on water added?	☐ Yes	⊠ No								
(If yes, attach results)				Jacob Walczak Natural Resource Technology						
17. Additional comments on development:				Naturai	Resourc	e rechnology				
Water was clear after 10 minutes of pur	rging.									
	· OO-									
Facility Address or Owner/Responsible Party Addre	:SS		I he	reby certify that th	ie above ii	nformation is true	and correct	to the best of my		
Name:				wledge.						
Firm: Ameren		·	. Sign	nature:				//4		
Street: 701 Main Street			. Pris	nt Name: Jacob	Walczal	ζ				
City/State/Zip: Venice, IL 62090			. Fiл	n: Natura	al Resou	rce Technology	,			



Facility/Project Name	County		Well Name					
Ameren - Venice Power Plant			MW-I1D					
Facility License, Permit or Monitoring Number	State IL	Unique Well Number	,	Well Num		<del></del>		
1. Can this well be purged dry?	es 🗵 No	11. Depth to Water	Before Deve	lopment	After D	Pevelopment		
2. Well development method:		(from top of well casing)	a.	6.83 n.		6.93 ft.		
Suiged with built and builted	4 1	wen casuig/						
- SorBoa with containing building	6 1	_	. 0/4/	2011		0/4/0011		
Jangou Willi block and banea	4 2	Date	b. 8/4/	2011		8/4/2011		
auged with block and pumped —	62							
	70					0 a.m		
compressed air	2 0	Time	c. (	)3:28 🖾 <sub>F</sub>	o.m.	03:58 ⊠ p.n		
bailed only	1 0							
pumped only	5 1	12. Sediment in well		inches		inches		
pumped sion iy	5 0	bottom						
other		13. Water clarity	Clear □ 1 Turbid ⊠ 1		Clear ⊠ Turbid □	2 0 2 5		
2.77	30.0 min.		(Describe)	-	(Describe)			
3. Time spent developing well	30.0 min.		-	- Dede	•			
4. Depth of well (from top of well casing)	49.0 ft.		Dark Tan to Grayish Br		Clear			
5. Inside diameter of well 2	.067 in.							
6 12 1 6								
6. Volume of water in filter pack and well casing	14.5 gal.							
Casing	14.5 gai.	eminimum and				Pa .		
		Fill in if drilling fluids	were used and w	en is at son	id waste faci	my:		
7. Volume of water removed from well	64.0 gat.			_		_		
		14. Total suspended		mg/l		mg/l		
8. Volume of water added (if any)	0.0 gal.	solids						
9. Source of water added not applicable	-	15. COD		mg/l		mg/l		
		16. Well developed by:	Person's Name a	and Firm				
	s 🖾 No	Jacob Wa	alczak					
(If yes, attach results)			lesource Tech	ากไดยง				
17. Additional comments on development:		1 vacuut 1	tesource Teen	погоду				
Air lift purged well at relatively high flow rate								
Air int purged well at relatively high flow rate								
4								
Facility Address or Owner/Responsible Party Address		I hereby certify that the	above informati	on is true a	ind correct to	the best of my		
Name:		knowledge.						
ranic.						<del></del>		
Firm: Ameren		_ Signature:						
t uut.		_   Signarms:						
Street: 701 Main Street		Print Name: Jacob V	Valczak					
City/State/Zip: Venice, IL 62090		Firm: Natural	Resource Tec	hnology				





(I) GENERAL INFORM	IATION		C	(2) FACILITY /OWNER INFORMATION						
Unique Well No.	Well ID No.	County		Facility Name						
					- Venice Pow					
Common Well Name			ov't Lot (if applicable)	Facility ID		License/Permit/Monit	toring No.			
1/4 of I	1/4 of Sec	; T	_ R	Street Addre						
				701 Main St City, Village, or Town						
	_		_ ft. □ E. □ W.							
Local Grid Origin 🛛	(estimated:	) or W	ell Location	Venice Present Well	Owner	Original Ow	ner			
Int o t		0 1	H or			Ameren				
Lat	Long _		S C N	Street Addre	ss or Route of (	Owner	2			
State Plane				701 Maii						
Reason For Abandonment		sique Well No		City, State, Zip Code						
Monitoring Network					IL 62090	CAEDIC & CEALING	MATCHIAL			
(3) WELL/DRILLHOLE		/1996	<b>Y</b>	T		N, CASING, & SEALING	677			
Original Construction		1	Piping Remov		No Not Applicable No Not Applicable					
Monitoring Well		1 ''	Removed? Removed?		No Not Applicable No Not Applicable					
Water Well	struction Report lease attach.		Left in Place?		No I Not Applicable					
Drillhole / Boreh					sing Cut Off Be		Yes No			
Construction Type:					_		Yes No			
☑ Drilled	Dug Dug	Did Material Settle After 24 Hours? Yes No								
Other (Specify)	//	If Yes	, Was Hole Ret	opped?	Yes 🛛 No					
Formation Type:				Require	d Method of Pl	acing Scaling Material				
Unconsolidated F	·		Bedrock	⊠ c₀	nductor Pipe - (	Gravity 🔲 Conduct	or Pipe - Pumped			
Unconsolidated F				Sci	reened & Poure	d 🔲 Other (E	ixplain)			
Total Well Depth (ft)	43.5	Casing Diar	neter (in.)	(Bentonite Chips)  Sealing Materials  Neat Cement Grout  Sand-Cement (Concrete) Grout						
(From ground surface)		Casing Dep	th (fl.) 43.5							
Lower Drillhole Diam	eter (in.)8.	3								
	_		1 Ø		na-Cement (Cor nerete	ncrete) Grout				
Was Well Annular Sp.		Yes			y-Sand Slurry					
If Yes, To W	hat Depth?		Feet		ntonite-Sand Si	илту				
Depth to Water (Feet)				Сь	ipped Bentonite					
(5)	Sealing Mater	ial Used		From (Ft.)	To (FL)	Sacks Sealant	Mix Ratio or Mud Weight			
Type III Portland Cen	ient	-		Surface	43.5	1.75 6 g	al water to 94 lbs of ceme			
(6) Comments		- 1								
(7) Name of Person or Fire	n Doing Sealing W	ork .	Date of Abandonn		and the second of the second					
Natural Resource Tec			7/19/11	Con	ments					
Signature of Person Doing	Work	Ī	Date Signed							
Street or Route		Telephone	7/13/12 Number							
23713 W. Paul Road		1 elephone	NUMBET							
City, State, Zip Code										
Pewaukee, WI 53072	!									



(1) GENERAL INFORM	IATION			(2) FACILITY /OWNER INFORMATION							
Unique Well No.	Well ID No.	County		Facility Nar	ne						
					- Venice Powe						
Common Well Name				Facility ID		License/Permit/Moni	toring No.				
1/4 of	1/4 of Sec	; T	R	Street Addre	ss of Well		77.7				
				701 Main St							
ft. [	] n. 🗌 s., _		A. 🗌 Е. 🔲 W.	City, Village, or Town Venice Present Well Owner Original Owner							
Local Grid Origin	•										
Lat°	Long	<del></del>		5		Ameren					
State Plane	A N		S C N		ss or Route of C	)wner					
Reason For Abandonment	No.	701 Mai									
Monitoring Network		Venice, IL 62090									
						, CASING, & SEALING	MATERIAL				
Original Construction Date 6/30/1999    Monitoring Well				Pump & Piping Removed?							
Depth to Water (Feet)	Sealing Mater			From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight				
Type III Portland Cen	ment			Surface	18.0	0.75 6 g	al water to 94 lbs of ceme				
(6) Comments					·	<u> </u>					
(7) Name of Person or Fin	m Doing Sealing W	ork	Date of Abandonn	nent			3.0				
Natural Resource Tec			7/19/11		inest:						
Signature of Person Doing			Date Signed								
			7/13/12								
Street or Route		Telephone	e Number								
23713 W. Paul Road											
City, State, Zip Code											
Pewaukee, WI 53072	2										



(1) GENERAL INFORM	IATION			(2) FACILITY /OWNER INFORMATION							
Unique Well No.	Well ID No.	County		- Facility Name							
					- Venice Pow						
Common Well Name				Facility ID		License/Permit/Moni	toring No.				
Grid Location	1/4 of Sec	; T	R	Street Addre	ss of Well						
				701 Mai							
	] и. 🔲 s., _		ft. 🗌 E. 🔲 W.	City, Village	, or Town						
Local Grid Origin	(estimated: 🗵	) or \	Well Location	Venice Present Well Owner Original Owner Ameren							
Lat ° *		0	9 69								
Lat	Long		or	Street Addre	ss or Route of C	Dwner (					
State Plane ft. N ft. E.					n Street						
Reason For Abandonment		ique Well !		City, State,	Zip Code		•				
Monitoring Network					IL 62090						
(3) WELL/DRILLHOLE	BOREHOLE INF	ORMATIC	DN	(4) PUMP, LI	NER, SCREEN	N. CASING, & SEALING					
Original Construction	Date - 7/1/	1999	_	1975.556	Piping Remov		No Not Applicable				
Monitoring Well			Removed?	☐ Yes ☒							
Water Well If a Well Construction Report is available, please attach.					Removed?	☐ Yes ☒ ☒ Yes ☐	No Not Applicable				
Drillhole / Boreh		avanabie,	piease attacii.		Left in Place?		No				
Construction Type:				1	sing Cut Off Be		Yes No				
Drilled	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Did Sealing Material Rise to Surface? Yes No Did Material Settle After 24 Hours? Yes No									
	) L Dug		terial Settle Aft L. Was Hole Ret	_	Yes No						
U Other (Specify)					18 2 140						
Formation Type:					a Method of Pi nductor Pipe - (	acing Sealing Material					
Unconsolidated F	ormation		Bedrock		nauctor Pipe - C reened & Poure		tor Pipe - Pumped				
Total Well Depth (fl)	18.5	Coolea Di	ameter (in.)2.00	(Bentonite Chips)							
(From ground surface)		_			Materials -	,					
			pth (ft.)18.5	Neat Cement Grout Sand-Cement (Concrete) Grout Concrete							
Lower Drillhole Diam	neter (in.)8.3	<u> </u>									
Was Well Annular Sp	ace Grouted?	Yes [	No 🔲 Unknown								
	hat Depth?				y-Sand Siurry						
			FCC1	Bentonite-Sand Slurry							
Depth to Water (Feet)	·			, L Ch	ipped Bentonite	; 1	1				
(5)	Sealing Materi	ial Used		From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight				
Type III Portland Cen	n ant			Surface	18.5	0,75 6 g	al water to 94 lbs of cemen				
Type III Fortialid Cell	nettr			Surface	(4.0)	0.73 01	al water to 94 lbs of cernen				
					23						
(6) Comments											
(7) Name of Person or Fire		ork	Date of Abandonn		ments						
Natural Resource Tec Signature of Person Doing			7/19/11 Date Signed	: (10:00) :::::::::::::::::::::::::::::::::							
SISHMUNC OF PERSON DOUB	, TT SJAR.		7/13/12								
Street or Route		Telephone									
23713 W. Paul Road											
City, State, Zip Code											
Pewaukee, WI 53072	2										



(1) GENERAL INFORMATION	(2	(2) FACILITY /OWNER INFORMATION								
Unique Well No. Well ID No. County	1	Facility Nan								
			<ul> <li>Venice Power</li> </ul>							
Common Well Name MW-8P Gov't Lot (if applied	ible)	Facility ID		Licens	License/Permit/Monitoring No.					
1/4 of 1/4 of Sec ; T R		Street Addre								
Grid Location	, L	701 Mai								
ft. N. S.,ft. E. C		City, Village	e, or Town							
Local Grid Origin (estimated: ) or Well Location	)  -	Venice Present Well Owner Original Owner Ameren								
Lat " Long " or		Street Addre	ss or Route of C	huner	Atticiett					
State Plane ft. N ft. E.	Ι,	701 Mai		, which						
Reason For Abandonment Unique Well No.	- (	City, State,								
Monitoring Network Adjustment of Replacement Well		Venice,	TL 62090							
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION	(4	PUMP, LI	NER, SCREEN	i, CASING,	& SEALING	MATERL	AL			
Original Construction Date 7/2/1999  Monitoring Well If a Well Construction Report is available, please attach.		Liner(s) Screen	k Piping Remove Removed? Removed? Left in Place?			No O	Not Ap	plicable plicable plicable		
☐ Drillhole / Borehole  Construction Type:  ☐ Drilled ☐ Driven (Sandpoint) ☐ Driven (Specify)	ıg	Was Casing Cut Off Below Surface?  Did Sealing Material Rise to Surface?  Did Material Settle After 24 Hours?  If Yes, Was Hole Retopped?  Yes No Yes No No						<u>.</u>		
Formation Type:  Unconsolidated Formation  Bedrock  Total Well Depth (ft) 16.0  Casing Diameter (in.) 2.		Required Method of Placing Sealing Material  Conductor Pipe - Gravity Conductor Pipe - Pumped Screened & Poured (Bentonite Chips)  Sealing Materials								
Casing Depth (ft.) 16.0  Lower Drillhole Diameter (in.) 8.3  Was Well Annular Space Grouted?			Neat Cement Grout  Sand-Cement (Concrete) Grout  Concrete  Clay-Sand Slurry  Bentonite-Sand Slurry  Chipped Bentonite							
(5) Sealing Material Used	1	rom (Ft.)	To (Ft.)	Sacks	Sealant		fix Ratio			
Type III Portland Cement		Surface	12.5	(	D.5 6g	al water (	o 94 lb:	s of ceme		
(6) Comments Once casing was removed slough immediately back	filled from	16.5 to 12	.5'							
(7) Name of Person or Firm Doing Sealing Work  Natural Resource Technology, Inc.  Signature of Person Doing Work  Date of Al 8/4/11  Signature of Person Doing Work	pandonment	Gen	unicuts							
7/13/12										
Street or Route Telephone Number 23713 W. Paul Road										
City, State, Zip Code										
Pewaukee, WI 53072										



(1) GENERAL INFORMATION			(2) FACILITY /OWNER INFORMATION						
Unique Well No.   Well ID No.	County		Facility Nar	ne					
			Ameren	- Venice Powe	er Plant	41			
Common Well NameMW-9P			Facility ID		License/Permit/Monu	toning No.			
1/4 of 1/4 of Sec	; T	R	Street Addre	ss of Well					
			701 Mai						
ft.		fi. □ E. □ W.	City, Village	t, or Town					
Local Grid Origin (estimated:	) or '	Well Location	Venice	10	1 0733-10				
			Present Wel	Owner	Original Ow Ameren	ner			
Lat Long		or	Street Addre	ss or Route of C		<del></del>			
State Plane ft. N.			701 Mais		2 WING!				
	ique Well I		City, State,						
Monitoring Network Adjustment of	•		Venice, IL 62090						
(3) WELL/DRILLHOLE/BOREHOLE INF					N, CASING, & SEALING	MATERIAL			
	nstruction Report please attach.	Liner(s) Screen	Piping Removed? Removed? Removed? Left in Place?	Yes      □	No Not Applicable No Not Applicable No Not Applicable No Not Applicable				
Drillhole / Borehole	,	brown assessin	<del></del>						
Construction Type:				sing Cut Off Be		Yes No			
	(Sandpoint	) Dug	Did Sealing Material Rise to Surface? Yes No Did Material Settle After 24 Hours? Yes No						
	(Sandpoin	, Loug	If Yes, Was Hole Retopped?						
Other (Specify)					**				
Formation Type:	_			a Memoa ot Ph nductor Pipe - C	acing Scaling Material	and Direct Property			
☑ Unconsolidated Formation		Bedrock	_	reened & Poure		tor Pipe - Pumped			
Total Well Depth (ft)16.0	C N	2.00	Screened & Poured						
(From ground surface)	-	epth (ft.)							
Lower Drillhole Diameter (in.)8.									
Was Well Annular Space Grouted?	] Yes [	No 🔲 Unknown		ncrete					
If Yes, To What Depth?		Feet		y-Sand Slurry					
Depth to Water (Feet) 9.1		7000		ntonite-Sand Slu					
Depin to Water (Feet)		<del> </del>	LJ Ch	ipped Bentonite	; i				
(5) Sealing Mater	ial Used		From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight			
Type III Portland Cement			Surface	9.0	0.4 6 g	al water to 94 lbs of cemer			
						1			
		_			l <u> </u>				
(6) Comments Once casing was remove	d slough i	mmediately backfilled fro	om 16.7 to 9'.						
(7) Name of Person or Firm Doing Sealing W	ork	Date of Abandonm							
Natural Resource Technology, Inc.		8/4/11	Con	ments:					
Signature of Person Doing Work		Date Signed							
Di Di	len i	7/13/12							
Street or Route	Telephon	e Number							
23713 W. Paul Road City, State, Zip Code									
Pewaukee, WI 53072									
A WITH MARKEY TO E STATE OF THE			100000	Serenter (262-121-121-121-121-121-121-121-121-121-		acceptation and application being the file			



(1) GENERAL INFORMATION			(2) FACILITY /OWNER INFORMATION							
Unique Well No.   Well ID No.	County		Facility Name							
				- Venice Power						
Common Well NameMW-AP-1A			Facility ID		License/Permit/Monit	toring No.				
1/4 of 1/4 of Sec	. ;T	_ R	Street Address of Well 701 Main St							
ft.			City, Village							
			Venice Present Well Owner Original Owner							
Local Grid Origin (estimated:	7) or A	Vell Location								
Lat Long	<u> </u>	or			Ameren					
			Street Address or Route of Owner							
State Plane ft. N.	nique Well N		701 Mair							
Reason For Abandonment Un Monitoring Network Adjustment of	•		City, State, Zip Code							
(3) WELL/DRILLHOLE/BOREHOLE INF			Venice, IL 62090  (4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL							
		FL4								
Original Construction Date9/17	/1999			Piping Removed Removed?	d?	No Not Applicable				
Monitoring Well										
☐ Water Weil	nstruction Report please attach.	Screen Removed?   Yes   No   Not Applicable   Casing Left in Place?   Yes   No								
Drillhole / Borehole						52				
Construction Type:				sing Cut Off Beld		Yes No Yes No				
☐ Driven☐ Driven☐	Dug	Did Sealing Material Rise to Surface?  Did Material Settle After 24 Hours?  Yes No								
	U Dug		, Was Hole Retor		Yes No					
Other (Specify)					ing Sealing Material					
Formation Type:	_		(m)	nductor Pipe - G		or Pipe - Pumped				
☑ Unconsolidated Formation		Bedrock	. =	eened & Poured	· —	•				
Total Well Depth (ft) 33.0	Cooling Die	meter (in.)		Sentonite Chips)	- Other (E	мрини)				
(From ground surface)	_			Materials						
		oth (ft.) 33.0	Neat Cement Grout Sand-Cement (Concrete) Grout Concrete							
Lower Drilthole Diameter (in.)8.	3									
Was Well Annular Space Grouted?	] Yes [	No Unknown								
If Yes, To What Depth?			_	y-Sand Slurry						
•				ntonite-Sand Slur	ту					
Depth to Water (Feet)			L. Ca	ipped Bentonite		10.7				
(5) Sealing Mater	ial Used		From (Ft.)	To (Ft.)	Sacks Sealant	Mix Ratio or Mud Weight				
Type III Portland Cement			Surface	33.0	1.25 6 g	al water to 94 lbs of cemen				
(6) Comments										
(7) Name of Person or Firm Doing Scaling W	ork	Date of Abandonm	ient							
Natural Resource Technology, Inc.		7/19/11	Com	ments						
Signature of Person Doing Work		Date Signed 7/13/12								
Street or Route	Telephone									
23713 W. Paul Road										
City, State, Zip Code										
Pewaukee, WI 53072										



(1) GENERAL INFORMATION	(2) FACILITY /OWNER INFORMATION							
Unique Well No.   Well ID No.   County	Facility Name							
	Ameren - Venice Power Plant							
Common Well NameMW-AP-2 Gov't Lot (if applicable)	Facility ID License/Permit/Monitoring No.							
1/4 of 1/4 of Sec ; T R	Street Address of Well							
Grid Location	701 Main St							
A.  \[ \text{N.} \[ \text{S.,} \]A.  \[ \text{E.} \[ \text{U.} \] W.	City, Village, or Town							
Local Grid Origin (estimated: ) or Well Location	Venice							
Lat Long ' " or	Present Well Owner Original Owner Ameren							
S C N	Street Address or Route of Owner							
State Plane ft. N ft. E.	701 Main Street							
Reason For Abandonment Unique Well No.	City, State, Zip Code							
Monitoring Network Adjustment of Replacement Well	Venice, IL 62090 .							
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION	(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL							
Original Construction Date 7/1/1999  Monitoring Well If a Well Construction Report is available please attach	Pump & Piping Removed?  Liner(s) Removed?  Screen Removed?  Pump & Piping Removed?  Yes No Not Applicab  Yes No Not Applicab							
is available, please attach.	Casing Left in Place? Yes No							
☐ Drillhole / Borehole	Was Casing Cut Off Below Surface?							
Construction Type:	Did Sealing Material Rise to Surface? Yes 🔲 No							
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug	Did Material Settle After 24 Hours?							
Other (Specify)	If Yes, Was Hole Retopped?							
	Required Method of Placing Sealing Material							
Formation Type:	Conductor Pipe - Gravity Conductor Pipe - Pumped							
☐ Unconsolidated Formation ☐ Bedrock	Screened & Poured Other (Explain)							
Total Well Depth (ft) 38.5 Casing Diameter (in.) 2.00	(Bentonite Chips)							
(From ground surface)	Sealing Materials							
Casing Depth (ft.)38.5  Lower Drillhole Diameter (in.)8.3	Neat Cement Grout Sand-Cement (Concrete) Grout							
Was Well Annular Space Grouted?	Concrete							
	Clay-Sand Siurry							
If Yes, To What Depth? Feet	Bentonite-Sand Slurry							
Depth to Water (Feet)	Chipped Bentonite							
(5) Sealing Material Used	From (Ft.) To (Ft.) Sacks Sealant Mix Ratio or Mud Weight							
Type III Portland Cement	Surface 38.5 1.5 6 gal water to 94 lbs of co							
(6) Comments								
(7) Name of Person or Firm Doing Sealing Work Date of Abandonn	vni							
Natural Resource Technology, Inc. 7/19/11	Comments:							
Signature of Person Doing Work Date Signed								
7/13/12								
Street or Route Telephone Number								
23713 W. Paul Road								
City, State, Zip Code								
Pewaukee, WI 53072								



April 26, 2011

Project No. 113-84179

Mr. Glenn Eberhardt, PE Career Engineer Dam Safety & Hydro Engineering Ameren Missouri 3700 S. Lindbergh Blvd., F-604 St. Louis, Missouri 63127

RE: ABANDONMENT OF MONITORING WELLS AT VENICE PLANT

Dear Mr. Eberhardt:

Golder Associates Inc. (Golder) has completed the sealing and abandonment of monitoring wells MW-7P and MW-7 located south of the Venice Power Plant on Terminal Railroad property. The monitoring wells were abandoned in accordance with Illinois Environmental Protection Agency (IEPA) and Illinois Department of Health (IDPH) regulations as outlined in Golder's *Proposal for Abandonment of Monitoring Wells at Venice Plant*, dated March 25, 2011. Abandonment was performed by Layne Western of Fenton, Missouri under supervision of a Golder engineer. Layne Western is a certified contractor for well installation and abandonment. Work was conducted on April 6, 2011.

#### 1.0 WELL SEALING AND ABANDONMENT

Well construction records indicate monitoring well MW-7P was originally installed to a depth of 18 feet below ground surface. The total depth of MW-7P was measured for comparison to construction logs and the well was disinfected using a dilute chlorine solution. The concrete surface completion and the entire length of the MW-7P well casing were removed. The well was grouted with high-solids bentonite grout installed from the bottom of the well using a tremie pipe. The top two feet of the MW-7P hole was backfilled with surrounding soil.

Well construction records indicate monitoring well MW-7 was originally installed to a depth of 40 feet below ground surface and included the addition of cement to the bentonite grout seal. The use of cement during the original grouting procedure allowed for only the concrete surface completion and the top 2.5 feet of well casing to be removed during abandonment. The total depth of MW-7 was measured for comparison to construction logs and the well was chlorinated before sealing. MW-7 was grouted from the bottom up using a high-solids bentonite grout installed through a tremie pipe. The top two feet of the MW-7 hole was backfilled with surrounding soil. The procedure followed during the abandonment of MW-7 was consistent with the Illinois Water Well Construction Code requirements.

The locations of monitoring wells MW-7P and MW-7 are included as Figure 1 attached to this report.

All scrap well materials generated during abandonment were disposed in onsite dumpsters or on scrap piles as directed by plant personnel. No significant amount of soil cuttings were generated during each of the abandonments.

#### 2.0 REPORTING

Layne Western has submitted IDPH well abandonment forms to the Madison County Department of Health as required. Copies of the completed well abandonment forms are provided as Attachment A.



#### 3.0 CLOSING

Should any information presented above require additional clarification, please contact the undersigned. Golder appreciates the opportunity to provide engineering support services to Ameren.

**GOLDER ASSOCIATES INC.** 

well Wehle

Jared L. Wehde Staff Engineer

Mark N. Haddock, P.E., R.G Senior Engineer Associate

Mach N. efalled

#### Attachments:

Figure 1 – Well Abandonment Location Map Attachment A – Completed IDPH Abandonment Forms

**JLW/MNH** 



FIGURE 1
WELL ABANDONMENT LOCATION MAP







# WELL ABANDONMENT LOCATION MAP

Abandonment of Monitoring Wells Ameren Venice, Illinois FIGURE 1

ATTACHMENT A
COMPLETED IDPH ABANDONMENT FORMS



Print Form.
WELL ED & MW-7

#### ILLINOIS DEPARTMENT OF PUBLIC HEALTH DIVISION OF ENVIRONMENTAL HEALTH 626 W. JEFFERSON ST. SPRINGFIELD, IL 62781



#### WATER WELL SEALING FORM RETURN ALL COPIES TO IDPH OR PDF FILLABLE/SAVABLE LOCAL HEALTH DEPARTMENT The formanative submitted to the Department of the Post the Society of the Society of Society of the Society of Ameren UE 1. Ownership (Name of Controlling Party) 62090 Well Site Address Zic 2. Well Location: Main Street City Illinois 2N Madison Township County Land I.D.# Lat# SE NW SW Ranga 110W Quarter of the Quarter of the Quarter Section GPS: North West Degrees 90 Minutes 10 Seconds |19,65 38 Minutes |39 Seconds |0.42 Degrees Report decimal minutes to minutes and seconds by multiplying the decimal part of the minutes by 60, o.g. latitude 36 degrees 46.07 minutes N Would be letitude 35 degrees 48 minutes 4.2 seconds (0.07 x 50 = 4.2) N. Report GPS coordinates to the necresi 0.1 second. 1999 4. Orilling Permit Number (and date, if known Not Known 3. Year Drilled 40 5. Type of Well Monitoring 6. Total Depth (it.) Dismater (in.) 7. Formation clear of obstruction Yes. 8. Detains of Plugging (bontonite, neat coment or other materials) From (ft.) to (ft.) Filled with 2 40 to (ft.) From (ft.) Bentonite Grout Kind of plug 2 ٥ to (ft.) From (fl.) Filled with liozgoT to (ft.) Kind of plug From (it.) to (ft.) Filled with From (ft.) to (ft.) Kind of plug From (fl.) 9. CASING RECORD Upper 2 feet of casing removed Yes 10. Date well was sealed Apr 6, 2011 11. Licensed water well driller or other person approved by the Department performing well sealing 092 Complete License Number 00 7665 Name 52749 City Zip Code State Address

This state against is requesting discolaure of information that to necessary to accomplish the statutory purpose as outlined under Public Act-0863. Disclosure of this information is mandalory. This form has been approved by the Forms Management Center. IL 462-0631- Ravised 5/09

Questions regarding the completion of this form should be directed to the local health department of the littlinois Department of Public Health 217-782-5830. TTY (for hearing impaired only) 800-547-0488,

Print Form
WELL ID = MW - 7 P

#### ILLINOIS DEPARTMENT OF PUBLIC HEALTH DIVISION OF ENVIRONMENTAL HEALTH 525 W. JEFFERSON ST. SPRINGFIELD, IL 62781

COCOCI POSSONIA



WATER WELL SEALING FORM
PDF FILLABLE/SAVABLE LOCAL HEALTH DEPARTMENT
The former and the supplies of the first of
[Mail cited:
Lot # N/A Land I.O.# N/A County Madison Township 2N
Range 10W Section 2 5W Quarter of the NW Quarter of the SE Quarter
GPS: North Degrees 38 Minutes 39 Seconds 0.45 Degrees 90 Minutes 10 Seconds 19.63 Report decimal minutes to minutes and seconds by multiplying the decimal part of the minutes by 60, e.g., latitude 38 degrees 46 minutes 4.2 seconds (0,07 x 60 = 4.2) N. Report GPS coordinates to the matters 0.1 second.
3. Year Orilled 1999 4. Orilling Permit Number (and date, if known Not Known
5. Type of Well Monitoring 6. Total Depth (ft.) 18 Diameter (in.) 2
7. Formation clear of obstruction Yes  8. Detains of Plugging (benjonite, neat coment or other materials)
Filled with From (ft.) to (ft.)
Kind of plug Bentonite Grout From (ft.) 18 to (ft.) 2
Filled with Topsoll From (ft.) 2 to (ft.) 0
Kind of plug
Filled with From (ft.) to (ft.)
Kind of plug From (ft.) to (ft.)
9, CASING RECORD Upper 2 feet of casing removed Yes 10. Date well was sealed Apr 6, 2011
11. Licensed water well driller or other person approved by the Department performing well scaling
Name Orda K. dist Complete License Number 092-007665
Address 307 Concord Col City Eldridge State SA 21p Code 52748
This state agency is requesting discolaure of information that is necessary to accomplish the statutory purpose as cutlined under Public Act-0863 Disclosure of this information is mandatory. This form has been approved by the Forms Management Center. II. 482-0631- Revised 5/06

Quastions regarding the completion of this form about be directed to the local health department or the illinois Department of Public Health 217-782-5830, TTY (for hearing impaired only) 800-547-0466.

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# APPENDIX D MONITORING WELL INSPECTION FORM



Venice Groundwater Monitoring Field Data Worksheet											
Sample Date:	(Page 1 of 3) Sample Date://										
River Level:			feet								
	Well #2	Well #2D	Well #3	Well #3D	Well #5	Well #6					
Well name sign, lock, and inner cap present (note any deficiency)											
Casing and concrete pad in good condition (note any deficiency)											
Internal piping unobstructed and in good condition (note any deficiency)					123						
Water Level (±0.01 feet, from top of casing mark)											
Total Well Depth (±0.01 feet)											
Time purging began (24-hour clock)	_:_	:	_:_	-:-	:	-:-					
Conductivity after 10 minutes µS/cm											
Temperature °C					W						
Conductivity after 15 minutes (µS/cm)											
Temperature °C											
If conductivity c measure conductiv											
Final Conductivity, µS/cm											
Time to reach final conductivity (min)  Temperature °C	11.										
pH (on site) (±0.01)											

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

LSV-TSD-000699 Rev. 06-15-12 CJT

# Venice Groundwater Monitoring Field Data Worksheet (Page 2 of 3)

N	Well #6D	Well #8	Well #9	Well #10	Well #11	Well #11D
Well name sign, lock, and inner cap present (note any deficiency)	<u> </u>					
Casing and concrete pad in good condition (note any deficiency)						
Internal piping unobstructed and in good condition (note any deficiency)						
Water Level (±0.01 feet, from top of casing mark)						
Total Well Depth (±0.01 feet)						
Time purging began (24-hour clock)	<del>:</del>	<del>:</del>	<del>:</del>			:
Conductivity after 10 minutes µS/cm						
Temperature °C						
Conductivity after 15 minutes (µS/cm)						
Temperature °C						
If conductivity ch measure conductivi	nanged more t ty every 5 mir	nan 10% betw nutes, until the	een 10 and 15 conductivity	minute sampl changes less t	es, continue p nan 10% betw	urging and een samples.
Final Conductivity, μS/cm						
Time to reach final conductivity (min)			- 82			
Temperature °C						
pH (on site) (±0.01)						

Sample collectors:	
--------------------	--

Note any items requiring maintenance at any well, and report to supervisor after return to Lab Services.

# Venice Groundwater Monitoring Field Data Worksheet (Page 3 of 3)

NOTES:				
	-CU: (A.V. 240E			
				ill Core
-				
		-		
<u> </u>				
. 10372-0340			X-1	
	- 17			
				M

Attach completed form to the Request for Chemical Analysis for inclusion in the final report.

