

# 2018 Annual Groundwater Monitoring and Corrective Action Report

Joppa Landfill – CCR Unit ID 402  
Joppa Power Station  
2100 Portland Road  
Joppa, Illinois 62953

**Electric Energy, Inc.**

January 31, 2019



JANUARY 31, 2019 | PROJECT #70091

# 2018 Annual Groundwater Monitoring and Corrective Action Report

Joppa Landfill – CCR Unit ID 402  
Joppa Power Station  
Joppa, Illinois

Prepared for:  
*Electric Energy, Inc.*



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## ACRONYMS AND ABBREVIATIONS

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CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
mg/L	milligrams per liter
NRT/OBG	Natural Resource Technology, an OBG Company
OBG	O'Brien & Gere Engineers, part of Ramboll
SSI	Statistically Significant Increase
S.U.	Standard Units
TDS	Total Dissolved Solids

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## SECTION 1: INTRODUCTION

This report has been prepared on behalf of Electric Energy, Inc. by O'Brien & Gere Engineers, part of Ramboll (OBG), to provide the information required by the Code of Federal Regulations (CFR) found in 40 CFR 257.90(e) for the Joppa Landfill located at Joppa Power Station near Joppa, Illinois.

In accordance with 40 CFR § 257.90(e), the owner or operator of an existing Coal Combustion Residuals (CCR) unit must prepare an annual groundwater monitoring and corrective action report, for the preceding calendar year, that documents the status of the groundwater monitoring and corrective action program for the CCR unit, summarizes key actions completed, describes any problems encountered, discusses actions to resolve the problems, and projects key activities for the upcoming year. At a minimum, the annual report must contain the following information, to the extent available:

1. A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit.
2. Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken.
3. In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs.
4. A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels).
5. Other information required to be included in the annual report as specified in §§ 257.90 through 257.98<sup>1</sup>.

This report provides the required information for the Joppa Landfill for calendar year 2018.

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<sup>1</sup> For calendar year 2018, corrective action and other information required to be included in the annual report as specified in §§ 257.96 through 257.98 is not applicable.

## SECTION 2: MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

Detection Monitoring Program sampling event dates and parameters collected are provided in the detection monitoring program summary table below. One sample was collected from each background and downgradient well in the monitoring system during the sampling events in November 2017 and June 2018. Resampling was conducted in September 2018 on a subset of the Appendix III parameters. Analytical data was evaluated after each event in accordance with the Statistical Analysis Plan, Joppa Power Station, Electric Energy, Inc. (NRT/OBG, 2017a) to identify any statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The sampling events and whether SSIs were identified are provided in the detection monitoring program summary table below.

**Detection Monitoring Program Summary**

Sampling Dates	Parameters Collected	SSIs	Alternate Source Demonstration Completion
<b>November 30, 2017</b>	Appendix III	No	Not Applicable
<b>June 19, 2018</b>	Appendix III	Yes	To Be Determined
<b>September 5, 2018</b>	SSI parameters	Not Applicable	Not Applicable
<b>December 6, 2018</b>	Appendix III	To Be Determined	To Be Determined

Statistical background values are provided in Table 1. Analytical results from the events summarized in the detection monitoring program summary table above are included in Table 2.

The Joppa Landfill remains in the Detection Monitoring Program in accordance with 40 CFR § 257.94.

### SECTION 3: KEY ACTIONS COMPLETED IN 2018

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Three groundwater monitoring events were completed in 2018 under the Detection Monitoring Program. These events occurred in June, September, and December and are detailed in Section 2. One sample was collected from each background and downgradient well in the monitoring system during the sampling events in June 2018 and December 2018. Resampling was conducted in September 2018 on a subset of the Appendix III parameters. All samples were collected and analyzed in accordance with the Sampling and Analysis Plan (NRT/OBG, 2017b). All monitoring data obtained under 40 CFR §§ 257.90 through 257.98 (as applicable) in 2018 are presented in Table 2.

The groundwater monitoring system, including the CCR unit and all background and downgradient monitoring wells, is presented in Figure 1.

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#### SECTION 4: PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

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No problems were encountered with the groundwater monitoring program during 2018. Groundwater samples were collected and analyzed in accordance with the Sampling and Analysis Plan (NRT/OBG, 2017b), and all data was accepted.

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## SECTION 5: KEY ACTIVITIES PLANNED FOR 2019

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The following key activities are planned for 2019:

- Continuation of the Detection Monitoring Program with semi-annual sampling scheduled for the first and third quarters of 2019.
- Complete evaluation of analytical data from the downgradient wells, using background data to determine whether an SSI of Appendix III parameters over background concentrations has occurred.
- If an SSI is identified, potential alternate sources (i.e., a source other than the CCR unit caused the SSI or that SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is demonstrated to be the cause of the SSI, a written demonstration will be completed within 90 days of SSI determination and included in the annual groundwater monitoring and corrective action report for 2019.
- » If an alternate source(s) is not identified to be the cause of the SSI, the applicable requirements of 40 CFR §§ 257.94 through 257.98 (e.g., assessment monitoring) as may apply in 2019 will be met, including associated recordkeeping/notifications required by 40 CFR §§ 257.105 through 257.108.

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## REFERENCES

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Natural Resource Technology, an OBG Company, 2017a, Statistical Analysis Plan, Joppa Power Station, Electric Energy, Inc., October 17, 2017.

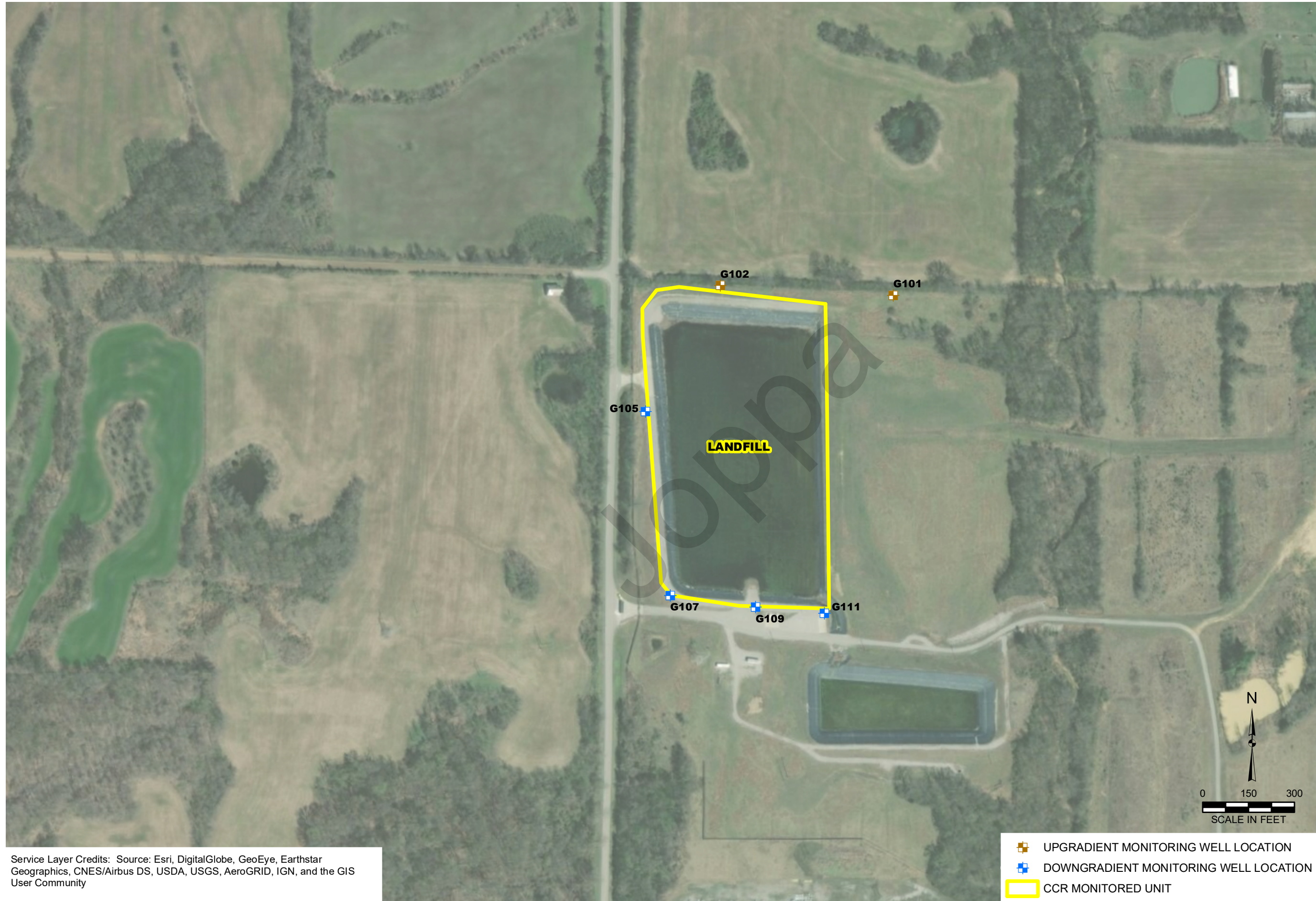
Natural Resource Technology, an OBG Company, 2017b, Sampling and Analysis Plan, Joppa Landfill, Joppa Power Station, Joppa, Illinois, Project No. 2285, Revision 0, October 17, 2017.

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Figures

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Y:\Mapping\Projects\2212285\MXD\2018\_AnnualGWM\_CAR\Figure 1\_CWS\_WellLoc\_JoppaL.mxd Author: stolzsd Date/Time: 1/28/2019 1:51:58 PM



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

-  UPGRADIENT MONITORING WELL LOCATION
-  DOWNGRADIENT MONITORING WELL LOCATION
-  CCR MONITORED UNIT

DRAWN BY/DATE:  
SDS 11/28/18  
REVIEWED BY/DATE:  
AJB 1/24/19  
APPROVED BY/DATE:  
NRK 1/28/19

GROUNDWATER SAMPLING WELL LOCATION MAP  
 JOPPA LANDFILL  
 UNIT ID: 402  
 2018 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 VISTRA CCR RULE GROUNDWATER MONITORING  
 JOPPA POWER STATION  
 JOPPA, ILLINOIS

PROJECT NO: 70091  
 FIGURE NO: 1



Tables

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**Table 1. Statistical Background Values**

2018 Annual Groundwater Monitoring and Corrective Action Report

Joppa Power Station

Unit ID 402 - Joppa Landfill

G105	
Parameter	Statistical Background Value
<b>Appendix III</b>	
Boron (mg/L)	DQR
Calcium (mg/L)	47.851
Chloride (mg/L)	47
Fluoride (mg/L)	0.29
pH (S.U.)	5.4 / 7.1
Sulfate (mg/L)	17
TDS (mg/L)	282

[O: KLS 8/28/18, C: RAB 8/30/18]

G107	
Parameter	Statistical Background Value
<b>Appendix III</b>	
Boron (mg/L)	0.0365
Calcium (mg/L)	113.257
Chloride (mg/L)	165
Fluoride (mg/L)	0.26
pH (S.U.)	5.7 / 7.5
Sulfate (mg/L)	180
TDS (mg/L)	923

[O: KLS 8/28/18, C: RAB 8/30/18]

G109	
Parameter	Statistical Background Value
<b>Appendix III</b>	
Boron (mg/L)	0.0315
Calcium (mg/L)	74.828
Chloride (mg/L)	12
Fluoride (mg/L)	0.29
pH (S.U.)	5.8 / 7.1
Sulfate (mg/L)	86
TDS (mg/L)	414

[O: KLS 8/28/18, C: RAB 8/30/18]

G111	
Parameter	Statistical Background Value
<b>Appendix III</b>	
Boron (mg/L)	0.0308
Calcium (mg/L)	24.45
Chloride (mg/L)	20
Fluoride (mg/L)	0.37
pH (S.U.)	6.0 / 7.2
Sulfate (mg/L)	52
TDS (mg/L)	386

[O: KLS 8/28/18, C: RAB 8/30/18]

**Notes:**

mg/L = milligrams per liter

S.U. = Standard Units

TDS = Total Dissolved Solids

**Table 2. Appendix III Analytical Results**

2018 Annual Groundwater Monitoring and Corrective Action Report

Joppa Power Station

Unit ID 402 - Joppa Landfill

Sample Location	Date Sampled	B, total (mg/L)	Ca, total (mg/L)	Cl, total (mg/L)	F, total (mg/L)	pH (field) (S.U.)	SO4, total (mg/L)	TDS (mg/L)
<b>Background / Upgradient Monitoring Wells</b>								
G101	11/30/2017	<0.025	9.28	<5	0.29	6.6	35	128
	6/19/2018	<0.025	10.4	<5	0.29	6.7	49	214
	12/6/2018	<0.025	11.7	<5	0.31	6.7	54	250
G102	11/30/2017	<0.025	8.55	6.0	0.14	6.3	20	128
	6/19/2018	<0.025	9.92	9.0	0.17	6.5	50	246
	12/6/2018	<0.025	8.32	5.0	0.15	6.4	28	180
<b>Downgradient Monitoring Wells</b>								
G105	11/30/2017	<0.025	24.4	37	0.16	6.3	12	238
	6/19/2018	<0.025	24.6	30	0.16	6.3	12	222
	12/6/2018	<0.025	24.6	27	0.16	6.2	11	232
G107	11/30/2017	0.0295	93.1	110	0.17	6.5	88	580
	6/19/2018	<0.025	94.1	115	0.23	6.6	77	608
	12/6/2018	0.0270	97.1	113	0.18	6.6	72	594
G109	11/30/2017	<0.025	14.4	10	0.18	6.5	48	166
	6/19/2018	0.0277	34.9	25	0.39	6.9	100	492
	9/5/2018	NA	NA	21	0.30	7.0	77	402
	12/6/2018	<0.025	24.6	19	0.30	6.7	68	364
G111	11/30/2017	<0.025	11.0	16	0.29	6.7	<10	242
	6/19/2018	<0.025	18.2	14	0.35	6.8	40	340
	12/6/2018	0.0404	20.8	9.0	0.34	6.5	32	320

[O: RAB 12/26/18, C: JQW 12/27/18][U: RAB 1/26/19]

**Notes:**

mg/L = milligrams per liter

S.U. = Standard Units

TDS = Total Dissolved Solids

NA = Not Analyzed

< = concentration is less than the reporting limit

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