

2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

**Caledonia Ash Landfill
Caledonia, WI**

We Energies

January 31, 2018



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2017 Annual Groundwater Monitoring and Corrective Action Report

Caledonia Ash Landfill

Caledonia, Wisconsin

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ACRONYMS AND ABBREVIATIONS

CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
mg/L	milligrams per liter
OBG	O'Brien & Gere Engineers, Inc.
SSI	Statistically Significant Increase
STD	standard units

1 INTRODUCTION

1.1 OVERVIEW

This report has been prepared on behalf of We Energies by O'Brien & Gere Engineers, Inc. (OBG), to provide the information required by Title 40 of the Code of Federal Regulations (40 CFR) Part 257.90(e) for the Caledonia Ash Landfill located in Caledonia, Wisconsin.

In accordance with 40 CFR 257.90(e), the owner or operator of an existing coal combustion residual (CCR) unit must prepare an annual groundwater monitoring and corrective action report (Annual Report) for the preceding calendar year. The Annual Report must document the status of the groundwater monitoring and corrective action program for the CCR unit and summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project 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 40 CFR 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); and
- (5) Other information required to be included in the annual report as specified in 40 CFR 257.90 through 257.98.¹

This report provides the required information for the Caledonia Ash Landfill for calendar year 2017.

1.2 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The final three independent samples of the minimum eight required by 40 CFR 257.94(b) were collected and analyzed from each background and downgradient well before October 17, 2017, with the exception of W12D, W49, and W50 as further described in Section 2.2. The other five independent samples were collected and analyzed in 2015 and 2016 for all wells except W49 and W50.

The collection of eight independent background samples was completed by October 17, 2017. The first semi-annual monitoring sample for the Detection Monitoring Program for Appendix III parameters was collected on November 14-15, 2017 from each well; the analytical data was received on December 18, 2017. Determination of statistically significant increases (SSI) of Appendix III parameters over background concentrations will be completed within 90 days of completing the sample analysis, but not later than January 15, 2018.

¹ For calendar year 2017, corrective action and other information required to be included in the annual report as specified in 40CFR 257.90 through 257.98 is not applicable.

2 KEY ACTIONS COMPLETED IN 2017

2.1 SUMMARY

Three groundwater sampling events were completed in 2017 as part of an effort initiated in 2015 to collect eight independent samples from background and downgradient monitoring wells in accordance with 40 CFR 257.94(b).

Subsequent to collection of the eight independent samples, an additional sampling event was completed in November 2017 for parameters listed in Appendix III, 40 CFR Part 257, to supplement the background data set and as the first semi-annual monitoring sampling event for the Detection Monitoring Program.

A map showing the groundwater monitoring system, including the CCR unit and all background (upgradient) and downgradient monitoring wells with well identification numbers, for the Caledonia Ash Landfill is presented in Figure 1.

Samples were collected and analyzed in accordance with the Sampling and Analysis Plan (Natural Resource Technology, an OBG Company, 2017) prepared for the Caledonia Ash Landfill.

All monitoring data obtained under 40 CFR 257.90 through 257.98 (as applicable) in 2017, as well as monitoring data for the previously collected five independent samples are presented in Tables 1 and 2. Sample collection dates in 2017 were February 8, April 15, August 21-22, and November 14-15. Sample collection dates for previously collected five independent samples are identified in Tables 1 and 2.

Statistical evaluation of analytical data from the eight independent samples required to be collected by October 17, 2017 and the first semi-annual detection monitoring event on November 14-15, 2017 was initiated and will be completed within 90 days of October 17, 2017 (January 15, 2018). Statistical evaluation of analytical data is being performed in accordance with the Statistical Analysis Plan, Caledonia Ash Landfill (Natural Resource Technology, an OBG Company, 2017).

2.2 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE PROBLEMS

Groundwater samples were collected and analyzed in accordance with the Sampling and Analysis Plan, and all data was accepted.

Based on observed fluctuations in groundwater flow direction since 2015, additional monitoring locations were necessary to adequately monitor groundwater downgradient of the Caledonia Ash Landfill. Also, during 2017 site access was improved in areas east-southeast of the landfill, allowing for installation of new groundwater monitoring well W50 closer to the CCR unit and in the same downgradient position as W12D, which had been part of the monitoring network.

New groundwater monitoring wells W49 and W50 were installed from April 18, 2017 to April 19, 2017 and added to the monitoring network to provide additional downgradient groundwater monitoring coverage and groundwater elevation data. In 2017, monitoring well W12D was removed from the monitoring network and replaced by well W50, which provides downgradient coverage east-southeast of the landfill and is located adjacent to the CCR unit. Groundwater monitoring data obtained from well W12D prior to the installation of W50 and during the collection of the eight independent samples from background and downgradient monitoring wells is provided in Tables 1 and 2.

Monitoring well locations are shown on Figure 1.

3 KEY ACTIVITIES PLANNED FOR 2018

3.1 SUMMARY

The following key activities are planned for 2018:

- Continuation of the Detection Monitoring Program with semi-annual sampling scheduled for the 2nd and 4th quarters of 2018.
- Complete evaluation of analytical data from the downgradient wells, using both the eight samples required to be collected by October 17, 2017 and the first semi-annual detection monitoring sample taken in November 2017 to determine whether a 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 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 detection and included in the annual groundwater monitoring and corrective action report for 2018.
 - » 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) will apply in 2018, including associated recordkeeping/notifications required by 40 CFR 257.105 through 257.108.

REFERENCES

Natural Resource Technology, an OBG Company, 2017, Sampling and Analysis Plan Revision 2, Caledonia Ash Landfill, Caledonia, Wisconsin, September 29, 2017.

Natural Resource Technology, an OBG Company, 2017, Statistical Analysis Plan, Caledonia Ash Landfill, Caledonia, Wisconsin, October 17, 2017.





Tables

Caledonia
Table 1. Caledonia Ash Landfill: Appendix III Analytical Results

Date Range: 11/11/2015 to 11/15/2017

Well Id	Date Sampled	Lab Id	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
W08D	11/11/2015	40124666006	0.4070	52.500	13.000	1.000	7.700	181.000
	02/16/2016	40128456003	0.4260	54.700	11.500	0.720	7.440	191.000
	05/11/2016	40132272002	0.4720	57.600	11.600	0.760	7.400	196.000
	08/30/2016	40137606003	0.4020	58.200	10.400	0.710	7.600	177.000
	11/14/2016	40142064003	0.4570	57.000	12.900	1.100	7.400	204.000
	02/08/2017	40145548002	0.4200	51.800	11.000	0.860	7.940	201.000
	05/15/2017	40150143005	0.4700	51.400	10.600	0.910	7.450	204.000
	08/22/2017	40155549007	0.4500	48.900	10.800	1.100	6.940	203.000
	11/14/2017	40161125002	0.4560	49.100	11.900	1.100	7.410	222.000
W09D	11/11/2015	40124666005	0.3790	19.900	4.600	1.300	8.200	30.400
	02/16/2016	40128456004	0.4040	18.600	4.900	1.300	8.340	31.200
	05/11/2016	40132272003	0.3890	18.800	4.900	1.400	8.130	32.300
	08/30/2016	40137606004	0.3500	19.900	4.100	1.300	8.300	31.500
	11/14/2016	40142064004	0.3890	18.900	3.900	1.400	8.300	33.900
	02/08/2017	40145548003	0.3700	18.400	4.000	1.300	8.190	33.500
	05/15/2017	40150143006	0.3800	17.900	3.800	1.400	7.830	33.400
	08/22/2017	40155549008	0.3900	17.700	3.800	1.300	7.700	31.800
	11/14/2017	40161125003	0.3940	18.600	4.900	1.400	8.230	32.200
W10D	11/11/2015	40124666004	0.3980	22.700	4.700	1.200	8.200	38.800
	02/17/2016	40128456007	0.4450	23.300	6.300	1.200	8.100	43.000
	05/11/2016	40132272005	0.4280	21.600	6.500	1.300	7.900	46.000
	08/30/2016	40137606005	0.3880	21.800	4.700	1.300	8.100	41.600
	11/14/2016	40142064005	0.4170	21.600	4.400	1.400	8.000	44.000
	02/08/2017	40145548005	0.3900	20.500	4.300	1.300	8.360	41.700
	05/15/2017	40150143007	0.4100	20.300	4.200	1.400	7.980	43.000
	08/22/2017	40155549009	0.4200	20.700	4.200	1.300	7.870	40.800
	11/14/2017	40161125004	0.4170	20.400	4.300	1.400	8.070	44.500
W12D	11/11/2015	40124666007	0.5010	26.700	5.300	1.200	8.400	100.000
	02/16/2016	40128456001	0.5140	24.400	5.600	1.200	8.200	104.000
	05/11/2016	40132272001	0.5250	25.300	5.700	1.300	8.000	105.000
	08/30/2016	40137606007	0.4860	26.400	4.900	1.200	8.300	98.500
	11/14/2016	40142064001	0.4970	24.500	5.300	1.300	8.200	109.000
	02/08/2017	40145548008	0.4800	24.800	4.900	1.200	8.520	108.000
	05/15/2017	40150143003	0.5100	24.400	4.700	1.200	8.090	108.000
	08/22/2017	40155549011	0.5300	24.300	4.700	1.200	7.610	109.000
	11/11/2015	40124666001	0.3320	31.000	6.100	0.820	8.100	26.300

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Table 1. Caledonia Ash Landfill: Appendix III Analytical Results

Date Range: 11/11/2015 to 11/15/2017

			B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
W46D	02/17/2016	40128456008	0.3760	35.900	7.400	0.740	7.800	11.600
	05/11/2016	40132272008	0.4060	33.200	10.100	4.000	7.400	5.400
	08/30/2016	40137606006	0.3580	30.300	7.200	2.300	7.600	25.000
	11/14/2016	40142064007	0.3700	29.600	9.600	0.540	7.500	26.500
	02/08/2017	40145548006	0.3700	28.400	10.400	<0.500	7.210	25.700
	05/16/2017	40150143010	0.3700	25.900	9.900	1.100	7.150	30.200
	08/21/2017	40155549004	0.3800	28.100	10.600	1.000	7.410	29.100
	11/14/2017	40161125001	0.3910	27.000	6.800	1.200	7.580	34.500
W48	11/11/2015	40124666002	0.3490	27.200	4.600	0.900	8.000	2.300
	02/16/2016	40128456002	0.3730	24.900	5.000	0.900	8.000	3.000
	05/11/2016	40132272006	0.3850	26.700	4.900	0.980	7.900	2.600
	08/30/2016	40137606001	0.3440	28.100	4.100	0.900	8.000	<2.000
	11/14/2016	40142064006	0.3570	26.500	4.100	0.990	8.000	<1.000
	02/08/2017	40145548001	0.3500	26.300	4.000	0.930	8.170	1.300
	05/15/2017	40150143004	0.3600	25.100	3.800	0.950	7.990	<1.000
	08/21/2017	40155549006	0.3600	27.300	3.800	0.920	7.460	<1.000
W49	11/15/2017	40161125005	0.3700	27.400	4.100	1.000	7.860	<1.000
	06/21/2017	40152212001	0.4200	40.600	6.500	1.200	7.970	44.900
	08/22/2017	40155549012	0.4100	24.900	6.300	1.300	7.870	46.100
W50	11/15/2017	40161125007	0.4320	19.500	5.800	1.500	8.090	51.600
	06/02/2017	40151093001	0.5000	30.800	6.500	1.200	6.920	51.300
	08/22/2017	40155549013	0.5000	25.900	5.400	1.200	7.150	75.200
	11/15/2017	40161125008	0.4900	26.200	5.800	1.300	7.840	80.800

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Table 1. Caledonia Ash Landfill: Appendix III Analytical Results

Date Range: 11/11/2015 to 11/15/2017

Well Id	Date Sampled	Lab Id	TDS, mg/L
W08D	11/11/2015	40124666006	432.000
	02/16/2016	40128456003	460.000
	05/11/2016	40132272002	446.000
	08/30/2016	40137606003	484.000
	11/14/2016	40142064003	510.000
	02/08/2017	40145548002	454.000
	05/15/2017	40150143005	448.000
	08/22/2017	40155549007	444.000
	11/14/2017	40161125002	416.000
W09D	11/11/2015	40124666005	202.000
	02/16/2016	40128456004	198.000
	05/11/2016	40132272003	194.000
	08/30/2016	40137606004	206.000
	11/14/2016	40142064004	206.000
	02/08/2017	40145548003	192.000
	05/15/2017	40150143006	200.000
	08/22/2017	40155549008	208.000
	11/14/2017	40161125003	170.000
W10D	11/11/2015	40124666004	222.000
	02/17/2016	40128456007	190.000
	05/11/2016	40132272005	206.000
	08/30/2016	40137606005	232.000
	11/14/2016	40142064005	210.000
	02/08/2017	40145548005	192.000
	05/15/2017	40150143007	196.000
	08/22/2017	40155549009	222.000
	11/14/2017	40161125004	180.000
W12D	11/11/2015	40124666007	272.000
	02/16/2016	40128456001	278.000
	05/11/2016	40132272001	258.000
	08/30/2016	40137606007	296.000
	11/14/2016	40142064001	284.000
	02/08/2017	40145548008	240.000
	05/15/2017	40150143003	276.000
	08/22/2017	40155549011	272.000
	11/11/2015	40124666001	230.000
W46D	11/11/2015	40124666001	230.000

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Table 1. Caledonia Ash Landfill: Appendix III Analytical Results

Date Range: 11/11/2015 to 11/15/2017

			TDS, mg/L
W46D	02/17/2016	40128456008	244.000
	05/11/2016	40132272008	218.000
	08/30/2016	40137606006	256.000
	11/14/2016	40142064007	260.000
	02/08/2017	40145548006	114.000
	05/16/2017	40150143010	230.000
	08/21/2017	40155549004	232.000
	11/14/2017	40161125001	196.000
W48	11/11/2015	40124666002	254.000
	02/16/2016	40128456002	222.000
	05/11/2016	40132272006	224.000
	08/30/2016	40137606001	242.000
	11/14/2016	40142064006	238.000
	02/08/2017	40145548001	224.000
	05/15/2017	40150143004	236.000
	08/21/2017	40155549006	254.000
	11/15/2017	40161125005	244.000
	W49	06/21/2017	40152212001
08/22/2017		40155549012	216.000
11/15/2017		40161125007	210.000
W50	06/02/2017	40151093001	270.000
	08/22/2017	40155549013	256.000
	11/15/2017	40161125008	260.000

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Table 2. Caledonia Ash Landfill: Appendix IV Analytical Results

Date Range: 11/11/2015 to 10/17/2017

Well Id	Date Sampled	Lab Id	As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
W08D	11/11/2015	40124666006	0.000570	0.094600	<0.000680	<0.001000	<0.001300	<0.00150
	02/16/2016	40128456003	0.000680	0.088500	<0.000680	<0.001000	<0.001300	<0.00150
	05/11/2016	40132272002	0.000570	0.092200	<0.000680	<0.001000	<0.001300	<0.00150
	08/30/2016	40137606003	0.000430	0.084900	<0.000680	<0.001000	<0.001300	<0.00150
	11/14/2016	40142064003	0.000410	0.085200	<0.001200	<0.001300	<0.001400	<0.00250
	02/08/2017	40145548002	0.000410	0.077100	<0.001200	<0.001300	<0.001400	<0.00250
	05/15/2017	40150143005	0.000460	0.077400	<0.001200	<0.001300	<0.001400	<0.00250
	08/22/2017	40155549007	0.000370	0.072400	<0.001200	<0.001300	<0.001400	<0.00250
W09D	11/11/2015	40124666005	0.000760	0.046300	<0.000680	<0.001000	<0.001300	<0.00150
	02/16/2016	40128456004	0.000620	0.043300	<0.000680	<0.001000	<0.001300	<0.00150
	05/11/2016	40132272003	0.000700	0.044400	<0.000680	<0.001000	<0.001300	<0.00150
	08/30/2016	40137606004	0.000740	0.047000	<0.000680	<0.001000	<0.001300	<0.00150
	11/14/2016	40142064004	0.000730	0.046900	<0.001200	<0.001300	<0.001400	<0.00250
	02/08/2017	40145548003	0.000580	0.045800	<0.001200	<0.001300	<0.001400	<0.00250
	05/15/2017	40150143006	0.000720	0.046100	<0.001200	<0.001300	<0.001400	<0.00250
	08/22/2017	40155549008	0.000530	0.047600	<0.001200	<0.001300	<0.001400	<0.00250
W10D	11/11/2015	40124666004	0.000960	0.034100	<0.000680	<0.001000	<0.001300	0.00200
	02/17/2016	40128456007	0.001200	0.031000	<0.000680	<0.001000	<0.001300	0.00210
	05/11/2016	40132272005	0.000900	0.029200	<0.000680	<0.001000	<0.001300	<0.00150
	08/30/2016	40137606005	0.000620	0.029500	<0.000680	<0.001000	<0.001300	<0.00150
	11/14/2016	40142064005	0.000580	0.028600	<0.001200	<0.001300	<0.001400	<0.00250
	02/08/2017	40145548005	0.000580	0.027600	<0.001200	<0.001300	<0.001400	<0.00250
	05/15/2017	40150143007	0.000610	0.029400	<0.001200	<0.001300	<0.001400	<0.00250
	08/22/2017	40155549009	0.000470	0.031600	<0.001200	<0.001300	<0.001400	<0.00250
W12D	11/11/2015	40124666007	0.000360	0.029900	<0.000680	<0.001000	<0.001300	<0.00150
	02/16/2016	40128456001	0.000310	0.025300	<0.000680	<0.001000	<0.001300	<0.00150
	05/11/2016	40132272001	0.000250	0.027100	<0.000680	<0.001000	<0.001300	<0.00150
	08/30/2016	40137606007	0.000110	0.027700	<0.000680	<0.001000	<0.001300	<0.00150
	11/14/2016	40142064001	0.000440	0.025300	<0.001200	<0.001300	<0.001400	<0.00250
	02/08/2017	40145548008	<0.000099	0.025500	<0.001200	<0.001300	<0.001400	<0.00250
	05/15/2017	40150143003	0.000490	0.026300	<0.001200	<0.001300	<0.001400	<0.00250
	08/22/2017	40155549011	<0.000280	0.026100	<0.001200	<0.001300	<0.001400	<0.00250
W46D	11/11/2015	40124666001	0.001400	0.040600	<0.000680	<0.001000	<0.001300	<0.00150
	02/17/2016	40128456008	0.001400	0.042500	<0.000680	<0.001000	<0.001300	<0.00150
	05/11/2016	40132272008	0.001600	0.035000	<0.000680	<0.001000	<0.001300	<0.00150
	08/30/2016	40137606006	0.000870	0.031000	<0.000680	<0.001000	<0.001300	<0.00150

Caledonia
Table 2. Caledonia Ash Landfill: Appendix IV Analytical Results

Date Range: 11/11/2015 to 10/17/2017

			As, tot, mg/L	Ba, tot, mg/L	Be, tot, mg/L	Cd,tot, mg/L	Co, tot, mg/L	Cr, tot, mg/L
W46D	11/14/2016	40142064007	0.000840	0.031300	<0.001200	<0.001300	<0.001400	<0.00250
	02/08/2017	40145548006	0.000650	0.029100	<0.001200	<0.001300	<0.001400	<0.00250
	05/16/2017	40150143010	0.001100	0.028300	<0.001200	<0.001300	<0.001400	<0.00250
	08/21/2017	40155549004	0.001000	0.031600	<0.001200	<0.001300	<0.001400	<0.00250
W48	11/11/2015	40124666002	0.000740	0.056900	<0.000680	<0.001000	<0.001300	<0.00150
	02/16/2016	40128456002	0.000720	0.052200	<0.000680	<0.001000	<0.001300	<0.00150
	05/11/2016	40132272006	0.000790	0.057000	<0.000680	<0.001000	<0.001300	<0.00150
	08/30/2016	40137606001	0.001500	0.067800	<0.000680	<0.001000	<0.001300	<0.00150
	11/14/2016	40142064006	0.000540	0.073100	<0.001200	<0.001300	<0.001400	<0.00250
	02/08/2017	40145548001	0.000480	0.081400	<0.001200	<0.001300	<0.001400	<0.00250
	05/15/2017	40150143004	0.000630	0.087800	<0.001200	<0.001300	<0.001400	<0.00250
	08/21/2017	40155549006	0.000670	0.104000	<0.001200	<0.001300	<0.001400	<0.00250
W49	06/21/2017	40152212001	0.002900	0.047700	<0.001200	<0.001300	0.001800	0.00650
	08/22/2017	40155549012	0.001300	0.030800	<0.001200	<0.001300	<0.001400	<0.00250
W50	06/02/2017	40151093001	0.002800	0.048800	<0.001200	<0.001300	<0.001400	<0.00250
	08/22/2017	40155549013	0.001900	0.034400	<0.001200	<0.001300	<0.001400	<0.00250

Caledonia
Table 2. Caledonia Ash Landfill: Appendix IV Analytical Results

Date Range: 11/11/2015 to 10/17/2017

Well Id	Date Sampled	Lab Id	F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Sb, tot, mg/L
W08D	11/11/2015	40124666006	1.000	<0.00010	0.00930	0.028100	<0.000033	<0.000066
	02/16/2016	40128456003	0.720	<0.00010	0.00110	0.025300	0.000190	0.000300
	05/11/2016	40132272002	0.760	<0.00013	0.00091	0.022200	0.000048	0.000130
	08/30/2016	40137606003	0.710	<0.00013	0.00130	0.019100	<0.000040	<0.000073
	11/14/2016	40142064003	1.100	<0.00013	0.00110	0.031600	<0.000040	<0.000073
	02/08/2017	40145548002	0.860	<0.00013	0.00190	0.030000	<0.000040	0.000090
	05/15/2017	40150143005	0.910	<0.00013	0.00180	0.038000	<0.000040	<0.000073
	08/22/2017	40155549007	1.100	<0.00013	0.00220	0.042000	<0.000200	<0.000150
W09D	11/11/2015	40124666005	1.300	<0.00010	0.00500	0.029500	0.000110	<0.000066
	02/16/2016	40128456004	1.300	<0.00010	0.00530	0.032100	0.000046	0.000084
	05/11/2016	40132272003	1.400	<0.00013	0.00530	0.030200	0.000055	0.000077
	08/30/2016	40137606004	1.300	<0.00013	0.00510	0.030700	0.000110	0.000140
	11/14/2016	40142064004	1.400	<0.00013	0.00570	0.032200	0.000082	0.000150
	02/08/2017	40145548003	1.300	<0.00013	0.00570	0.029000	<0.000040	<0.000073
	05/15/2017	40150143006	1.400	<0.00013	0.00560	0.031000	0.000043	<0.000073
	08/22/2017	40155549008	1.300	<0.00013	0.00550	0.031000	<0.000200	<0.000150
W10D	11/11/2015	40124666004	1.200	<0.00010	0.00420	0.036700	0.000220	0.000084
	02/17/2016	40128456007	1.200	<0.00010	0.00460	0.042800	0.000230	0.000360
	05/11/2016	40132272005	1.300	<0.00013	0.00370	0.040300	0.000052	0.000180
	08/30/2016	40137606005	1.300	<0.00013	0.00420	0.038900	<0.000040	<0.000073
	11/14/2016	40142064005	1.400	<0.00013	0.00440	0.041900	<0.000040	<0.000073
	02/08/2017	40145548005	1.300	<0.00013	0.00470	0.037000	0.000200	0.000260
	05/15/2017	40150143007	1.400	<0.00013	0.00490	0.040000	0.000083	<0.000073
	08/22/2017	40155549009	1.300	<0.00013	0.00460	0.040000	<0.000200	<0.000150
W12D	11/11/2015	40124666007	1.200	<0.00010	0.00500	0.054700	0.000200	<0.000066
	02/16/2016	40128456001	1.200	<0.00010	0.00490	0.057200	0.000150	0.000120
	05/11/2016	40132272001	1.300	<0.00013	0.00540	0.052800	0.000050	<0.000073
	08/30/2016	40137606007	1.200	<0.00013	0.00490	0.053400	<0.000040	<0.000073
	11/14/2016	40142064001	1.300	<0.00013	0.00610	0.053400	0.000250	0.000300
	02/08/2017	40145548008	1.200	<0.00013	0.00550	0.050000	<0.000040	<0.000073
	05/15/2017	40150143003	1.200	<0.00013	0.00580	0.052000	0.000320	0.000310
	08/22/2017	40155549011	1.200	<0.00013	0.00550	0.055000	<0.000200	<0.000150
W46D	11/11/2015	40124666001	0.820	<0.00010	0.00330	0.027300	0.000270	<0.000330
	02/17/2016	40128456008	0.740	<0.00010	0.00200	0.020600	0.000210	0.000150
	05/11/2016	40132272008	4.000	<0.00013	0.00420	0.019400	0.000390	0.000220
	08/30/2016	40137606006	2.300	<0.00013	0.00310	0.026800	0.000056	0.000140

Caledonia
Table 2. Caledonia Ash Landfill: Appendix IV Analytical Results

Date Range: 11/11/2015 to 10/17/2017

			F, tot, mg/L	Hg, tot, mg/L	Li, tot, mg/L	Mo, tot, mg/L	Pb, tot, mg/L	Sb, tot, mg/L
W46D	11/14/2016	40142064007	0.540	<0.00013	0.00440	0.021900	0.000082	0.000190
	02/08/2017	40145548006	<0.500	<0.00013	0.00410	0.020000	0.000063	0.000130
	05/16/2017	40150143010	1.100	<0.00013	0.00350	0.024000	<0.000040	0.000180
	08/21/2017	40155549004	1.000	<0.00013	0.00400	0.016000	<0.000200	0.000230
W48	11/11/2015	40124666002	0.900	<0.00010	0.00500	<0.002500	0.000058	0.000067
	02/16/2016	40128456002	0.900	<0.00010	0.00500	<0.002500	0.000081	0.000120
	05/11/2016	40132272006	0.980	<0.00013	0.00490	<0.002500	<0.000040	<0.000073
	08/30/2016	40137606001	0.900	<0.00013	0.00550	<0.002500	0.000850	0.000910
	11/14/2016	40142064006	0.990	<0.00013	0.00590	<0.001400	<0.000040	<0.000073
	02/08/2017	40145548001	0.930	<0.00013	0.00620	0.001500	<0.000040	0.000110
	05/15/2017	40150143004	0.950	<0.00013	0.00630	0.001500	0.000072	<0.000073
	08/21/2017	40155549006	0.920	<0.00013	0.00690	<0.001400	0.000280	0.000240
W49	06/21/2017	40152212001	1.200	<0.00013	0.01410	0.043000	0.002400	0.000660
	08/22/2017	40155549012	1.300	<0.00013	0.00380	0.045000	0.000680	0.000400
W50	06/02/2017	40151093001	1.200	<0.00013	0.00460	0.028000	0.000900	0.000540
	08/22/2017	40155549013	1.200	<0.00013	0.00290	0.037000	<0.000200	<0.000150

Caledonia
Table 2. Caledonia Ash Landfill: Appendix IV Analytical Results

Date Range: 11/11/2015 to 10/17/2017

Well Id	Date Sampled	Lab Id	Ra 226+228, PCi/L	Se, tot, mg/L	Tl, tot, mg/L
W08D	11/11/2015	40124666006	1.2900	0.00018	<0.000018
	02/16/2016	40128456003	0.3000	0.00025	0.000220
	05/11/2016	40132272002	1.1500	<0.00021	<0.000140
	08/30/2016	40137606003	1.5500	<0.00021	<0.000140
	11/14/2016	40142064003	0.2210	<0.00021	<0.000140
	02/08/2017	40145548002	0.9870	<0.00021	<0.000140
	05/15/2017	40150143005	0.5310	<0.00021	<0.000140
	08/22/2017	40155549007	1.2100	<0.00032	<0.000140
W09D	11/11/2015	40124666005	1.3300	<0.00016	<0.000018
	02/16/2016	40128456004	0.2380	<0.00021	<0.000140
	05/11/2016	40132272003	0.0000	<0.00021	<0.000140
	08/30/2016	40137606004	0.3870	<0.00021	0.000360
	11/14/2016	40142064004	0.1540	<0.00021	0.000160
	02/08/2017	40145548003	1.1700	<0.00021	<0.000140
	05/15/2017	40150143006	1.0600	<0.00021	<0.000140
	08/22/2017	40155549008	0.4380	<0.00032	<0.000140
W10D	11/11/2015	40124666004	0.6450	<0.00016	<0.000018
	02/17/2016	40128456007	0.6540	<0.00021	<0.000140
	05/11/2016	40132272005	0.1380	<0.00021	<0.000140
	08/30/2016	40137606005	1.2600	<0.00021	<0.000140
	11/14/2016	40142064005	0.3940	<0.00021	<0.000140
	02/08/2017	40145548005	0.3450	<0.00021	0.000250
	05/15/2017	40150143007	0.1720	<0.00021	<0.000140
	08/22/2017	40155549009	0.3970	<0.00032	<0.000140
W12D	11/11/2015	40124666007	0.3940	<0.00016	<0.000018
	02/16/2016	40128456001	0.6040	<0.00021	0.000260
	05/11/2016	40132272001	0.0000	<0.00021	<0.000140
	08/30/2016	40137606007	0.5340	<0.00021	<0.000140
	11/14/2016	40142064001	0.3090	0.00022	0.000350
	02/08/2017	40145548008	1.8600	<0.00021	<0.000140
	05/15/2017	40150143003	0.3670	0.00036	0.000400
	08/22/2017	40155549011	1.4000	<0.00032	<0.000140
W46D	11/11/2015	40124666001	0.4980	<0.00080	<0.000090
	02/17/2016	40128456008	0.4430	<0.00021	<0.000140
	05/11/2016	40132272008	0.0665	<0.00021	<0.000140
	08/30/2016	40137606006	0.9470	<0.00021	<0.000140

Caledonia
Table 2. Caledonia Ash Landfill: Appendix IV Analytical Results

Date Range: 11/11/2015 to 10/17/2017

			Ra 226+228, PCi/L	Se, tot, mg/L	Tl, tot, mg/L
W46D	11/14/2016	40142064007	0.3680	<0.00021	<0.000140
	02/08/2017	40145548006	0.3120	<0.00021	<0.000140
	05/16/2017	40150143010	0.5020	<0.00021	<0.000140
	08/21/2017	40155549004	0.4240	<0.00032	<0.000140
W48	11/11/2015	40124666002	0.6220	<0.00016	0.000036
	02/16/2016	40128456002	0.2060	<0.00021	<0.000140
	05/11/2016	40132272006	0.5010	<0.00021	<0.000140
	08/30/2016	40137606001	0.9080	0.00077	0.001300
	11/14/2016	40142064006	0.5340	<0.00021	<0.000140
	02/08/2017	40145548001	0.2150	<0.00021	0.000170
	05/15/2017	40150143004	1.0100	<0.00021	<0.000140
	08/21/2017	40155549006	0.4970	<0.00032	0.000280
	W49	06/21/2017	40152212001	0.6800	0.00066
08/22/2017		40155549012	0.7460	0.00038	0.000410
W50	06/02/2017	40151093001	0.4820	0.00039	0.000260
	08/22/2017	40155549013	0.7420	<0.00032	0.000140



Figures

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DRAWN BY/DATE:
 SDS 1/17/18
 REVIEWED BY/DATE:
 GRL 1/17/18
 APPROVED BY DATE:
 GRL 1/29/18

GROUNDWATER SAMPLING WELL LOCATION MAP

2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT WE ENERGIES CALEDONIA ASH LANDFILL CALEDONIA, WISCONSIN

PROJECT NO: 67985

FIGURE NO: 1



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THERE'S A WAY

