2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

# Weston Disposal Site No. 3 Landfill
# Town of Knowlton, Wisconsin

**Wisconsin Public Service Corporation**

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OBG

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# 2017 Annual Groundwater Monitoring and Corrective Action Report

## Weston Disposal Site No. 3 Landfill

## Town of Knowlton, Wisconsin

Prepared for:

***WEC Business Services, LLC***
*333 W. Everett Street*
*Milwaukee, WI*

**KRISTEN L. THEESFELD**
**Hydrogeologist**

**GLENN R. LUKE, PE**
**Managing Engineer**

# TABLE OF CONTENTS

## TABLES



## FIGURES

## 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 |
| WDS3 | Weston Disposal Site No. 3 |

# 1 INTRODUCTION

## 1.1 OVERVIEW

This report has been prepared on behalf of Wisconsin Public Service Corporation (WPSC) 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 Weston Disposal Site No. 3 (WDS3) Landfill located in the Town of Knowlton, 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 WDS3 Landfill for calendar year 2017.

## 1.2 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The final two 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. The other six independent samples were collected and analyzed in 2016.

The first semi-annual monitoring sample for the Detection Monitoring Program was collected on October 11, 2017 from each well; the analytical data was received on October 26, 2017.

The collection of eight independent background samples and the first semi-annual detection monitoring event for Appendix III parameters were completed by October 17, 2017. Determination of statistically significant increases (SSI) of Appendix III parameters over background concentrations will be completed within 90 days of completing 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

Two groundwater sampling events were completed in 2017 as part of an effort initiated in 2016 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 October 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 WDS3 Landfill is presented in Figure 1. No monitoring wells were installed or decommissioned from the monitoring system in 2017.

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 six independent samples are presented in Tables 1 and 2. Sample collection dates in 2017 were March 10, June 2, and October 11. Sample collection dates for previously collected six independent samples are identified in Tables 1 and 2. One ground water sample was collected from each background and downgradient well in each sampling event.

During the February 18, 2016 sampling event at WDS3 landfill the water quality probe malfunctioned during sample collection and field parameters, inclusive of specific conductance, pH, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity, were not obtained.

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 October 11, 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, WDS3 Landfill (Natural Resource Technology, an OBG Company, 2017).

## 2.2 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE PROBLEMS

No problems were encountered with the groundwater monitoring program during 2017and all data was accepted.

# 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 October 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, Statistical Analysis Plan, Weston Disposal Site No. 3 Landfill, Town of Knowlton, Wisconsin, October 17, 2017.

# Tables

# Weston Disposal Site #3
## Table 1. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results

**Date Range: 02/18/2016 to 10/11/2017**

| 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 |
|---|---|---|---|---|---|---|---|---|
| LS-100 | 02/18/2016 | 40128408001 | 0.0480 | 13.900 | 4.000 | <0.200 | | 12.500 |
| | 04/05/2016 | 40130257002 | 0.0120 | 27.300 | 4.300 | <0.200 | 6.460 | 16.600 |
| | 06/15/2016 | 40133877003 | 0.0350 | 22.500 | 3.600 | <0.200 | 6.530 | 13.100 |
| | 08/10/2016 | 40136543003 | 0.0410 | 28.200 | 4.900 | <0.200 | 6.620 | 20.700 |
| | 10/05/2016 | 40139741002 | 0.1000 | 56.800 | 0.970 | <0.100 | 6.620 | 4.500 |
| | 12/21/2016 | 40143755003 | 0.0980 | 75.200 | 21.000 | <0.100 | 7.110 | 202.000 |
| | 03/10/2017 | 40146662002 | 0.0290 | 17.900 | 3.600 | <0.100 | 8.390 | 30.000 |
| | 06/02/2017 | 40151013002 | 0.1100 | 13.100 | 1.600 | <0.100 | 8.030 | 31.500 |
| | 10/11/2017 | 40158568002 | 0.0559 | 11.000 | 0.860 | <0.100 | 6.270 | 15.700 |
| LS-101 | 02/18/2016 | 40128408002 | 0.0086 | 5.200 | 2.900 | <0.200 | | 5.600 |
| | 04/05/2016 | 40130257003 | 0.0096 | 3.400 | 2.300 | <0.200 | 6.230 | 5.600 |
| | 06/15/2016 | 40133877002 | 0.0097 | 4.700 | 2.600 | <0.200 | 6.280 | 4.800 |
| | 08/10/2016 | 40136543002 | 0.0140 | 11.600 | 2.400 | <0.200 | 6.400 | 4.100 |
| | 10/05/2016 | 40139741003 | 0.0120 | 6.800 | 2.000 | <0.100 | 6.760 | 13.300 |
| | 12/21/2016 | 40143755002 | 0.0120 | 6.900 | 0.820 | <0.100 | 6.990 | 4.300 |
| | 03/10/2017 | 40146662003 | 0.0092 | 3.300 | <0.500 | <0.100 | 7.470 | 4.400 |
| | 06/02/2017 | 40151013003 | 0.0430 | 2.500 | 0.720 | <0.100 | 7.800 | 4.100 |
| | 10/11/2017 | 40158568003 | 0.0138 | 11.400 | 0.760 | <0.100 | 5.750 | 5.900 |
| LS-105 | 02/18/2016 | 40128408003 | 0.0140 | 17.300 | 4.200 | <0.200 | | 9.200 |
| | 04/05/2016 | 40130257004 | 0.0140 | 14.200 | 3.500 | <0.200 | 6.500 | 10.000 |
| | 06/15/2016 | 40133877004 | 0.0130 | 14.300 | 3.500 | <0.200 | 6.500 | 9.100 |
| | 08/10/2016 | 40136543004 | 0.0200 | 20.100 | 2.900 | <0.200 | 6.740 | 4.800 |
| | 10/05/2016 | 40139741004 | 0.0300 | 31.400 | 12.400 | <1.000 | 7.070 | 67.800 |
| | 12/21/2016 | 40143755005 | 0.0300 | 34.000 | 10.600 | <0.500 | 7.450 | 58.600 |
| | 03/10/2017 | 40146662004 | 0.0260 | 32.300 | 7.200 | <0.100 | 7.820 | 50.400 |
| | 06/02/2017 | 40151013004 | 0.0330 | 14.200 | 2.600 | <0.100 | 7.900 | 26.500 |
| | 10/11/2017 | 40158568004 | 0.0452 | 18.800 | 3.600 | <0.500 | 7.240 | 31.000 |
| LS-106 | 02/18/2016 | 40128408004 | 0.0150 | 9.200 | 4.200 | <0.200 | | 6.700 |
| | 04/05/2016 | 40130257005 | 0.0890 | 7.700 | 3.200 | <0.200 | 6.700 | 6.600 |
| | 06/15/2016 | 40133877005 | 0.0540 | 7.600 | 3.200 | <0.200 | 6.520 | 5.500 |
| | 08/10/2016 | 40136543005 | 0.0630 | 10.100 | <10.000 | <1.000 | 6.640 | <10.000 |
| | 10/05/2016 | 40139741005 | 0.3600 | 10.700 | 2.800 | <0.500 | 7.020 | <5.000 |
| | 12/21/2016 | 40143755006 | 0.1200 | 12.300 | <2.500 | <0.500 | 7.500 | 5.700 |
| | 03/10/2017 | 40146662005 | 0.4500 | 9.900 | <2.500 | <0.500 | 8.080 | 5.200 |
| | 06/02/2017 | 40151013005 | 0.0910 | 9.400 | 4.100 | <0.500 | 7.950 | 11.800 |
| | 10/11/2017 | 40158568005 | 0.1060 | 15.500 | 3.600 | <0.500 | 6.580 | 11.400 |

# Weston Disposal Site #3
## Table 1. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results

**Date Range: 02/18/2016 to 10/11/2017**

| | | | B, tot, mg/L | Ca, tot, mg/L | Cl, tot, mg/L | F, tot, mg/L | pH (field), STD | SO4, tot, mg/L |
|---|---|---|---|---|---|---|---|---|
| LS-107 | 02/18/2016 | 40128408005 | 0.0100 | 17.000 | 9.400 | <0.200 | | 9.000 |
| | 04/05/2016 | 40130257006 | 0.0097 | 18.200 | 7.400 | <0.200 | 6.220 | 9.200 |
| | 06/15/2016 | 40133877001 | 0.0089 | 19.100 | 7.900 | <0.200 | 6.520 | 10.800 |
| | 08/10/2016 | 40136543001 | 0.0120 | 21.000 | 6.900 | <0.200 | 6.710 | 10.000 |
| | 10/05/2016 | 40139741006 | 0.0120 | 22.000 | 5.400 | <0.100 | 6.830 | 10.000 |
| | 12/20/2016 | 40143755001 | 0.0140 | 25.900 | 4.700 | <0.100 | 7.160 | 12.500 |
| | 03/10/2017 | 40146662006 | 0.0110 | 25.700 | 3.800 | <0.100 | 7.420 | 15.200 |
| | 06/02/2017 | 40151013006 | 0.0310 | 21.900 | 5.400 | <0.100 | 7.580 | 19.900 |
| | 10/11/2017 | 40158568006 | 0.0143 | 26.000 | 6.200 | <0.100 | 6.130 | 25.500 |

# Weston Disposal Site #3
## Table 1. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results

**Date Range: 02/18/2016 to 10/11/2017**

| Well Id | Date Sampled | Lab Id | TDS, mg/L |
|---|---|---|---|
| LS-100 | 02/18/2016 | 40128408001 | 122.000 |
| | 04/05/2016 | 40130257002 | 150.000 |
| | 06/15/2016 | 40133877003 | 148.000 |
| | 08/10/2016 | 40136543003 | 182.000 |
| | 10/05/2016 | 40139741002 | 306.000 |
| | 12/21/2016 | 40143755003 | 360.000 |
| | 03/10/2017 | 40146662002 | 98.000 |
| | 06/02/2017 | 40151013002 | 94.000 |
| | 10/11/2017 | 40158568002 | 80.000 |
| LS-101 | 02/18/2016 | 40128408002 | 50.000 |
| | 04/05/2016 | 40130257003 | 52.000 |
| | 06/15/2016 | 40133877002 | 44.000 |
| | 08/10/2016 | 40136543002 | 84.000 |
| | 10/05/2016 | 40139741003 | 70.000 |
| | 12/21/2016 | 40143755002 | 60.000 |
| | 03/10/2017 | 40146662003 | 28.000 |
| | 06/02/2017 | 40151013003 | 30.000 |
| | 10/11/2017 | 40158568003 | 62.000 |
| LS-105 | 02/18/2016 | 40128408003 | 98.000 |
| | 04/05/2016 | 40130257004 | 94.000 |
| | 06/15/2016 | 40133877004 | 80.000 |
| | 08/10/2016 | 40136543004 | 148.000 |
| | 10/05/2016 | 40139741004 | 204.000 |
| | 12/21/2016 | 40143755005 | 196.000 |
| | 03/10/2017 | 40146662004 | 178.000 |
| | 06/02/2017 | 40151013004 | 96.000 |
| | 10/11/2017 | 40158568004 | 100.000 |
| LS-106 | 02/18/2016 | 40128408004 | 70.000 |
| | 04/05/2016 | 40130257005 | 94.000 |
| | 06/15/2016 | 40133877005 | 110.000 |
| | 08/10/2016 | 40136543005 | 94.000 |
| | 10/05/2016 | 40139741005 | 228.000 |
| | 12/21/2016 | 40143755006 | 186.000 |
| | 03/10/2017 | 40146662005 | 544.000 |
| | 06/02/2017 | 40151013005 | 72.000 |
| | 10/11/2017 | 40158568005 | 108.000 |

# Weston Disposal Site #3
## Table 1. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results

**Date Range: 02/18/2016 to 10/11/2017**

| | | | TDS, mg/L |
|---|---|---|---|
| LS-107 | 02/18/2016 | 40128408005 | 88.000 |
| | 04/05/2016 | 40130257006 | 94.000 |
| | 06/15/2016 | 40133877001 | 112.000 |
| | 08/10/2016 | 40136543001 | 118.000 |
| | 10/05/2016 | 40139741006 | 118.000 |
| | 12/20/2016 | 40143755001 | 72.000 |
| | 03/10/2017 | 40146662006 | 134.000 |
| | 06/02/2017 | 40151013006 | 110.000 |
| | 10/11/2017 | 40158568006 | 134.000 |

# Weston Disposal Site #3
## Table 2. Weston Disposal Site No. 3 Landfill: Appendix IV Analytical Results

**Date Range: 02/18/2016 to 10/01/2017**

| 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 |
|---|---|---|---|---|---|---|---|---|
| LS-100 | 02/18/2016 | 40128408001 | 0.000500 | 0.028400 | 0.000270 | <0.000027 | 0.001300 | 0.00520 |
| | 04/05/2016 | 40130257002 | <0.000730 | 0.028800 | <0.000042 | <0.000025 | 0.000160 | 0.00056 |
| | 06/15/2016 | 40133877003 | 0.000370 | 0.032800 | 0.000150 | <0.000089 | 0.000700 | 0.00290 |
| | 08/10/2016 | 40136543003 | 0.000520 | 0.042600 | 0.000190 | <0.000089 | 0.000540 | 0.00270 |
| | 10/05/2016 | 40139741002 | 0.000650 | 0.109000 | <0.000130 | <0.000089 | 0.001000 | 0.00100 |
| | 12/21/2016 | 40143755003 | 0.000760 | 0.128000 | <0.000130 | 0.000094 | 0.000300 | 0.00160 |
| | 03/10/2017 | 40146662002 | 0.000260 | 0.022000 | <0.000130 | 0.000090 | 0.000250 | 0.00130 |
| | 06/02/2017 | 40151013002 | 0.000520 | 0.025000 | <0.001200 | <0.001300 | <0.001400 | <0.00250 |
| LS-101 | 02/18/2016 | 40128408002 | <0.000110 | 0.018500 | <0.000045 | <0.000027 | 0.000079 | 0.00025 |
| | 04/05/2016 | 40130257003 | <0.000730 | 0.020700 | <0.000042 | <0.000025 | 0.000150 | 0.00068 |
| | 06/15/2016 | 40133877002 | 0.000180 | 0.023900 | <0.000130 | <0.000089 | 0.000081 | <0.00039 |
| | 08/10/2016 | 40136543002 | 0.000270 | 0.052500 | <0.000130 | <0.000089 | 0.000087 | 0.00044 |
| | 10/05/2016 | 40139741003 | <0.000099 | 0.032700 | <0.000130 | <0.000089 | 0.000061 | <0.00039 |
| | 12/21/2016 | 40143755002 | 0.000200 | 0.027300 | <0.000130 | <0.000089 | 0.000110 | 0.00042 |
| | 03/10/2017 | 40146662003 | 0.000230 | 0.018800 | <0.000130 | <0.000089 | 0.000170 | 0.00110 |
| | 06/02/2017 | 40151013003 | <0.000280 | 0.015400 | <0.001200 | <0.001300 | <0.001400 | <0.00250 |
| LS-105 | 02/18/2016 | 40128408003 | 0.001900 | 0.036800 | 0.000150 | <0.000027 | 0.012400 | 0.00190 |
| | 04/05/2016 | 40130257004 | 0.001000 | 0.023900 | 0.000065 | <0.000025 | 0.009400 | 0.00049 |
| | 06/15/2016 | 40133877004 | 0.001300 | 0.025700 | <0.000130 | <0.000089 | 0.010200 | 0.00048 |
| | 08/10/2016 | 40136543004 | 0.002300 | 0.035800 | <0.000130 | <0.000089 | 0.013600 | 0.00100 |
| | 10/05/2016 | 40139741004 | 0.002400 | 0.056200 | <0.000130 | <0.000089 | 0.015700 | 0.00051 |
| | 12/21/2016 | 40143755005 | 0.002000 | 0.055400 | <0.000130 | <0.000089 | 0.018500 | 0.00067 |
| | 03/10/2017 | 40146662004 | 0.001600 | 0.049500 | <0.000130 | <0.000089 | 0.018300 | 0.00084 |
| | 06/02/2017 | 40151013004 | 0.001600 | 0.027000 | <0.001200 | <0.001300 | 0.007600 | <0.00250 |
| LS-106 | 02/18/2016 | 40128408004 | 0.001500 | 0.061200 | 0.000310 | <0.000027 | 0.005600 | 0.00660 |
| | 04/05/2016 | 40130257005 | 0.002600 | 0.084800 | 0.000740 | 0.000049 | 0.009400 | 0.02340 |
| | 06/15/2016 | 40133877005 | 0.002000 | 0.055400 | 0.000320 | <0.000089 | 0.008500 | 0.00920 |
| | 08/10/2016 | 40136543005 | 0.001600 | 0.054800 | 0.000170 | <0.000089 | 0.006000 | 0.00630 |
| | 10/05/2016 | 40139741005 | 0.006400 | 0.198000 | 0.002100 | <0.000180 | 0.016400 | 0.05810 |
| | 12/21/2016 | 40143755006 | 0.002200 | 0.090000 | 0.000740 | <0.000089 | 0.009300 | 0.01850 |
| | 03/10/2017 | 40146662005 | 0.005900 | 0.179000 | 0.002400 | <0.000440 | 0.018400 | 0.06320 |
| | 06/02/2017 | 40151013005 | 0.003000 | 0.063500 | <0.001200 | <0.001300 | 0.007200 | 0.01090 |
| LS-107 | 02/18/2016 | 40128408005 | 0.000200 | 0.049100 | <0.000045 | <0.000027 | 0.000540 | 0.00050 |
| | 04/05/2016 | 40130257006 | <0.000730 | 0.036900 | <0.000042 | <0.000025 | 0.000140 | 0.00022 |
| | 06/15/2016 | 40133877001 | 0.000160 | 0.041600 | <0.000130 | <0.000089 | 0.000200 | <0.00039 |
| | 08/10/2016 | 40136543001 | 0.000120 | 0.045700 | 0.000190 | <0.000089 | 0.000140 | 0.00054 |

# Weston Disposal Site #3
## Table 2. Weston Disposal Site No. 3 Landfill: Appendix IV Analytical Results

**Date Range: 02/18/2016 to 10/01/2017**

| | | | As, tot, mg/L | Ba, tot, mg/L | Be, tot, mg/L | Cd,tot, mg/L | Co, tot, mg/L | Cr, tot, mg/L |
|---|---|---|---|---|---|---|---|---|
| LS-107 | 10/05/2016 | 40139741006 | <0.000099 | 0.046900 | <0.000130 | <0.000089 | 0.000092 | <0.00039 |
| | 12/20/2016 | 40143755001 | 0.000250 | 0.054100 | 0.000390 | 0.000270 | 0.000500 | 0.00054 |
| | 03/10/2017 | 40146662006 | <0.000099 | 0.051000 | <0.000130 | <0.000089 | 0.000240 | 0.00100 |
| | 06/02/2017 | 40151013006 | <0.000280 | 0.045800 | <0.001200 | <0.001300 | <0.001400 | <0.00250 |

# Weston Disposal Site #3
## Table 2. Weston Disposal Site No. 3 Landfill: Appendix IV Analytical Results

**Date Range: 02/18/2016 to 10/01/2017**

| 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 | Ra 226+228, PCi/L |
|---|---|---|---|---|---|---|---|---|
| LS-100 | 02/18/2016 | 40128408001 | <0.200 | <0.00010 | 0.00190 | 0.000310 | 0.000780 | 1.0030 |
| | 04/05/2016 | 40130257002 | <0.200 | <0.00010 | 0.00044 | 0.000360 | 0.000130 | 1.3900 |
| | 06/15/2016 | 40133877003 | <0.200 | <0.00013 | 0.00100 | 0.000330 | 0.000230 | 0.7240 |
| | 08/10/2016 | 40136543003 | <0.200 | <0.00013 | 0.00099 | 0.000250 | 0.000130 | 0.3600 |
| | 10/05/2016 | 40139741002 | <0.100 | <0.00013 | 0.00051 | 0.000085 | 0.000044 | 1.1190 |
| | 12/21/2016 | 40143755003 | <0.100 | <0.00013 | 0.00066 | 0.000180 | 0.000160 | 0.6950 |
| | 03/10/2017 | 40146662002 | <0.100 | <0.00013 | 0.00045 | 0.000870 | 0.000180 | 0.3260 |
| | 06/02/2017 | 40151013002 | <0.100 | <0.00013 | 0.00120 | <0.001400 | 0.000440 | 0.9960 |
| LS-101 | 02/18/2016 | 40128408002 | <0.200 | <0.00010 | 0.00031 | 0.000085 | 0.000100 | 1.5280 |
| | 04/05/2016 | 40130257003 | <0.200 | <0.00010 | 0.00040 | 0.000410 | 0.000170 | 0.3310 |
| | 06/15/2016 | 40133877002 | <0.200 | <0.00013 | 0.00020 | <0.000070 | 0.000068 | 1.5770 |
| | 08/10/2016 | 40136543002 | <0.200 | <0.00013 | 0.00054 | 0.000240 | 0.000044 | 0.5270 |
| | 10/05/2016 | 40139741003 | <0.100 | <0.00013 | 0.00029 | 0.000083 | <0.000040 | 1.1990 |
| | 12/21/2016 | 40143755002 | <0.100 | <0.00013 | 0.00043 | 0.000130 | 0.000057 | 0.2260 |
| | 03/10/2017 | 40146662003 | <0.100 | <0.00013 | 0.00024 | 0.000150 | 0.000140 | 0.1930 |
| | 06/02/2017 | 40151013003 | <0.100 | <0.00013 | 0.00025 | <0.001400 | <0.000200 | 0.3750 |
| LS-105 | 02/18/2016 | 40128408003 | <0.200 | <0.00010 | 0.00200 | 0.000200 | 0.001100 | 0.3420 |
| | 04/05/2016 | 40130257004 | <0.200 | <0.00010 | 0.00054 | 0.000160 | 0.000120 | 0.3660 |
| | 06/15/2016 | 40133877004 | <0.200 | <0.00013 | 0.00043 | 0.000170 | 0.000068 | 1.3450 |
| | 08/10/2016 | 40136543004 | <0.200 | <0.00013 | 0.00047 | 0.000240 | 0.000140 | 1.1369 |
| | 10/05/2016 | 40139741004 | <1.000 | <0.00013 | 0.00045 | 0.000340 | <0.000040 | 0.9710 |
| | 12/21/2016 | 40143755005 | <0.500 | <0.00013 | 0.00040 | 0.000220 | 0.000089 | 1.0182 |
| | 03/10/2017 | 40146662004 | <0.100 | <0.00013 | 0.00054 | 0.000260 | 0.000250 | 0.1570 |
| | 06/02/2017 | 40151013004 | <0.100 | <0.00013 | 0.00032 | <0.001400 | <0.000200 | 0.4970 |
| LS-106 | 02/18/2016 | 40128408004 | <0.200 | <0.00010 | 0.00890 | 0.000280 | 0.002100 | 1.5740 |
| | 04/05/2016 | 40130257005 | <0.200 | <0.00010 | 0.01270 | 0.000420 | 0.003500 | 2.1900 |
| | 06/15/2016 | 40133877005 | <0.200 | <0.00013 | 0.00440 | 0.000210 | 0.001200 | 1.0780 |
| | 08/10/2016 | 40136543005 | <1.000 | <0.00013 | 0.00250 | 0.000094 | 0.000530 | 1.1750 |
| | 10/05/2016 | 40139741005 | <0.500 | <0.00013 | 0.02170 | 0.000590 | 0.005400 | 3.9750 |
| | 12/21/2016 | 40143755006 | <0.500 | <0.00013 | 0.00630 | 0.000170 | 0.001600 | 1.3150 |
| | 03/10/2017 | 40146662005 | <0.500 | <0.00013 | 0.02300 | 0.000420 | 0.005400 | 2.0200 |
| | 06/02/2017 | 40151013005 | <0.500 | <0.00013 | 0.00380 | <0.001400 | 0.001200 | 0.1640 |
| LS-107 | 02/18/2016 | 40128408005 | <0.200 | <0.00010 | 0.00100 | 0.000220 | 0.000310 | 0.4850 |
| | 04/05/2016 | 40130257006 | <0.200 | <0.00010 | 0.00062 | 0.000250 | 0.000055 | 0.6840 |
| | 06/15/2016 | 40133877001 | <0.200 | <0.00013 | 0.00063 | 0.000540 | 0.000110 | 0.1750 |
| | 08/10/2016 | 40136543001 | <0.200 | <0.00013 | 0.00080 | 0.000590 | 0.000048 | 0.3320 |

## Weston Disposal Site #3
## Table 2. Weston Disposal Site No. 3 Landfill: Appendix IV Analytical Results

**Date Range: 02/18/2016 to 10/01/2017**

| | | | F, tot, mg/L | Hg, tot, mg/L | Li, tot, mg/L | Mo, tot, mg/L | Pb, tot, mg/L | Ra 226+228, PCi/L |
|---|---|---|---|---|---|---|---|---|
| LS-107 | 10/05/2016 | 40139741006 | <0.100 | <0.00013 | 0.00052 | 0.000410 | <0.000040 | 0.4230 |
| | 12/20/2016 | 40143755001 | <0.100 | <0.00013 | 0.00100 | 0.000480 | 0.000350 | 1.2450 |
| | 03/10/2017 | 40146662006 | <0.100 | <0.00013 | 0.00071 | 0.000210 | 0.000100 | 0.1840 |
| | 06/02/2017 | 40151013006 | <0.100 | <0.00013 | 0.00054 | <0.001400 | <0.000200 | 0.6110 |

# Weston Disposal Site #3
## Table 2. Weston Disposal Site No. 3 Landfill: Appendix IV Analytical Results

**Date Range: 02/18/2016 to 10/01/2017**

| Well Id | Date Sampled | Lab Id | Sb, tot, mg/L | Se, tot, mg/L | Tl, tot, mg/L |
|---|---|---|---|---|---|
| LS-100 | 02/18/2016 | 40128408001 | <0.000066 | 0.00033 | 0.000047 |
| | 04/05/2016 | 40130257002 | <0.000034 | 0.00031 | <0.000012 |
| | 06/15/2016 | 40133877003 | <0.000073 | 0.00045 | <0.000140 |
| | 08/10/2016 | 40136543003 | <0.000073 | 0.00037 | 0.000280 |
| | 10/05/2016 | 40139741002 | <0.000073 | 0.00071 | <0.000140 |
| | 12/21/2016 | 40143755003 | 0.000240 | 0.00140 | <0.000140 |
| | 03/10/2017 | 40146662002 | 0.000200 | 0.00044 | 0.000200 |
| | 06/02/2017 | 40151013002 | <0.000150 | 0.00077 | 0.000290 |
| LS-101 | 02/18/2016 | 40128408002 | <0.000066 | 0.00025 | <0.000018 |
| | 04/05/2016 | 40130257003 | <0.000034 | 0.00024 | <0.000012 |
| | 06/15/2016 | 40133877002 | <0.000073 | 0.00034 | <0.000140 |
| | 08/10/2016 | 40136543002 | <0.000073 | <0.00021 | 0.000930 |
| | 10/05/2016 | 40139741003 | <0.000073 | <0.00021 | <0.000140 |
| | 12/21/2016 | 40143755002 | 0.000370 | 0.00025 | <0.000140 |
| | 03/10/2017 | 40146662003 | <0.000073 | 0.00042 | <0.000140 |
| | 06/02/2017 | 40151013003 | <0.000150 | 0.00044 | <0.000140 |
| LS-105 | 02/18/2016 | 40128408003 | 0.000099 | 0.00072 | 0.000024 |
| | 04/05/2016 | 40130257004 | <0.000034 | 0.00015 | 0.000015 |
| | 06/15/2016 | 40133877004 | <0.000073 | 0.00056 | <0.000140 |
| | 08/10/2016 | 40136543004 | 0.000420 | 0.00073 | 0.000180 |
| | 10/05/2016 | 40139741004 | <0.000073 | 0.00070 | <0.000140 |
| | 12/21/2016 | 40143755005 | 0.000150 | 0.00081 | <0.000140 |
| | 03/10/2017 | 40146662004 | <0.000073 | 0.00051 | <0.000140 |
| | 06/02/2017 | 40151013004 | <0.000150 | 0.00044 | <0.000140 |
| LS-106 | 02/18/2016 | 40128408004 | 0.000081 | 0.00097 | 0.000080 |
| | 04/05/2016 | 40130257005 | 0.000096 | 0.00047 | 0.000140 |
| | 06/15/2016 | 40133877005 | <0.000073 | 0.00140 | <0.000140 |
| | 08/10/2016 | 40136543005 | <0.000073 | 0.00100 | <0.000140 |
| | 10/05/2016 | 40139741005 | <0.000150 | 0.00450 | <0.000290 |
| | 12/21/2016 | 40143755006 | 0.000170 | 0.00190 | <0.000140 |
| | 03/10/2017 | 40146662005 | <0.000360 | 0.00470 | <0.000710 |
| | 06/02/2017 | 40151013005 | <0.000150 | 0.00180 | <0.000140 |
| LS-107 | 02/18/2016 | 40128408005 | <0.000066 | 0.00031 | 0.000027 |
| | 04/05/2016 | 40130257006 | <0.000034 | 0.00021 | <0.000012 |
| | 06/15/2016 | 40133877001 | <0.000073 | 0.00025 | <0.000140 |
| | 08/10/2016 | 40136543001 | <0.000073 | <0.00021 | 0.000620 |

## Weston Disposal Site #3
## Table 2. Weston Disposal Site No. 3 Landfill: Appendix IV Analytical Results

**Date Range: 02/18/2016 to 10/01/2017**

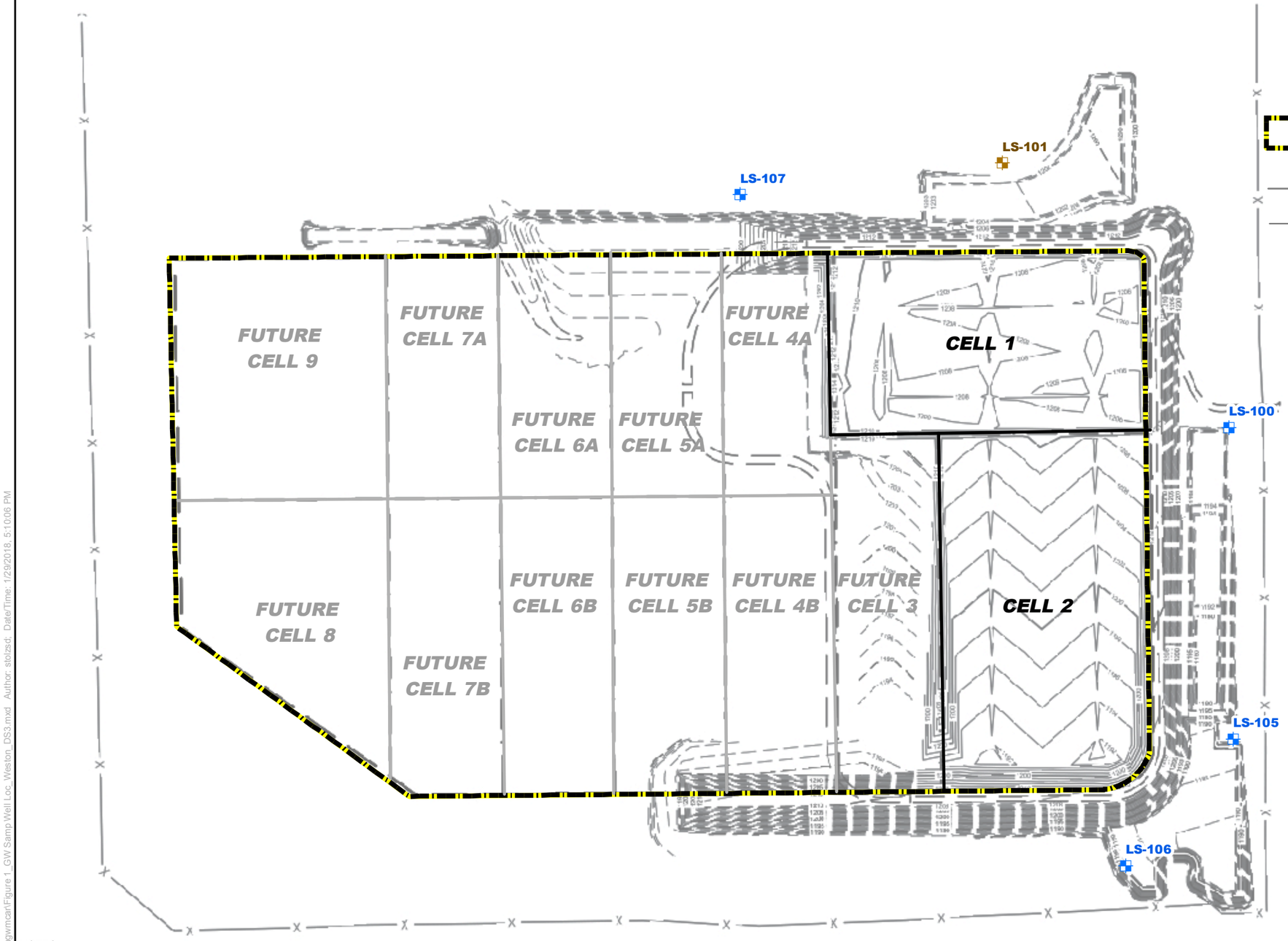
| | | | Sb, tot, mg/L | Se, tot, mg/L | Tl, tot, mg/L |
|---|---|---|---|---|---|
| LS-107 | 10/05/2016 | 40139741006 | <0.000073 | 0.00021 | <0.000140 |
| | 12/20/2016 | 40143755001 | 0.000270 | 0.00041 | 0.000410 |
| | 03/10/2017 | 40146662006 | <0.000073 | <0.00021 | <0.000140 |
| | 06/02/2017 | 40151013006 | <0.000150 | <0.00032 | <0.000140 |

# Figures

# GROUNDWATER SAMPLING WELL LOCATION MAP

2017 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
WESTON DISPOSAL SITE NO. 3 LANDFILL
TOWN OF KNOWLTON, WISCONSIN

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




CCR RULE DOWNGRADIENT MONITORING WELL LOCATION

CCR RULE UPGRADIENT MONITORING WELL LOCATION

WESTON DISPOSAL SITE NO. 3 LANDFILL

SURFACE ELEVATION CONTOUR (DASHED WHERE INFERRED)

FENCE LINE

N

0 125 250

SCALE IN FEET

NOTES:

1. THE TOPOGRAPHIC BASE MAP HAS BEEN CREATED FROM AERIAL PHOTOGRAPHY AND LIDAR ACQUISITION BY AERO-METRIC, INC., SHEBOYGAN, WI. DATE FLOWN: NOVEMBER 5, 2010.
2. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM (NAD 83/2007), US SURVEY FEET.
3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). CONTOUR INTERVAL IS 2 FEET.

PROJECT NO: 67985

FIGURE NO: 1

**OBG**

THERE'S A WAY