

Intended for
WEC Business Services, LLC

Document type
CCR Rule Annual Report

Date
January 31, 2020

2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

WESTON DISPOSAL SITE NO. 3 LANDFILL

**2019 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
WESTON DISPOSAL SITE NO. 3 LANDFILL**

Project name **Landfill Database Management, Sampling, and Reporting**
Project no. **71202**
Recipient **WEC Business Services, LLC**
Document type **CCR Rule Annual Report**
Revision **0**
Date **January 31, 2020**
Prepared by **Glenn R. Luke, PE**
Checked by **Nathaniel R. Keller, PG**
Approved by **Tim Muehlfeld, PE**

Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
USA

T 414-837-3607
F 414-837-3608
<https://ramboll.com>

CONTENTS

1.	Introduction	3
2.	Monitoring and Corrective Action Program Status	4
3.	Key Actions Completed in 2019	5
4.	Problems Encountered and Actions To Resolve Problems	6
5.	Key Activities for 2020	7
6.	References	8

TABLES

Table 1	Detection Monitoring Program Summary
Table 2	Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results

FIGURES

Figure 1	Groundwater Sampling Well Location Map
----------	--

APPENDICES

Appendix A	Alternate Source Demonstrations (ASDs)
A1	40 CFR Section 257.94(e)(2) Alternate Source Demonstration (ASD) Detection Monitoring Round 4, Wisconsin Public Service Corporation (WPSC) Weston Disposal Site No. 3 Landfill

ACRONYMS AND ABBREVIATIONS

ASD	Alternate Source Demonstration
B	Boron
Ca	Calcium
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
Cl	Chloride
mg/L	milligrams per liter
NRT	Natural Resource Technology, an OBG Company
OBG	O'Brien & Gere Engineers, Inc.
Ramboll	O'Brien & Gere Engineers, Inc., a Ramboll Company
SO ₄	Sulfate
SSI	Statistically Significant Increase
TBD	To be Determined
TDS	Total Dissolved Solids
WDS3	Weston Disposal Site No. 3 Landfill
WPSC	Wisconsin Public Service Corporation

1. INTRODUCTION

This report has been prepared on behalf of Wisconsin Public Service Corporation (WPSC) by O'Brien & Gere Engineers, Inc., a Ramboll Company (Ramboll) to provide the information required by Title 40 of the Code of Federal Regulations (40 CFR) 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.

This report provides the required information for the WDS3 Landfill for calendar year 2019.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The WDS3 Landfill remained in Detection Monitoring (40 CFR 257.94) during 2019. Detection Monitoring Program sampling dates and parameters collected are provided in Table 1. Analytical results from the two sampling rounds collected and those statistically analyzed in 2019 are included in Table 2.

In accordance with 40 CFR 257.93(h)(2), the *Statistical Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, an OBG Company, 2017), and within 90 days of completing sampling and analysis (receipt of data); analytical data was evaluated for statistically significant increases (SSIs) over background concentrations for Appendix III constituents in groundwater monitoring wells at the WDS3 Landfill. SSIs and the SSI determination dates are provided in Table 1.

40 CFR 257.94(e)(2) allows 90 days to demonstrate that a SSI was caused by a source other than the CCR unit or resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality (i.e., an alternate source demonstration). An alternate source demonstration (ASD) was completed for WDS3 Landfill on the date provided in Table 1. The ASD document for 2019 is provided in Appendix A. The April 15, 2018 ASD was included in the 2018 Annual Groundwater Monitoring and Corrective Action Report.

Table 1. Detection Monitoring Program Summary

Detection Round	Sampling Date	Parameters Collected	Data Received	SSI Determination Date	SSI Parameters	Resample Date	ASD Date
3	10/25/18	Appendix III	11/26/18	2/24/19	B, Ca, SO ₄ , TDS	NA	4/15/18 ¹
4	4/25/19	Appendix III	6/12/19	9/10/19	Ca, Cl, SO ₄ , TDS	9/13/19	12/9/19
5	10/24/19	Appendix III	11/27/19	TBD (before 2/25/20)	TBD	TBD	TBD

Ca – Calcium

NA – Not applicable

SO₄ - Sulfate

TBD – To Be Determined

TDS – Total Dissolved Solids

- The April 15, 2018 ASD for Weston Disposal Site No. 3 Landfill provided a description, data, and pertinent information supporting an alternate source for the wells and parameters with SSIs in Detection Monitoring Rounds 3. Data resulting in SSIs above background are consistent with analytical results observed in previous detection monitoring rounds.

WDS3 Landfill remains in the Detection Monitoring Program in accordance with 40 CFR 257.94.

3. KEY ACTIONS COMPLETED IN 2019

Two groundwater sampling events were completed in 2019 as part of the Detection Monitoring Program, Rounds 4 and 5. One groundwater sample was collected from each background and downgradient well in the monitoring system during each event. One resampling event was completed in accordance with the *Statistical Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, an OBG Company, 2017). Sampling dates are summarized in Table 1. All samples were collected and analyzed in accordance with the *Sampling and Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, an OBG Company, 2017). All monitoring data obtained under 40 CFR 257.90 through 257.98 (as applicable) in 2019 are presented in Table 2.

A map showing the groundwater monitoring system, including the CCR unit and all background (upgradient) and downgradient monitoring wells with well identification numbers, for WDS3 Landfill No. 3 is presented on Figure 1. There were no changes to the monitoring system in 2019.

Statistical evaluation, including SSI determinations, of analytical data from the Detection Monitoring Program for October 25, 2018 (Detection Monitoring Round 3) and April 25, 2019 (Detection Monitoring Round 4) were completed in 2019 and within 90 days of receipt of the analytical data. Statistical evaluation of analytical data was performed in accordance with the *Statistical Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, an OBG Company, 2017).

An Alternate Source Demonstration for Detection Monitoring Round 4 was prepared for WDS3 Landfill in 2019 and is provided in Appendix A. The ASD was prepared in accordance with 40 CFR 257.94(e)(2) and provides a description, data, and pertinent information to support an alternate source for wells and parameters with SSIs at WDS3 Landfill. The ASD provides justification that the SSIs observed during the Detection Monitoring Program were not due to a release from the CCR unit but were from naturally occurring conditions (e.g. natural variation in groundwater quality) and potential anthropogenic impacts in the area surrounding WDS3 Landfill.

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE PROBLEMS

No problems were encountered during implementation of the Detection Monitoring Program during 2019. Groundwater samples were collected and analyzed in accordance with the *Sampling and Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, and OBG Company, 2017), and all data was accepted.

5. KEY ACTIVITIES FOR 2020

The following key activities are planned for 2020:

- Continuation of the Detection Monitoring Program with semi-annual sampling scheduled for the 2nd and 4th quarters of 2020.
- Complete statistical evaluation of analytical data from the downgradient wells, using background data to determine whether a SSI over background concentrations has occurred for Appendix III parameters.
- 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 the SSI determination and will be included in the annual groundwater monitoring and corrective action report for 2020.
 - 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 2020, including associated recordkeeping/notifications required by 40 CFR 257.105 through 257.108.

6. REFERENCES

Natural Resource Technology, an OBG Company, 2017, *Sampling and Analysis Plan, Weston Disposal Site No. 3 Landfill, Town of Knowlton, Wisconsin, October 3, 2017.*

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 CCR
Table 2. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results

Date Range: 10/01/2018 to 12/31/2019

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	10/25/2018	AE31422	0.0250	11.000	0.290	0.066	6.300	17.000
	04/24/2019	AE36960	0.0180	8.300	0.530	0.040	5.870	13.000
	10/24/2019	AE41530	0.0230	9.600	0.510	<0.070	5.500	18.000
LS-101	10/25/2018	AE31423	0.0140	3.000	0.400	0.061	6.100	3.100
	04/24/2019	AE36961	0.0081	4.200	0.620	<0.040	5.680	2.600
	10/24/2019	AE41531	0.0120	3.100	0.280	<0.070	5.300	2.600
LS-105	10/25/2018	AE31424	0.0300	20.000	0.740	0.085	6.500	16.000
	04/24/2019	AE36962	0.0180	2.100	1.200	0.057	5.910	19.000
	10/24/2019	AE41532	0.0260	18.000	0.540	0.073	5.500	16.000
LS-106	10/25/2018	AE31425	0.0540	6.000	0.470	0.066	6.400	3.200
	04/24/2019	AE36963	0.0250	6.600	8.400	0.053	6.060	6.300
	09/13/2019	AE40532			11.000		5.960	
LS-107	10/24/2019	AE41533	0.2600	22.000	8.400	<0.070	5.600	6.500
	10/25/2018	AE31426	0.0170	21.000	2.700	0.065	6.000	26.000
	04/24/2019	AE36964	0.0091	18.000	1.800	0.040	5.740	21.000
	10/24/2019	AE41534	0.0180	19.000	1.800	<0.070	5.500	24.000

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




Date Range: 10/01/2018 to 12/31/2019

Well Id	Date Sampled	Lab Id	TDS, mg/L
LS-100	10/25/2018	AE31422	50.000
	04/24/2019	AE36960	30.000
	10/24/2019	AE41530	50.000
LS-101	10/25/2018	AE31423	44.000
	04/24/2019	AE36961	<20.000
	10/24/2019	AE41531	27.000
LS-105	10/25/2018	AE31424	110.000
	04/24/2019	AE36962	110.000
	10/24/2019	AE41532	86.000
LS-106	10/25/2018	AE31425	58.000
	04/24/2019	AE36963	52.000
	10/24/2019	AE41533	130.000
LS-107	10/25/2018	AE31426	120.000
	04/24/2019	AE36964	86.000
	10/24/2019	AE41534	76.000

FIGURES



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

-  CCR RULE DOWNGRAIDENT MONITORING WELL LOCATION
-  CCR RULE UPGRADIENT MONITORING WELL LOCATION
-  WESTON DISPOSAL SITE NO. 3 LANDFILL



GROUNDWATER SAMPLING WELL LOCATION MAP

FIGURE 1

2019 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
WESTON DISPOSAL SITE NO. 3 LANDFILL
TOWN OF KNOWLTON, WISCONSIN

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



APPENDIX A
ALTERNATE SOURCE DEMONSTRATION (ASD)

APPENDIX A1
40 CFR SECTION 257.94(E)(2) ALTERNATE SOURCE DEMONSTRATION
(ASD) DETECTION MONITORING ROUND 4, WISCONSIN PUBLIC SERVICE
CORPORATION (WPSC) WESTON DISPOSAL SITE NO. 3 LANDFILL

Mr. Tim Muehlfeld
WEC Business Services, LLC
333 W. Everett Street – A231
Milwaukee, WI 53203

RE: 40 CFR Section 257.94(e)(2) Alternate Source Demonstration (ASD) Detection Monitoring Round 4, Wisconsin Public Service Corporation (WPSC) Weston Disposal Site No. 3 Landfill

Dear Mr. Muehlfeld:

Date December 9, 2019

This document has been prepared by O'Brien & Gere Engineers, Inc., a Ramboll company (Ramboll) to provide pertinent information for an alternate source demonstration (ASD) as allowed by 40 CFR Section 257.94(e)(2) for the Weston Disposal Site No. 3 (WDS3) Landfill, located in the Town of Knowlton, Wisconsin (Figure 1).

OVERVIEW

Detection Monitoring Round 4 samples were collected on April 24, 2019 for which analytical data was received on June 12, 2019. Analytical data is presented in the attached Table 1. In accordance with 40 CFR Section 257.93(h)(2), statistical analysis of the data from Detection Monitoring Round 4 to identify statistically significant increases (SSIs) of 40 CFR Part 257 Subpart D Appendix III parameters over background concentrations was completed within 90 days of receipt of the analytical data (September 10, 2019). The statistical determination using interwell statistics identified the following SSIs at downgradient monitoring wells:

Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
USA

T 414-837-3607
F 414-837-3608
<https://ramboll.com>

- Calcium above the background prediction interval at well LS-107
- Chloride above the background prediction interval at well LS-106
- Sulfate above the background prediction interval at LS-105 and LS-107
- Total dissolved solids (TDS) above the background prediction interval at LS-105

The concentrations of calcium, sulfate and TDS detected in monitoring wells during Detection Monitoring Round 4 were consistent with detections during previous monitoring rounds. An *Alternate Source Demonstration, Weston Disposal Site No. 3, Town of Knowlton, WI*, dated April 15, 2018 provided several lines of evidence which attributed these SSIs to sources other than the CCR unit. The stable concentrations of these parameters continue to support the conclusions of the previous ASD, and these SSIs do not indicate a release from the CCR unit.

To verify the SSI for chloride detected in LS-106 during Detection Monitoring Round 4, well LS-106 was resampled on September 13, 2019 and analyzed for only the SSI parameter (chloride, dissolved and total), in accordance the *Statistical Analysis Plan, Weston Disposal Site No. 3, Town of Knowlton, WI*, dated October 17, 2017 (NRT, an OBG Company 2017) (SAP). Analytical results were received on September 26, 2019 and are included in Table 1. The concentration of chloride in the sample collected during the resample event remained above the background prediction interval.

40 CFR Section 257.94(e)(2) allows the owner or operator 90 days from the date of determination to demonstrate that a source other than the coal combustion residual (CCR) unit caused the SSI, or that the apparent SSI was from a source other than the CCR unit, or that the SSI resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Pursuant to 40 CFR Section 257.94(e)(2), the following demonstrates that sources other than WDS3 Landfill were the cause of the SSIs listed above. This ASD was completed within 90 days of determination of the SSIs (September 10, 2019) as required by 40 CFR Section 257.94(e)(2).

BACKGROUND

The WDS3 Landfill is located in the E 1/2 of the NW 1/4 and W 1/2 of the NE 1/4, Section 23, Township 26 North, Range 7 East, Town of Knowlton, Marathon County, Wisconsin. The landfill was originally permitted by the Wisconsin Department of Natural Resources (WDNR) on October 20, 1986, with the issuance of a Conditional Plan of Operation Approval. The original facility was licensed and approved to consist of 8 cells covering 35 acres and having a total design capacity of 873,000 cubic yards. Former Cell 1 was constructed and placed into operation with the construction documentation approval on December 18, 1990.

However, due to WPSC's beneficial use program, the former cell was only partially filled, temporarily capped, and remained dormant. In 2011, WPSC began a permitting effort to expand the WDS3 landfill from 35 acres and 873,000 cubic yards to 57.6 acre and 4,075,500 cubic yards. The new expanded landfill was permitted December 11, 2014, with the issuance of a Conditional Plan of Operation Approval by WDNR.

As part of that permitting effort the geologic and hydrogeologic investigation program defined the geologic conditions, groundwater quality, and groundwater flow regimes for the site. All of the information for permitting of the reconfigured landfill is included in the report titled; *Feasibility Report, Proposed Weston Disposal Site No. 3 Expansion* (AECOM, 2012). Table 2 summarizes the location and applicable elevations of the CCR groundwater monitoring wells. Figure 1 shows the location of all existing groundwater monitoring wells and the groundwater flow direction during Detection Monitoring Round 4. Cells 1 and 2 of the existing landfill were constructed during the 2015 construction season, with completion of the new landfill cells and installation of a new leachate force main, storage tank, and load-out system in late December 2015. The construction of Cells 1 and 2 of the new landfill included the removal and off-site disposal of all CCR from the former Cell 1 at a licensed municipal solid waste landfill (TRC, 2016).

Subsequent sampling in Detection Monitoring Rounds 1 -3 indicated boron, calcium, chloride, sulfate and TDS exceeded the background prediction interval in at least one well during monitoring events. However, an ASD completed on April 15, 2018 (OBG, 2018) indicated that these impacts were not related to the CCR unit for the following reasons:

- Existing groundwater concentrations
- Landfill design
- Variability of uppermost aquifer and geochemistry
- Changes in geochemical conditions from landfill construction

ALTERNATE SOURCE DEMONSTRATION SUMMARY

As allowed by 40 CFR Section 257.94(e)(2), this ASD demonstrates that sources other than WDS3 caused the apparent SSI. Lines of evidence supporting this ASD include the following:

- **Existing Concentrations:** The concentrations of chloride previously detected in LS-100 and LS-105 (upgradient of LS-106) and LS-106 in 2016 are similar or higher than the chloride concentration detected in LS-106 during Detection Monitoring Round 4.
- **Lack CCR Indicators and Upgradient Activities:** Boron (a conservative indicator of CCR impacts), and sulfate do not show similar increases in concentration coincident with the detected chloride concentration. A release from the WDS3 would result in elevated concentrations of these parameters as well. Concentrations of boron have declined, and sulfate concentrations have been variable. The lack of consistent trends that correspond with the elevated chloride concentration indicate that the CCR unit is not the source of chloride in LS-106.
- **Potential Surface Water Infiltration near LS-106:** LS-106 is located in a topographically low area of the site which receives surface water runoff from much of the surrounding area. The construction of the well in a bermed area results in little separation between potential surface water ponding and infiltration and the well screen.

Data and information supporting these ASD lines of evidence are discussed in more detail below.

ASD SUPPORTING INFORMATION

Existing Concentrations

The concentration of chloride in LS-100 and LS-105 during 2016 sampling were detected at similar concentrations to those detected in LS-106 during April and September 2019. The groundwater flow direction is influenced by the groundwater gradient control system and both of these wells are upgradient of LS-106. Figure 2 (below) illustrates the concentrations of chloride in LS-100, LS-105, and LS-106. The concentrations of chloride in 2016 are approximately equal, or greater than those detected during Detection Monitoring Round 4.

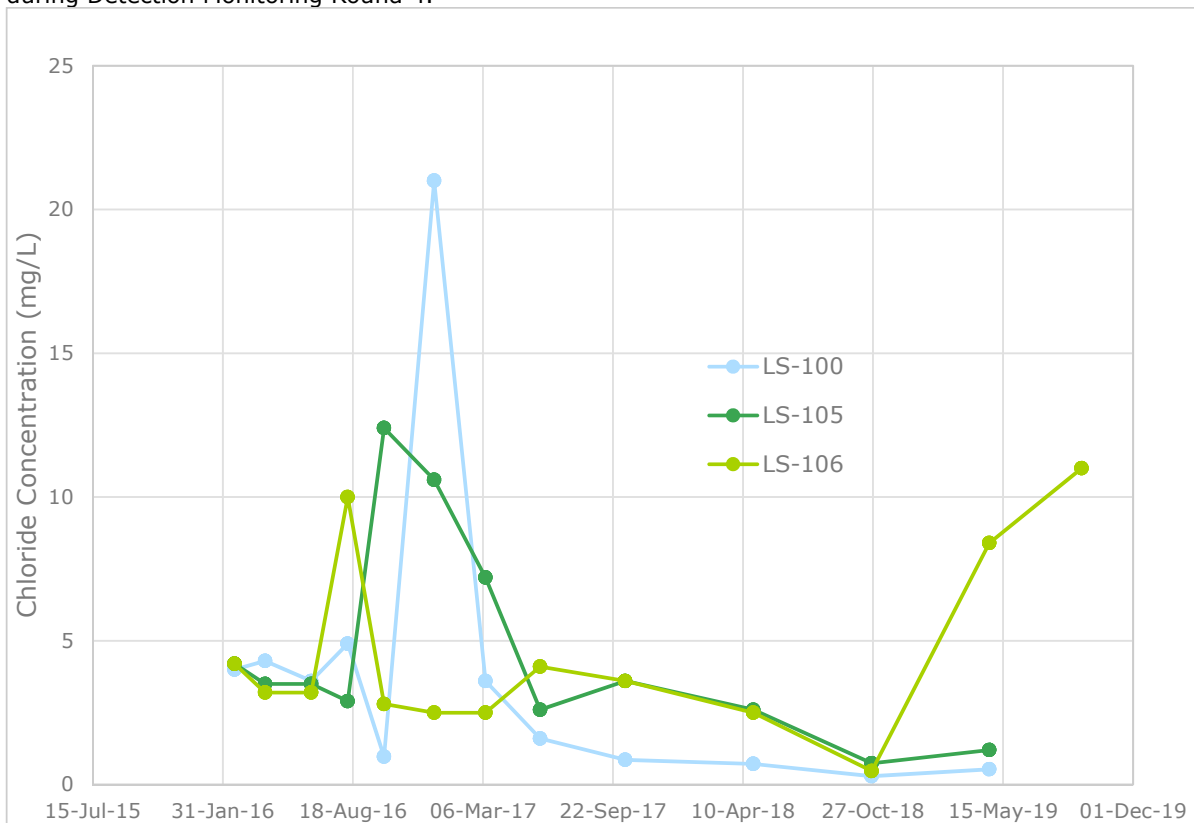


Figure 2. Time Series Plot of Chloride at LS-100, LS-105, and LS-106

LS-100 and LS-105 are located adjacent to Legner Road, where application of deicing materials is a probable source of chloride. LS-106 is located downgradient of these locations and downstream of surface water runoff from these areas. These data show that there is variability in the chloride concentration upgradient and suggest that sources other than the CCR unit are influencing the elevated chloride detected in LS-106.

Lack of Additional CCR Indicators

The concentrations of chloride and other CCR indicators (boron and sulfate) do not show a strong correlation in LS-106 (Figure 2 and 3). It is expected that concentrations would increase for both boron and sulfate in conjunction with chloride if a release had occurred from the CCR unit and resulted in an SSI. Review of the data indicates the following:

- The concentration of boron is not elevated when compared to previous sampling events. Boron is a conservative and non-reactive tracer that is used to identify groundwater potentially impacted by CCR leachate; concentrations of boron are decreasing in LS-106 during the last 5 monitoring events. The lack of elevated boron concentrations in LS-106 concurrent with the chloride detections indicates that impacts from the CCR unit are unlikely.
- The sulfate concentrations display similar variability through time with chloride concentrations although the chloride concentration is generally less variable than the sulfate concentration. During Detection Monitoring Round 4, the chloride concentration increased significantly compared to sulfate concentrations which potentially indicates a different source.
- An elevated concentration of chloride (21 mg/L, in December 2016) was detected previously in background well LS-100, indicating that sources of elevated chloride may occasionally exist upgradient, as previously described.

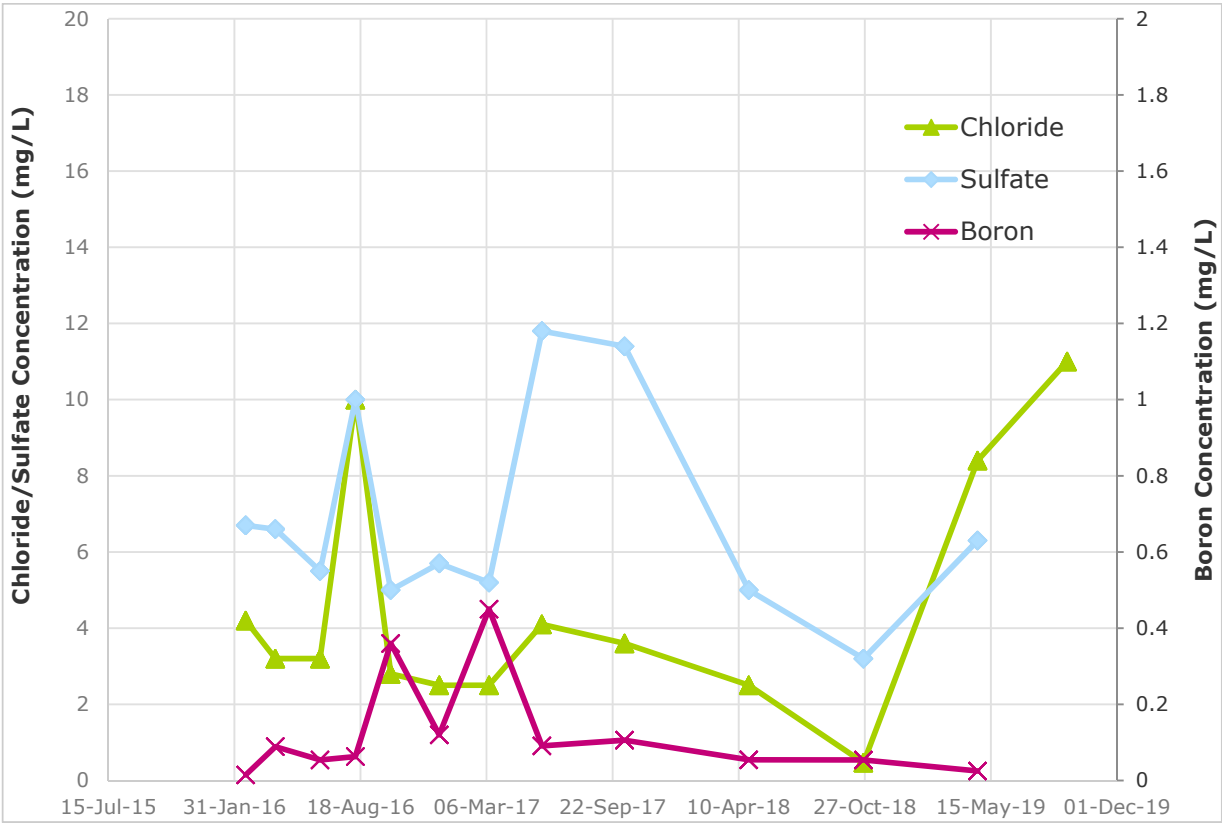


Figure 3. Time Series Plot of Boron, Chloride and Sulfate in LS-106

Potential Surface Water Infiltration Near LS-106

The topography of WDS3 results in surface water flow to the south near LS-106, where it sometimes pools and infiltrates depending on magnitude of precipitation. The groundwater gradient control system also discharges to the area around LS-106. LS-106 is installed through a constructed berm and because of the elevation change is screened across what is the land surface a short distance (15-20 feet) from where surface water and groundwater accumulates. There is potential for surface water runoff, including water in contact with deicing materials along Legner Road, to affect the groundwater in LS-106 because it is screened at an elevation that is across the nearby land surface. If variability in groundwater quality continues and is considered attributable to the location and construction of the well, the need for a replacement well may be evaluated but due to the topography, geologic conditions, and surrounding wetlands a suitable location downgradient of the landfill may not be feasible. The groundwater elevations measured within LS-106 indicate that the water level is generally near the native land surface (between 1181 and 1183 ft). A general cross-section of the land surface LS-106 is shown in Figure 4 below.

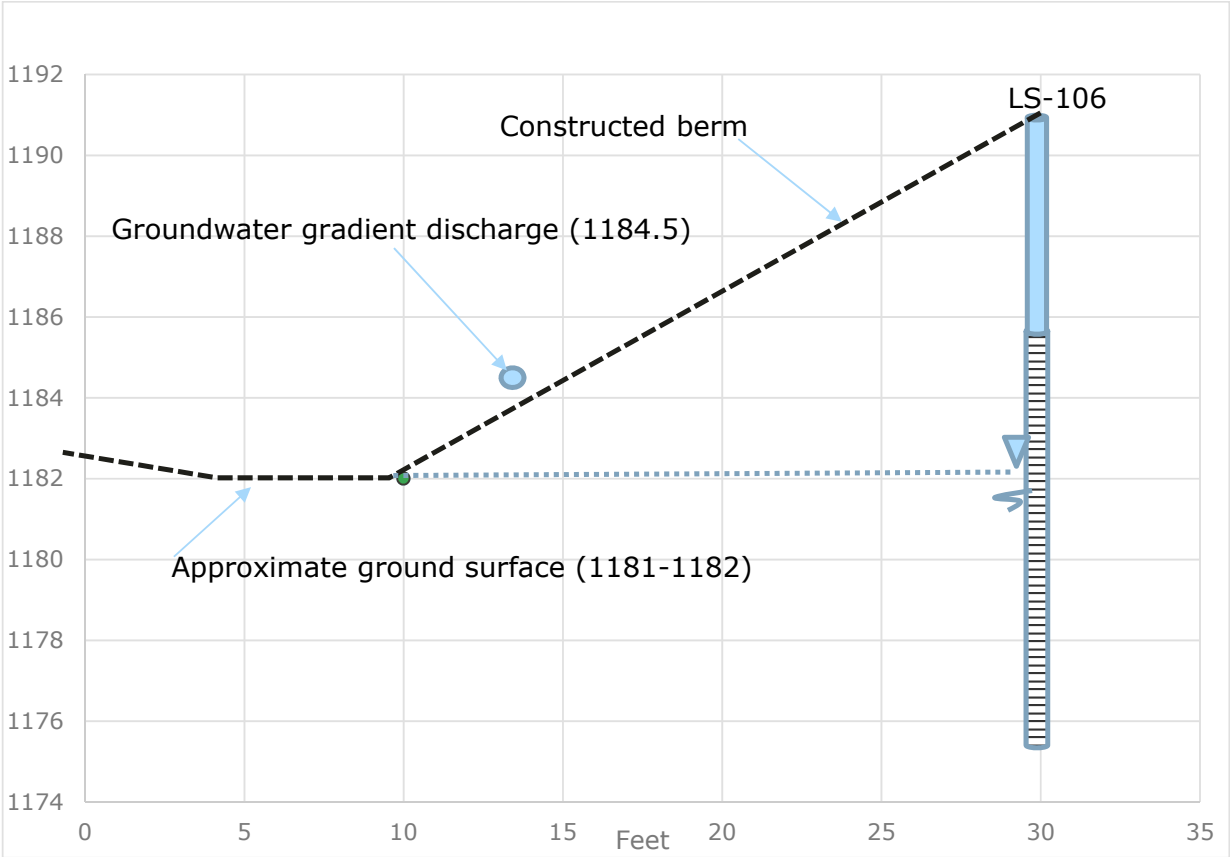


Figure 4. Cross-section of LS-106 and Land Surface

CONCLUSIONS AND CERTIFICATION

This document has been prepared on behalf of WPSC by Ramboll to provide pertinent information for an ASD as allowed by 40 CFR Section 257.94(e)(2) for the Weston Disposal Site No. 3 Landfill located in the Town of Knowlton, Wisconsin. Statistical analysis of the Detection Monitoring Round 4 samples for SSIs of 40 CFR Part 257 Appendix III parameters over background concentrations was completed within 90 days of receipt of the analytical data (June 12, 2019). The determination identified the following SSIs (concentrations greater than background prediction intervals) not previously addressed in the April 15, 2018 ASD at downgradient monitoring wells:

- Chloride at LS-106

40 CFR Section 257.94(e)(2) allows the owner or operator 90 days from the date of determination to demonstrate that a source other than the CCR unit caused the SSI, or that the apparent SSI was from a source other than the CCR unit, or that the SSI resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Pursuant to 40 CFR Section 257.94(e)(2), this document demonstrates that sources other than WDS3 Landfill were the cause of the apparent SSI listed above. This ASD was completed within 90 days of determination of the SSIs (September 10, 2019) as required by 40 CFR Section 257.94(e)(2).

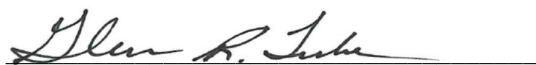
Pursuant to 40 CFR Section 257.94(e)(2), the following lines of evidence were presented to demonstrate that the listed SSIs are due to alternate sources as follows:

- Existing concentrations
- Lack of additional CCR indicators and upgradient activities
- Potential surface water infiltration in LS-106

The preceding information serves as the ASD prepared in accordance with 40 CFR Section 257.94(e)(2) and supports the position that the SSIs observed during Detection Monitoring Round 4 are not due to a release from the CCR unit but were from naturally occurring conditions and potential anthropogenic impacts in the area surrounding WDS3 Landfill. Therefore, no further action (i.e. assessment monitoring) is warranted and WDS3 Landfill will remain in detection monitoring.

If you have any questions regarding this document, please do not hesitate to contact us.

Sincerely,



Glenn R. Luke, PE
Managing Engineer
Professional Engineer No. 42834-6
State of Wisconsin
O'Brien & Gere Engineers, Inc., a Ramboll company
Date: December 9, 2019

I, Glenn R. Luke, a qualified professional engineer in good standing in the State of Wisconsin, certify that enclosed information is accurate as of the date of my signature below. The content of this report is not to be used for other than its intended purpose and meaning, or for extrapolations beyond the interpretations contained herein.



Nathaniel R. Keller, PG
Senior Hydrogeologist
Professional Geologist No. 1283-013
State of Wisconsin
O'Brien & Gere Engineers, Inc., a Ramboll company
Date: December 9, 2019

I, Nathaniel R. Keller, a qualified professional geologist, certify that the enclosed information is accurate as of the date of my signature below. The content of this report is not to be used for other than its intended purpose and meaning, or for extrapolations beyond the interpretations contained herein.

Figures

Figure 1 Groundwater Elevation Contour Map Detection Monitoring Round 4 – April 2019

Tables

Table 1 Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results
Table 2 CCR Rule Groundwater Monitoring Well Information

FIGURES



- CCR RULE MONITORING WELL
- MONITORING WELL LOCATION
- PIEZOMETER LOCATION
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD 88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER GRADIENT CONTROL SYSTEM
- WESTON DISPOSAL SITE NO. 3 LANDFILL
- SURFACE ELEVATION CONTOUR (DASHED WHERE INFERRED)
- FENCE LINE

- 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).
 4. * ELEVATION NOT USED FOR CONTOURING



**WESTON DISPOSAL SITE NO. 3
UPPERMOST AQUIFER UNIT
GROUNDWATER ELEVATION CONTOUR MAP
DETECTION MONITORING ROUND 4 - APRIL 2019**

Alternate Source Demonstration
Weston Disposal Site No. 3
Town of Knowlton, Wisconsin

FIGURE 01



TABLES

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

Date Range: 02/01/2016 to 09/13/2019

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
	04/26/2018	40168127002	0.0292	6.550	0.720	<0.100	6.970	13.100
	10/25/2018	AE31422	0.0250	11.000	0.290	0.066	6.300	17.000
	04/24/2019	AE36960	0.0180	8.300	0.530	0.040	5.870	13.000
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
	04/26/2018	40168127003	<0.0067	4.180	0.540	<0.100	6.450	4.100
	10/25/2018	AE31423	0.0140	3.000	0.400	0.061	6.100	3.100
	04/24/2019	AE36961	0.0081	4.200	0.620	<0.040	5.680	2.600
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
	04/26/2018	40168127004	0.0161	18.700	2.600	<0.500	7.430	15.900
	10/25/2018	AE31424	0.0300	20.000	0.740	0.085	6.500	16.000
	04/24/2019	AE36962	0.0180	2.100	1.200	0.057	5.910	19.000

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

Date Range: 02/01/2016 to 09/13/2019

			B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
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
	04/26/2018	40168127005	0.0544	6.160	<2.500	<0.500	7.510	<5.000
	10/25/2018	AE31425	0.0540	6.000	0.470	0.066	6.400	3.200
	04/24/2019	AE36963	0.0250	6.600	8.400	0.053	6.060	6.300
	09/13/2019	AE40532			11.000		5.960	
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
	04/26/2018	40168127006	0.0097	20.100	3.000	<0.100	6.850	17.500
	10/25/2018	AE31426	0.0170	21.000	2.700	0.065	6.000	26.000
	04/24/2019	AE36964	0.0091	18.000	1.800	0.040	5.740	21.000

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

Date Range: 02/01/2016 to 09/13/2019

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
	04/26/2018	40168127002	82.000
	10/25/2018	AE31422	50.000
	04/24/2019	AE36960	30.000
	LS-101	02/18/2016	40128408002
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
04/26/2018		40168127003	58.000
10/25/2018		AE31423	44.000
04/24/2019		AE36961	<20.000
LS-105		02/18/2016	40128408003
	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
	04/26/2018	40168127004	118.000
	10/25/2018	AE31424	110.000
	04/24/2019	AE36962	110.000

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

Date Range: 02/01/2016 to 09/13/2019

			TDS, mg/L	
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	
	04/26/2018	40168127005	88.000	
	10/25/2018	AE31425	58.000	
	04/24/2019	AE36963	52.000	
	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	
04/26/2018		40168127006	128.000	
10/25/2018		AE31426	120.000	
04/24/2019		AE36964	86.000	

Table 2. CCR Rule Groundwater Monitoring Well Information
Weston Disposal Site No. 3
Wisconsin Public Service Corporation
Town of Knowlton, WI

Well Designation	Wisconsin Unique Well Number	Date Well Installed	Drilling Subcontractor	Drilling Method	Gradient Position	State Plane Northing	State Plane Easting	Latitude	Longitude	Ground Surface Elevation (ft NAVD88)	Top of Protective Cover Pipe Elevation (ft NAVD88)	Top of Well Riser Elevation (ft NAVD88)	Borehole Drilled Depth (ft bgs)	Borehole Bottom Elevation (ft NAVD88)	Depth to Top of Well Screen (ft bgs)	Depth to Well Bottom (ft bgs)	Top of Screen Elevation (ft NAVD88)	Well Bottom Elevation (ft NAVD88)	Top of Bedrock Elevation (ft NAVD88)
LS-100	VU955	8/23/2011	Badger State Drilling	Air Rotary and Hollow Stem Auger	Downgradient	325,223	2,063,529	44.72484	-89.63437	1196.9	1199.26	1199.04	14.5	1182.4	3.9	13.9	1193.0	1183.0	1186.6
LS-101	VU952	7/13/2011	Badger State Drilling	Air Rotary and Hollow Stem Auger	Upgradient	325,816	2,063,032	44.72648	-89.63627	1203.1	1205.58	1205.41	16.5	1186.6	5.0	15.0	1198.1	1188.1	1197.2
LS-105	VU953	7/14/2011	Badger State Drilling	Air Rotary and Hollow Stem Auger	Downgradient	324,533	2,063,527	44.72295	-89.63439	1187.9	1190.42	1190.28	9.3	1178.6	2.8	7.8	1185.1	1180.1	1181.7
LS-106	-	2/5/2016	Coleman Engineering Company	Hollow Stem Auger	Downgradient	324,253	2,063,283	44.72219	-89.63533	1190.5	1193.26	1193.24	15.5	1175.0	5.0	15.0	1185.5	1175.5	NE
LS-107	-	2/5/2016	Coleman Engineering Company	Air Rotary	Downgradient	325,749	2,062,448	44.72630	-89.63852	1191.5	1194.50	1194.40	15.5	1176.0	5.0	15.0	1186.5	1176.5	1181.0

Notes:

Ground surface, top of protective cover pipe and top of well riser elevations for wells obtained from well construction forms and tabulated summary provided by GEI Consultants. Elevation datum is referenced to North American Vertical Datum 1988 (NAVD88).

Horizontal Datum is referenced to Wisconsin State Plane Coordinate System, Central Zone, North America Datum (NAD 83/2007), US Survey Feet.

All wells constructed with 2-inch nominal size schedule 40 PVC with 5-foot to 10-foot long 10-slot screens.

bgs = below ground surface

ft = feet

"-" = information not available

NE = Not encountered.