Bridgeton Landfill, LLC

Weekly Data Submittal
Week of March 11, 2018 – March 17, 2018

Required by Section 52.F of Agreed Order, Case No. 13SL-CC01088
Effective May 13, 2013

Contents:
Attachment A – Leachate Levels in Leachate Collection Sumps
Attachment B – Temperature Monitoring Probe Analytical Charts
Attachment C – Gas Interceptor Wellhead Temperature Graphs
Attachment D – Neck-Area Gas Extraction Wellhead Temperature Graphs

Provided Separately:
– Leachate Level in Leachate Collection Sump Raw Data Excel Spreadsheet
– Temperature Monitoring Probe Raw Data Excel Spreadsheet
– Heat Extraction System TMP Raw Data Excel Spreadsheet
– Gas Interceptor Well Reading Raw Data Excel Spreadsheet
– Neck-Area Gas Extraction Well Data Excel Spreadsheet

March 23, 2018


**Commentary on Data**

March 23, 2018

**Attachment A – Leachate Levels in Leachate Collection Sumps**

Downhole discharge piping and the pump for LCS-1D was replaced the week of 2/5/18. Pump was non-operational after startup activities. Pump replacement is pending parts arrival.

The pump in LCS-2D was non-operational during the weekly reporting period.

The Blackhawk pneumatic pumps in LCS-3D were replaced with a QED AP-4 pneumatic pump on 2/15/18. Liquid level was measured manually.

The level sensor in LCS-4B is currently operational and responsive. Liquid level was not recorded by the level sensor during the weekly reporting period. LCS-4B is equipped with a flow meter that displayed no flow during the weekly reporting period. Therefore, it can be concluded that the liquid level was below the bottom of the pump and level sensor in LCS-4B.

LCS-5B was fully operational during the weekly reporting period.

The pump in LCS-6B was observed to be non-operational on 3/9/18. The liquid level in LCS-6B measured on 3/14/18 is still in compliance with the pump non-operational. Pump replacement is pending parts arrival.

**Attachment B - Temperature Monitoring Probe Analytical Charts**


TMP readings for evaluation of the Heat Extraction System (HES) are provided as attachment “Heat Extraction System TMP Raw Data Excel Spreadsheet,” but are not discussed in this report.

**Attachment C - Gas Interceptor Wellhead Temperature Graphs**

As part of the HES, there are currently cooling water circulation loops installed in twelve Gas Interceptor Wells (GIWs) (GIW-02 through GIW-13). The remaining well (GIW-01) had a measured gas temperature within its historical operating limits.

**Attachment D – Neck Area Gas Extraction Well Data**

Weekly gas temperature data is collected for select Gas Extraction Wells (GEWs) located in the neck area of the landfill. These wells include GEW-008, -009, -010, -038, -039, -040, 041R, -043R, -053, -054, -055, -056R, -109, and -110.

**North Quarry Oxygen Levels**

GEW-1A is noted as having an oxygen concentration greater than 2.0% since its installation in December 2015.
The area in which GEW-1A is installed is very saturated. Bridgeton has installed a sump near GEW-1A and increased the force main capacity during the North Quarry capping projects in an effort to lower the potentiometric surface in the area to improve gas quality and reduce ambient air intrusion at the well. In addition, Bridgeton tested a 5 hp electric pump in GEW-1A to provide increased capacity in an effort to sufficiently dewater the well and expose perforations. However, rapid recharge prevented exposure of perforations.

As an alternative measure, Bridgeton is preparing a design to extend the EVOH to the north in the vicinity of GEW-1A to control surface exceedances of methane and to collect landfill gas through additional landfill gas controls associated with the EVOH cap. This conceptual design was discussed in correspondence to St. Louis County Department of Public Health-Air Pollution Control Program (SLCDPH/APCP) dated February 9, 2018. The February 9, 2018 letter requested that SLCDPH/APCP consider the extension of the North Quarry EVOH cap system and additional gas collection controls as a replacement to GEW-1A. If the approach is approved by SLCDPH/APCP, Bridgeton will provide a project schedule, monitoring frequency, and design detail within ninety (90) days of obtaining concurrence. Further, the February 9, 2018 letter requested an additional ninety (90) days for the area in the vicinity of GEW-1A to be addressed for adequate monitoring requirements to allow time to complete design, procurement, and construction schedules. SLCDPH/APCP responded to the February 9, 2018 request letter in correspondence dated February 13, 2018. SLCDPH/APCP indicated that they consider the EVOH liner extension to be a replacement for GEW-1A or best available alternative to a gas extraction well. The February 13, 2018 SLCDPH/APCP letter approved the 90-day extension for correcting the oxygen parameter exceedance at GEW-1A (due May 13, 2018).
ATTACHMENT A

LEACHATE LEVELS IN LEACHATE COLLECTION SUMPS
LCS-1D Liquid Level Below Ground Surface

- Measured Liquid Level Below Ground Surface (feet)

--Transducer at 92.4 ft depth--

--Liquid Level may be lower--

Depth Below Grade (feet)

3/13/17, 4/13/17, 5/13/17, 6/13/17, 7/13/17, 8/13/17, 9/13/17, 10/13/17, 11/13/17, 12/13/17, 1/13/18, 2/13/18, 3/13/18
LCS-3D Liquid Level Below Ground Surface

Measured Liquid Level Below Ground Surface (Ft.)

Depth Below Grade (feet)

LCS-4B Liquid Level Below Ground Surface

-- Transducer at 74 ft depth --
-- Liquid Level may be lower --
LCS-5B Liquid Level Above Quarry Floor

Height of Liquid (Ft.)

Height Above Quarry Floor (feet)
ATTACHMENT B

TEMPERATURE MONITORING PROBE ANALYTICAL CHARTS
Notes for TMPs are summarized at the end of the TMP figures.
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TEMPERATURE (°F)

DEPTH AT INSTALLATION (FT)

LEGEND

10/25/16
02/12/18
02/20/18
02/26/18
03/06/18
03/12/18

TMP-36

BRIDGETON LANDFILL

TEMPERATURE VS DEPTH
Notes for TMPs are summarized at the end of the TMP figures.
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TMP-43

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AVERAGE TEMPERATURES

TEMPERATURE VS TIME
BRIDGETON LANDFILL

DATE
11/01/12 01/01/13 03/01/13 05/01/13 07/01/13 09/01/13 11/01/13 01/01/14 03/01/14 05/01/14 07/01/14 09/01/14 11/01/14 01/01/15 03/01/15 05/01/15 07/01/15 09/01/15 11/01/15 01/01/16 03/01/16 05/01/16 07/01/16 09/01/16 11/01/16 01/01/17 03/01/17 05/01/17 07/01/17 09/01/17 11/01/17 01/01/18

TEMPERATURE (°F)
60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310

TEMPERATURE (°F)

LEGEND
TMP-1  TMP-2  TMP-2R  TMP-3  TMP-3R  TMP-4  TMP-4R  TMP-5  TMP-6  TMP-7  TMP-8  TMP-9  TMP-10  TMP-11  TMP-11R  TMP-12  TMP-13  TMP-14  TMP-14R

TEMPERATURE VS TIME
BRIDGETON LANDFILL
TMP BRIDGETON LANDFILL NOTES
TMP notes that are new for the reporting week are in **bold**.

TMP-1: NONE

TMP-2:

1. TMP-2 has been replaced by TMP-2R and will no longer be monitored or included in the presentation.

TMP-2R:

1. Data reported on 11/29/2016 was inadvertently left as the 11/22/2016 data. This was corrected on 12/5/2016 reading submittal.

TMP-3:

1. No reliable temperature readings have been obtained at 170 ft depth since 1/29/2014, except on 3/13/2014.
2. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 10, 90, 130, 210 and 250 ft depths are no longer reliable.
3. The connectivity tests on 10/28/2014 conducted by Feezor Engineering showed that units at 10, 90, 110, 130, 210 and 250 ft depths are not reliable.

TMP-3R:

1. The unit at 20 ft depth had a fluctuating resistance since 9/25/2017. Therefore the temperature is determined to be unreliable.

TMP-4:

1. The connectivity tests on 4/11/2014 conducted by CEC showed that the unit at 48 ft depth is no longer reliable.

TMP-4R: NONE

TMP-5: TMP NO LONGER IN SERVICE – Verified by Connectivity testing by Feezor Engineering in March 2015.

TMP-6:

1. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 35, 55, 75, 155, 175, and 195 ft depths are no longer reliable.
2. No reliable temperature readings have been obtained at the unit at 215 ft depth since 6/13/2014.

TMP-7R: TMP NO LONGER IN SERVICE
TMP-8: TMP NO LONGER IN SERVICE

TMP-9:

1. Unit at 100 ft depth had an inaccurate temperature reading on 8/1/2013 and no reading since 8/6/2013.
2. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 20, 60, 80, and 100 ft depths are no longer reliable.

TMP-10:

1. All units were verified by connectivity testing by Feezor Engineering on 6/1/2017 to be unreliable.

TMP-11:

1. All units were verified by connectivity testing by Feezor Engineering on 11/23/2016 to be unreliable.
2. TMP-11 is no longer in service and will not be included in the presentation.

TMP-11R: NONE

TMP-12:

2. All units were verified by connectivity testing by Feezor Engineering in October 2015 to be unreliable.

TMP-13: TMP NO LONGER IN SERVICE

TMP-14:

1. All units were verified by connectivity testing by Feezor Engineering in March 2016 to be unreliable.

TMP-14R:

1. Due to the connectivity test results by Feezor Engineering on TMP-14 (see note above), TMP-14R is added to this reporting data set as of 3/7/2016.

TMP-15: TMP WAS NEVER IN SERVICE

TMP-16:

1. TMP-16 has been replaced by TMP-16R and will no longer be included in the presentation.

TMP-16R: NONE

TMP-17: NONE
TMP-18: NONE

TMP-19: NOT PART OF THIS SUBMITTAL (HEAT EXTRACTION TMP)

TMP-20: NOT PART OF THIS SUBMITTAL (HEAT EXTRACTION TMP)

TMP-21: NONE

TMP-22: NONE

TMP-23: NONE

TMP-24: NONE

TMP-25:

   1. TMP-25 has been replaced by TMP-25R and will no longer be included in the presentation.

TMP-25R: NONE

TMP-26:

   1. Resistance on unit at 80 ft dropped 12.9 ohms (11/06/2017) and subsequent resistance reading continue to be low. Upon further investigation by Feezor Engineering, this unit is determined to be unreliable.

TMP-27: NONE

TMP-28:

   1. TMP-28 has been replaced by TMP-28R and will no longer be included in the presentation.

TMP-28R: NONE

TMP-29: NONE

TMP-33: NONE

TMP-34: NONE

TMP-35: NONE

TMP-36: NONE

TMP-37: NONE

TMP-38: NONE

TMP-39: NONE
TMP-40: NONE
TMP-41: NONE
TMP-42: NONE
TMP-43: NONE
TMP-44: NONE
TMP-45: NONE
TMP-46: NONE
TMP-47: NONE
TMP-48: NONE
TMP-49: NONE

TMP vs DEPTH and TMP vs ELEVATION (for 03/12/18):

1. There were no reliable temperature readings for TMP-13 since 3/19/2014.
2. There were no reliable temperature readings for TMP-7R, as determined by the connectivity test on 4/11/2014.
3. There were no reliable temperature readings for TMP-5 since 11/5/2014.
4. There were no reliable temperature readings for TMP-12 since 9/28/2015.
5. There were no reliable temperature readings for TMP-8 since 9/9/2015.
6. There were no reliable temperature readings for TMP-14, confirmed since 3/7/2016.
7. There were no reliable temperature readings for TMP-11 as determined by the connectivity test on 11/23/2016.
8. TMP-2 has been replaced by TMP-2R and will no longer be monitored.
9. TMP-11 is no longer in service and will not be included in the presentation.
10. There were no reliable temperature readings for TMP-10 since 5/30/2017.
11. TMP-16, 25, and 28 have been replaced by TMP-16R, 25R, and 28R and will be no longer reported since 1/15/2018.
ATTACHMENT C

GAS INTERCEPTOR WELLHEAD TEMPERATURE GRAPHS
1.) AERIAL TOPOGRAPHY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 1, 2017.

NOTE:

LEGEND

- WELL LOCATION
GIW-11 Wellhead Temperatures
GIW-13 Wellhead Temperatures

Wellhead Temp. (F)

Temperature °F

ATTACHMENT D

NECK-AREA GAS EXTRACTION WELL DATA
GEW-010 Wellhead Temperatures

Temperature °F

Wellhead Temp. (°F)
GEW-038 Wellhead Temperatures

Temperature °F

Wellhead Temp. (°F)
GEW-043R Wellhead Temperatures

Wellhead Temp. (°F) vs. Date
GEW-054 Wellhead Temperatures

Temperature °F

Wellhead Temp. (°F)