

Transmittal

West Des Moines, IA

PROJECT: BV County, FY26-28 On-Call Support, IA 27225284.00 DATE: 9/30/2026

SUBJECT: Buena Vista County Sanitary Landfill - 11-SDP-01-74 - Leachate Collection System Abandonment and Passive Landfill Gas Vent Installation Work Plan TRANSMITTAL ID: 00002

PURPOSE: For your approval VIA: Info Exchange

FROM

NAME	COMPANY	EMAIL	PHONE
Sean Marczewski West Des Moines, IA	SCS Engineers	SMarczewski@scsengineers.com	+1-515-631-6152

TO

NAME	COMPANY	EMAIL	PHONE
Mike Smith 502 East 9th Street Des Moines IA 50319-0034 United States	Iowa, State of	mike.smith@dnr.iowa.gov	515-725-8200

REMARKS: Mike -

SCS Engineers, on behalf of the Buena Vista County Solid Waste Commission, is submitting the Leachate Collection System Abandonment and Passive Landfill Gas Vent Installation Work Plan, for the Buena Vista County Sanitary Landfill. If you have any questions or comments regarding this work plan, please contact me at the number below.

Thanks,



Sean Marczewski
Senior Project Professional
smarczewski@scsengineers.com
O: 515-631-6152
M: 712-661-9682
1690 All-State Court, Suite 100
West Des Moines, Iowa 50265

Transmittal

DATE: 9/30/2026
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DESCRIPTION OF CONTENTS

QTY	DATED	TITLE	NOTES
1	9/30/2026	2026-09-30_Buena Vista County Sanitary Landfill_Work Plan_v1.0.pdf	

COPIES:

Lori Dicks	(Buena Vista County Solid Waste Commission)
Sean Marczewski	(SCS Engineers)
Todd Courtney	(SCS Engineers)
Becky Jolly	
Tim Buelow	(SCS Engineers)



1690 All-State Court
Suite 100
West Des Moines, Iowa 50265
515-631-6160
File No. 27225284.00

September 30, 2026

Mr. Mike Smith, P.E.
Iowa Department of Natural Resources
Land Quality Bureau
6200 Park Avenue
Des Moines, Iowa 50321

Subject: Leachate Collection System Abandonment and Passive Landfill Gas Vent
Installation Work Plan
Buena Vista County Sanitary Landfill
Permit No. 11-SDP-01-74

Dear Mike:

SCS Engineers (SCS), on behalf of the Buena Vista County Solid Waste Commission (Commission), is submitting this letter to inform the Iowa Department of Natural Resources (DNR) of the work plan to abandon the leachate collection system associated with the Eastern Fill Area and install passive landfill gas vents within the property boundary near landfill gas monitoring well LFGW-2 on the southwest side of the Western Fill Area (near groundwater monitoring well MW-5) at the Buena Vista County Sanitary Landfill (Landfill) as recommended in correspondence dated May 29, 2026 (Doc #117234).

Background

Leachate Collection System

SCS submitted the Leachate Collection System Cessation Review on May 13, 2026 (Doc #117116), which recommended cessation of leachate collection from the Eastern Fill Area, which was subsequently approved by the DNR on May 29, 2026 (Doc #117234). A work plan to abandon the leachate collection system is provided herein.

Landfill Gas

Methane concentrations measured in subsurface monitoring point GV-5 have consistently been greater than 100% of the lower explosive limit (LEL). GV-5 is located in the southwest corner of the property, south of the Western Fill Area. Subsurface monitoring point LFGW-2, which is south of GV-5 and closer to the south property boundary, most recently measured methane concentrations greater than 100% of the LEL during the third quarter of 2025 monitoring event, as documented in the 2025 Landfill Gas Report dated April 23, 2025 (Doc #116942), and during the first and second quarters of 2026 monitoring events. However, subsurface methane monitoring point GV-6, which is located just south of the south property boundary and south of both GV-5 and LFGW-2, has

consistently been non-detect for methane, indicating that off-site methane migration may not be occurring, or if off-site migration is occurring, it appears to be to a very limited extent. However, to meet the requirements to begin drafting an environmental covenant and end post-closure care, a passive gas venting system is proposed to be installed as recommended by the DNR in correspondence dated May 29, 2026 (Doc #117234). A work plan to install passive landfill gas vents is provided herein.

Leachate Collection System Abandonment Work Plan

Abandonment of the leachate collection system will involve excavating the three manholes located south of the Eastern Fill Area, adjacent to the storage lagoon. These manholes were installed to receive leachate conveyed from the landfill and direct it to the storage lagoon. Following excavation of the manholes, the connected HDPE collection pipes will be fitted with mechanically connected end caps. The excavated area will then be backfilled with soil, mechanically compacted, graded to promote positive drainage and prevent ponding, and seeded to reestablish vegetation. Decommissioning the leachate lagoon is not being addressed at this time.

Passive Gas Vent Installation Work Plan

GV-4 was installed east of LFGW-2 in November 2018 as documented in correspondence dated December 31, 2018 (Doc #94082). The stickup was destroyed sometime between May 2020 and October 2020, at which point it was considered lost, as documented in correspondence dated May 10, 2022 (Doc #103190). During the 2019 monitoring events and the first three quarterly 2020 monitoring events, methane was only measured once at 6% of the LEL in GV-4. GV-3, GV-2, and GV-1, which are also east of LGW-2 along the southern property boundary, as well as GV-6, which was installed south of the southern property boundary, have consistently been non-detect for methane. A temporary gas vent, GV-Temp, was also installed in 2018 west of LFGW-2. A single measurement detected methane at 30% of the LEL before abandonment (Doc #94082). The Commission purchased a triangular parcel of land in August 2019 in the southwest corner of the site, which includes a creek that acts as a natural barrier to off-site migration. Therefore, the extent of methane migration has been generally defined to the west, south, and east of LFGW-2.

The geology of the proposed gas vent installation area is generally sand and lean clay from the ground surface to an approximate depth of 10 feet below ground surface, and fine to coarse sand from an approximate depth of 10 feet below ground surface to approximately 25 feet below ground surface. The sandy subsurface was determined to not be conducive to installing a gas interceptor trench due to the possibility of cave-ins during excavation. Recent groundwater level measurements in GV-5 and LFGW-2 are approximately 20 feet below ground surface and approximately 24 feet below ground surface, respectively. Boring logs for GV-4, GV-5, GV-6, and LFGW-2 are included in **Attachment A**.

A field investigation was conducted on July 28, 2026, to estimate the depth at which methane enters the screened intervals of GV-5 and LFGW-2 and to establish the appropriate gas vent boring depths. Based on the investigation findings of gas migration

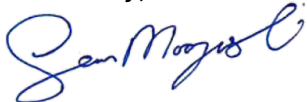
potentially occurring at depth of 15 to 18 feet below ground surface, the gas vents will be installed to a depth of approximately 20 feet below ground surface.

A site map showing the approximate proposed gas vent alignment is provided as **Figure 1**. Gas vent installation will be initiated with a central gas vent located within the proposed installation area. Subsequent step-out gas vents will be installed to the northwest and southeast of the central gas vent, generally parallel to the projected waste boundary between the waste mass and GV-5. The lateral extent of the step-out gas vents will be determined in the field based on methane monitoring results, with installation continuing until methane concentrations within the newly installed gas vents are less than 50% of the LEL. The need for and spacing of additional gas vents between the central gas vent and the outermost step-out gas vents will be determined during field activities based on measured methane concentrations and subsurface conditions.

Once a work plan is approved, an anticipated schedule for work plan implementation will be provided to the DNR.

If you have any questions regarding this work plan, please contact Sean Marczewski at (712) 661-9682.

Sincerely,



Sean Marczewski
Senior Project Professional
SCS Engineers
712-661-9682
smarczewski@scsengineers.com



Todd Courtney
Landfill Operations Specialist
SCS Engineers
319-621-4802
tcourtney@scsengineers.com

Attachment A: Boring Logs

CC: Ms. Lori Dicks, Buena Vista County Solid Waste Commission

Attachment A
Boring Logs

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: GV-4		Facility Name: Buena Vista County Solid Waste	Facility Street Address: 1332 630th Street Storm Lake, Iowa			
Boring Depth (ft) X Diameter (in): 25' x 7.25"			Drilling Method: Hollow Stem Auger			
Well Contractor Name: Jerome Hobson Registration Number: 9062			Logged By: Josh Prohaska			
Ground Surface Elevation (ASL): 1,377.22		Top of Casing Elevation (ASL): 1,382.24				
Date: 11/7/2018 Start Time: 1:00 p.m.	Date: 11/7/2018 End Time: 3:00 p.m.	UST Number: N/A	LUST Number: N/A			
Depth Feet	Well Construction Details	Blow Count if applicable	Sample No.	Type*	PDI/FID Reading (ppm)	Rock Formations, Soil Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
1382.24	Top of casing					
-3.5						
0	1377.22					CL 0-1' Dark brown silty clay
	2-inch PVC riser with bentonite slurry					CL 1'-4.5' Light brown sandy lean clay
3.5	1373.42					CL 4.5'-5' Dark brown silty clay
	1372.22					SW 5'-14' Light brown fine sand
7	2-inch PVC riser with sand 2-inch PVC slotted screen with sand					
10.5						
14						SW 14'-15' Light brown coarse sand
17.5						SW 15'-19' Light brown/gray fine sand
21						GW-SW 19'-25' Very coarse sand with large gravel
24.5	1353.72					
	1352.22					SC Bottom of Boring at 25 feet
28						25' Clayey sand
31.5						
35						

* SS (split spoon) HS (hollow stem auger) HA (hand auger)

Observations	Date:	11/7/2018			
Water Levels (ASL)	Level:	1353.72			
Static Water Level Symbol	Time:	2:30 p.m.			

MONITORING WELL/PIEZOMETER CONSTRUCTION FORM

Disposal Site Name	<u>Buena Vista County Solid Waste Commission</u>	Permit #	<u>11-SDP-01-74C and 11-SDP-02-87C</u>
Well or Piezometer #	<u>GV-4</u>	Date Started	<u>11/7/2018</u>
Project No.	<u>BVCSL 19003</u>	Date Completed	<u>11/7/2018</u>

A. Surveyed Locations and Elevations

Locations (+/-0.5 ft.):

Surveyed location of well N 23.7942
 E -643.75

Distance and Direction
 from boundary to well N/A

Elevation(+/-0.01 ft. MSL):

Ground surface 1377.22
 Top of Protective Casing N/A
 Top of Well Casing 1382.24
 Benchmark Elevation N/A
 Benchmark Description N/A

Well Installation, continued:

Filter pack:

Material Silica Sand
 Grain Size 0.88 mm
 Volume 5.42 ft³

Seal (minimum 3 ft. length above filter pack):

Material Bentonite Chips
 Placement Method Pour
 Volume 0.97 ft³

Backfill (if different from seal):

Material N/A
 Placement Method N/A
 Volume N/A

Surface seal design:

Material of Protective Casing:
N/A
 Material of grout between protective casing
 and well casing
N/A
 Protective cap material
N/A
 Vented? (Y/N) N/A Locking? (Y/N) N/A
 Well cap material
N/A
 Vented? (Y/N) Y

B. Soil Boring Information

Name and Address of Construction Company
Barker Lemar Engineering Consultants
1801 Industrial Circle
West Des Moines, IA 50256
 Name of Driller Jerome Hobson
 Drilling Method Hollow Stem Auger
 Drilling Fluid None
 Bore hole Diameter 7.25 inches
 Soil Sampling Method Continuous Sampler
 Depth of Boring * 25.00 feet

C. Monitoring Well Installation

Casing Material PVC
 Length of Casing 10.02 feet
 Outside Casing Diameter 2.375 inch
 Inside Casing Diameter 2.0 inch
 Casing Joint Type threaded
 Casing/Screen joint type threaded
 Screen material PVC
 Screen opening size 0.010 inch
 Screen length 20.00 feet
 Depth of Well ** 30.02 feet

D. Groundwater Measurement

Water level (+/-0.01 ft. below top of inner
 well casing) N/A
 Stabilization time N/A
 Well development method
N/A
 Upgradient or downgradient well?
N/A
 Average Depth of Frostline
3 feet

* Depth of boring measured from ground surface.

** Depth of well measured from Top of Casing (TOC).

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: GV-5		Facility Name: Buena Vista County Solid Waste	Facility Street Address: 1332 630th Street Storm Lake, Iowa
Boring Depth (ft) X Diameter (in): 20' x 7.25"			Drilling Method: Hollow Stem Auger
Well Contractor Name: Jerome Hobson Registration Number: 9062			Logged By: Josh Prohaska
Ground Surface Elevation (ASL): 1,379.29		Top of Casing Elevation (ASL): 1,384.45	
Date: 11/8/2018 Start Time: 8:30 a.m.	Date: 11/8/2018 End Time: 10:30 a.m.	UST Number: N/A	LUST Number: N/A

Depth Feet	Well Construction Details	Blow Count if applicable	Sample No.	Type*	PDI/FID Reading (ppm)	Rock Formations, Soil Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
1384.45	Top of casing					
-3.5						
0	1379.29					FILL 0-5' Mixed sand lean clay and fill
3.5	1375.79					CL 5'-6' Dark brown lean clay
	1374.29					CL 6'-10' Stiff, light brown sandy lean clay
7						SC 10'-15' Very little recovery (suspected clayey sand)
10.5						
14						SW 15'-19' Super fine gray/ brown sand
17.5						
	1359.79					SC 19'-19.5' Brown clayey sand
21	1359.29					SM 19.5'-20' Wet gray coarse silty sand with gravel
24.5						Bottom of Boring at 20 feet
28						
31.5						
35						

* SS (split spoon) HS (hollow stem auger) HA (hand auger)

Observations	Date:	11/8/2018			
Water Levels (ASL)	Level:	1359.79			
Static Water Level Symbol 	Time:	10:00 a.m.			

MONITORING WELL/PIEZOMETER CONSTRUCTION FORM

Disposal Site Name	<u>Buena Vista County Solid Waste Commission</u>	Permit #	<u>11-SDP-01-74C and 11-SDP-02-87C</u>
Well or Piezometer #	<u>GV-5</u>	Date Started	<u>11/8/2018</u>
Project No.	<u>BVCSL 19003</u>	Date Completed	<u>11/8/2018</u>

A. Surveyed Locations and Elevations

Locations (+/-0.5 ft.):

Surveyed location of well N 69.9071
 E -757.397

Distance and Direction
 from boundary to well N/A

Elevation(+/-0.01 ft. MSL):

Ground surface 1379.29
 Top of Protective Casing N/A
 Top of Well Casing 1384.45
 Benchmark Elevation N/A
 Benchmark Description N/A

Well Installation, continued:

Filter pack:

Material Silica Sand
 Grain Size 0.88 mm
 Volume 4.22 ft³

Seal (minimum 3 ft. length above filter pack):

Material Bentonite Chips
 Placement Method Pour
 Volume 0.90 ft³

Backfill (if different from seal):

Material N/A
 Placement Method N/A
 Volume N/A

Surface seal design:

Material of Protective Casing:

N/A
 Material of grout between protective casing
 and well casing N/A
 Protective cap material N/A
 Vented? (Y/N) N/A Locking? (Y/N) N/A
 Well cap material N/A
 Vented? (Y/N) Y

B. Soil Boring Information

Name and Address of Construction Company
Barker Lemar Engineering Consultants
1801 Industrial Circle
West Des Moines, IA 50256
 Name of Driller Jerome Hobson
 Drilling Method Hollow Stem Auger
 Drilling Fluid None
 Bore hole Diameter 7.25 inches
 Soil Sampling Method Continuous Sampler
 Depth of Boring * 20.00 feet

C. Monitoring Well Installation

Casing Material PVC
 Length of Casing 10.16 feet
 Outside Casing Diameter 2.375 inch
 Inside Casing Diameter 2.0 inch
 Casing Joint Type threaded
 Casing/Screen joint type threaded
 Screen material PVC
 Screen opening size 0.010 inch
 Screen length 15.00 feet
 Depth of Well ** 25.16 feet

D. Groundwater Measurement

Water level (+/-0.01 ft. below top of inner
 well casing) N/A
 Stabilization time N/A
 Well development method N/A
 Upgradient or downgradient well?
N/A
 Average Depth of Frostline
3 feet

* Depth of boring measured from ground surface.
 ** Depth of well measured from Top of Casing (TOC).

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: GV-6		Facility Name: Buena Vista County Solid Waste		Facility Street Address: 1332 630th Street Storm Lake, Iowa		
Boring Depth (ft) X Diameter (in): 20' x 7.25"				Drilling Method: Hollow Stem Auger		
Well Contractor Name: Jerome Hobson Registration Number: 9062				Logged By: Josh Prohaska		
Ground Surface Elevation (ASL): 1,374.83			Top of Casing Elevation (ASL): 1,380.13			
Date: 11/8/2018 Start Time: 12:00 p.m.		Date: 11/8/2018 End Time: 2:00 p.m.		UST Number: N/A LUST Number: N/A		
Depth Feet	Well Construction Details	Blow Count if applicable	Sample No.	Type*	PDI/FID Reading (ppm)	Rock Formations, Soil Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
1380.13	Top of casing					
-3.5						
0	2-inch PVC riser with bentonite slurry					CL 0-3' Brown sandy clay
3.5	2-inch PVC riser with sand					SW 3'-7' Light brown fine sand
7	2-inch PVC slotted screen with sand					SP 7'-19' Coarse sand and cobble
10.5						
14						
17.5						
21						SC 19'-20' Firm orange/brown clayey sand Bottom of Boring at 20 feet
24.5						
28						
31.5						
35						

* SS (split spoon) HS (hollow stem auger) HA (hand auger)

Observations	Date:	11/8/2018			
Water Levels (ASL)	Level:	1355.33			
Static Water Level Symbol	Time:	2:30 p.m.			

MONITORING WELL/PIEZOMETER CONSTRUCTION FORM

Disposal Site Name		<u>Buena Vista County Solid Waste Commission</u>		Permit # <u>11-SDP-01-74C and 11-SDP-02-87C</u>	
Well or Piezometer #		<u>GV-6</u>	Date Started	<u>11/8/2018</u>	Date Completed <u>11/8/2018</u>
Project No.		<u>BVCSL 19003</u>			

A. Surveyed Locations and Elevations Locations (+/-0.5 ft.): <table style="width:100%;"> <tr> <td>Surveyed location of well</td> <td><u>N -19.8441</u></td> </tr> <tr> <td></td> <td><u>E -720.815</u></td> </tr> </table> Distance and Direction from boundary to well <table style="width:100%;"> <tr> <td></td> <td><u>N/A</u></td> </tr> </table> Elevation(+/-0.01 ft. MSL): <table style="width:100%;"> <tr> <td>Ground surface</td> <td><u>1374.83</u></td> </tr> <tr> <td>Top of Protective Casing</td> <td><u>N/A</u></td> </tr> <tr> <td>Top of Well Casing</td> <td><u>1380.13</u></td> </tr> <tr> <td>Benchmark Elevation</td> <td><u>N/A</u></td> </tr> <tr> <td>Benchmark Description</td> <td><u>N/A</u></td> </tr> </table> B. Soil Boring Information Name and Address of Construction Company <u>Barker Lemar Engineering Consultants</u> <u>1801 Industrial Circle</u> <u>West Des Moines, IA 50256</u> Name of Driller <u>Jerome Hobson</u> Drilling Method <u>Hollow Stem Auger</u> Drilling Fluid <u>None</u> Bore hole Diameter <u>7.25 inches</u> Soil Sampling Method <u>Continuous Sampler</u> Depth of Boring * <u>20.00 feet</u> C. Monitoring Well Installation <table style="width:100%;"> <tr> <td>Casing Material</td> <td><u>PVC</u></td> </tr> <tr> <td>Length of Casing</td> <td><u>10.30 feet</u></td> </tr> <tr> <td>Outside Casing Diameter</td> <td><u>2.375 inch</u></td> </tr> <tr> <td>Inside Casing Diameter</td> <td><u>2.0 inch</u></td> </tr> <tr> <td>Casing Joint Type</td> <td><u>threaded</u></td> </tr> <tr> <td>Casing/Screen joint type</td> <td><u>threaded</u></td> </tr> <tr> <td>Screen material</td> <td><u>PVC</u></td> </tr> <tr> <td>Screen opening size</td> <td><u>0.010 inch</u></td> </tr> <tr> <td>Screen length</td> <td><u>15.00 feet</u></td> </tr> <tr> <td>Depth of Well **</td> <td><u>25.30 feet</u></td> </tr> </table>	Surveyed location of well	<u>N -19.8441</u>		<u>E -720.815</u>		<u>N/A</u>	Ground surface	<u>1374.83</u>	Top of Protective Casing	<u>N/A</u>	Top of Well Casing	<u>1380.13</u>	Benchmark Elevation	<u>N/A</u>	Benchmark Description	<u>N/A</u>	Casing Material	<u>PVC</u>	Length of Casing	<u>10.30 feet</u>	Outside Casing Diameter	<u>2.375 inch</u>	Inside Casing Diameter	<u>2.0 inch</u>	Casing Joint Type	<u>threaded</u>	Casing/Screen joint type	<u>threaded</u>	Screen material	<u>PVC</u>	Screen opening size	<u>0.010 inch</u>	Screen length	<u>15.00 feet</u>	Depth of Well **	<u>25.30 feet</u>	Well Installation, continued: Filter pack: <table style="width:100%;"> <tr> <td>Material</td> <td><u>Silica Sand</u></td> </tr> <tr> <td>Grain Size</td> <td><u>0.88 mm</u></td> </tr> <tr> <td>Volume</td> <td><u>4.22 ft³</u></td> </tr> </table> Seal (minimum 3 ft. length above filter pack): <table style="width:100%;"> <tr> <td>Material</td> <td><u>Bentonite Chips</u></td> </tr> <tr> <td>Placement Method</td> <td><u>Pour</u></td> </tr> <tr> <td>Volume</td> <td><u>0.90 ft³</u></td> </tr> </table> Backfill (if different from seal): <table style="width:100%;"> <tr> <td>Material</td> <td><u>N/A</u></td> </tr> <tr> <td>Placement Method</td> <td><u>N/A</u></td> </tr> <tr> <td>Volume</td> <td><u>N/A</u></td> </tr> </table> Surface seal design: Material of Protective Casing: <u>N/A</u> Material of grout between protective casing and well casing <u>N/A</u> Protective cap material <u>N/A</u> Vented? (Y/N) <u>N/A</u> Locking? (Y/N) <u>N/A</u> Well cap material <u>N/A</u> Vented? (Y/N) <u>Y</u> D. Groundwater Measurement Water level (+/-0.01 ft. below top of inner well casing) <u>N/A</u> Stabilization time <u>N/A</u> Well development method <u>N/A</u> Upgradient or downgradient well? <u>N/A</u> Average Depth of Frostline <u>3 feet</u>	Material	<u>Silica Sand</u>	Grain Size	<u>0.88 mm</u>	Volume	<u>4.22 ft³</u>	Material	<u>Bentonite Chips</u>	Placement Method	<u>Pour</u>	Volume	<u>0.90 ft³</u>	Material	<u>N/A</u>	Placement Method	<u>N/A</u>	Volume	<u>N/A</u>
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* Depth of boring measured from ground surface.

** Depth of well measured from Top of Casing (TOC).

MONITORING WELL/PIEZOMETER CONSTRUCTION FORM

Disposal Site Name	<u>Buena Vista County Sanitary Landfill (Closed)</u>	Permit #	<u>11-SDP-01-74C</u>
Well or Piezometer #	<u>LFGW-2</u>	Date Started	<u>1/10/2018</u>
Project No.	<u>BVCSL 18002</u>	Date Completed	<u>1/10/2018</u>

A. Surveyed Locations and Elevations		Well Installation, continued:	
Locations (+/-0.5 ft.):		Filter pack:	
Specify corner of site	<u>N 35.39</u>	Material	<u>Silica Sand</u>
Distance and Direction along boundary	<u>E -739.53</u>	Grain Size	<u>0.65 mm</u>
	<u>See above</u>	Volume	<u>5.76 ft³</u>
Distance and Direction from boundary to well	<u>NA</u>	Seal (minimum 3 ft. length above filter pack):	
		Material	<u>Bentonite chips</u>
		Placement Method	<u>backfilled</u>
		Volume	<u>0.51 ft³</u>
Elevation(+/-0.01 ft. MSL):		Backfill (if different from seal):	
Ground surface	<u>1378.72</u>	Material	<u>NA</u>
Top of Protective Casing	<u>1381.91</u>	Placement Method	<u>NA</u>
Top of Well Casing	<u>1381.56</u>	Volume	<u>NA</u>
Benchmark Elevation	_____		
Benchmark Description	_____		
B. Soil Boring Information		Surface seal design:	
Name and Address of Construction Company	<u>Barker Lemar Engineering Consultants (BLEC)</u>	Material of Protective Casing:	
<u>1801 Industrial Circle</u>		<u>Metal</u>	
<u>West Des Moines, IA 50256</u>		Material of grout between protective casing and well casing	
Name of Driller	<u>Jerome Hobson</u>	<u>Concrete</u>	
Drilling Method	<u>Hollow Stem Auger</u>	Protective cap material	
Drilling Fluid	<u>None</u>	<u>Metal</u>	
Bore hole Diameter	<u>7.25 inches</u>	Vented? (Y/N) <u>N</u> Locking? (Y/N) <u>Y</u>	
Soil Sampling Method	<u>continuous sampler</u>	Well cap material	
Depth of Boring *	<u>25.5 feet</u>	<u>PVC</u>	
		Vented? (Y/N) <u>N</u>	
C. Monitoring Well Installation		D. Groundwater Measurement	
Casing Material	<u>PVC</u>	Water level (+/-0.01 ft. below top of inner well casing)	
Length of Casing	<u>8.34 feet</u>	<u>27.10 feet</u>	
Outside Casing Diameter	<u>2.375 inch</u>	Stabilization time	
Inside Casing Diameter	<u>2.0 inch</u>	<u>< 24 hrs.</u>	
Casing Joint Type	<u>threaded</u>	Well development method	
Casing/Screen joint type	<u>threaded</u>	<u>NA</u>	
Screen material	<u>PVC</u>	Upgradient or downgradient well?	
Screen opening size	<u>0.010 inch</u>	<u>Downgradient</u>	
Screen length	<u>20.00 feet</u>	Average Depth of Frostline	
Depth of Well **	<u>28.34</u>	<u>3-feet</u>	

* Depth of boring measured from ground surface.

** Depth of well measured from Top of Casing (TOC).

SOIL BORING LOG & MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: LFGW-2		Facility Name: Buena Vista County Sanitary Landfill	Facility Street Address: 1332 630th Street Storm Lake, Iowa	
Boring Depth (ft) X Diameter (in): 25.5' X 7.25"			Drilling Method: Hollow Stem Auger	
Well Contractor Name: Jerome Hobson Registration Number: 9062			Logged By: Jerome Hobson	
Ground Surface Elevation (ASL): 1,378.72		Top of Casing Elevation (ASL): 1,381.56		
Date: 1/10/2018 Start Time: 10:00 a.m.	Date: 1/10/2018 End Time: 12:30 p.m.	UST Number: NA	LUST Number: NA	

Depth Feet	Well Construction Details	Blow Count if applicable	Sample No.	Type*	PDI/FID Reading (ppm)	Rock Formations, Soil Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
-2.84	1381.56 Top of casing					
0	1378.72 1377.72 Ground surface 2-inch PVC with bentonite seal					CL 0'-2' Light brown lean clay
-2.75	1375.72 1374.22 2-inch PVC with sand 2-inch slotted screen with sand					SP 2'-7' Medium coarse brown sand
-5.5						GP 7'-9' Large stones/cobbles
-8.25						SP 9'-11' Coarse sand
-11						SW 11'-18' Light brown/ orange fine to medium sand
-13.75						
-16.5						
-19.25						GP 18'-21' Large rocks/ cobble
-22						SP 21'-25.5' Light brown sand
-24.75	1354.46 1354.12 1353.22					Bottom of Boring at 25.5 feet
-27.5						

* SS (split spoon) HS (hollow stem auger) HA (hand auger)

Observations	Date:	1/11/2018			
Water Levels (ASL)	Level:	1354.46			
Static Water Level Symbol	Time:	12:30 p.m.			