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SCS ENGINEERS

August 9, 2017
File No. 23212007.05

Ms. Tracy Buchanan
Ohio EPA Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Subject: Village of St. Bernard Landfill
MP-10 2nd Contingency Monitoring 30-day Report

Dear Ms. Buchanan:

Per the approved EGMP for the above referenced site, every 30 days from the date of initial detection above threshold limits, until contingency plan discontinuation criteria are met, the owner/operator will submit a report to the Ohio EPA and Hamilton County Public Health in compliance with OAC 3745-27-12 (E)(5)(g)(ii). This letter serves as the second 30-day report. A site map is presented in Attachment A.

Analysis and Summary

The results of the contingency monitoring performed to date are included in Attachment B. The most recent monitoring was performed on August 2, 2017. Combustible gas concentrations above the compliance threshold were detected at MP-10.

The absence of pressure at MP-10 indicates that there is no driving force that could cause gas migration over a significant distance. The methane detected at MP-10 is likely either a localized concentration or is present due to migration driven only by a concentration gradient/diffusion. Given this condition, it is unlikely that sufficient methane to present a risk to human health and safety will reach the residences. The residences adjacent to the landfill (excluding the Schrenk residence) have gas alarms and there have been no reported detections of landfill related combustible gas, indicating that these short term detections of combustible gas as has occurred at MP-10 do not represent a risk to the residences. At this time, no further remedial actions are proposed.

Pathway Characterization

The description of the site setting and site geology has been summarized from the EGMP. With respect to regional geology, the site is situated on the southeast edge of the Mill Creek Valley. The regional geology reflects multiple glacial advances and is consistent with a glacial outwash valley. Generally, regional geologic sequences consist of glacial valleys incised within Ordovician bedrock formations. These valley fills consist of highly variable interbedded sands, gravels, clays, silts, boulders, and cobbles.

With respect to site specific geology, the most significant feature includes a glacial till/outwash sequence which appears to form the base of the site. This unit is predominated by low

permeability clays and or silts interbedded with silty sands within the areas investigated. Both oxidized and non-oxidized native materials have been found at depth, suggesting deposition in multiple sequences.

Although interbedded sands represent a potential zone of migration, those materials examined via borings were saturated and included a high percentage of silt (estimated at 40 percent or higher). As such, although classified as granular material, the potential for large scale gas transmission is seen as limited.

Along the northern perimeter of the site, the former landfill property is contiguous with several residential properties along Bank Avenue. Essentially, this area consists of a flat terrace, projecting out from the toe of the landfill slope and transitioning into the back yards of the Bank Avenue residences. This terrace was raised to its current elevation by the placement of two generations of fill. A geologic cross section along this northern perimeter is presented as Figure 2 in Attachment A. The boring logs used to prepare the cross section are presented in the EGMP. Only the log for MP-10 is included in this report in Appendix C. The fill soils, in particular the lower fill, contain hard fill and miscellaneous debris. As a result, the near surface geologic profile of this terrace is quite varied. Recent water level measurements show that the fill soil in the vicinity of MP-10 is saturated at approximately 4 feet below the ground surface. MP-10 is screened from approximately 2 to 12 feet below the ground surface, mainly across the various fill layers.

As part of the delineation investigation a test pit, TP-7, was excavated in the vicinity of MP-10. The log for TP-7 is included in Appendix C. The unsaturated portion of the fill layers is the primary pathway. Geotechnical testing of this material as part of the delineation investigation showed that it can be classified as silty sand with gravel. Porosity of the soil matrix of the fill is considered to be moderate. The presence of large pieces of concrete debris within the fill results in the potential for isolated, unconnected open void space, depending on the location and orientation of the concrete debris.

Possible Causes of Exceedance

Just prior to the detection of the initial exceedance at MP-10, the St. Bernard area experienced a period of frequent rain events. The infiltration into the landfill of significant quantities of water could have displaced methane in the landfill into the pathway monitored by MP-10. Alternatively, the additional water that infiltrated into the landfill could have resulted in an increase in the generation of methane, some of which reached MP-10.

Summary of the Steps Taken to Ensure Protection of Human Health and the Environment

The collection and control system was adjusted to apply additional vacuum to the segment in the vicinity of MP-10, specifically the segment monitored by EW-4S. This was done by reducing vacuum on the other selected segments in the system.

Should you have any questions or comments, please contact the undersigned.

Sincerely,

Randall C. Mills, P.G.
Senior Project Professional
SCS ENGINEERS

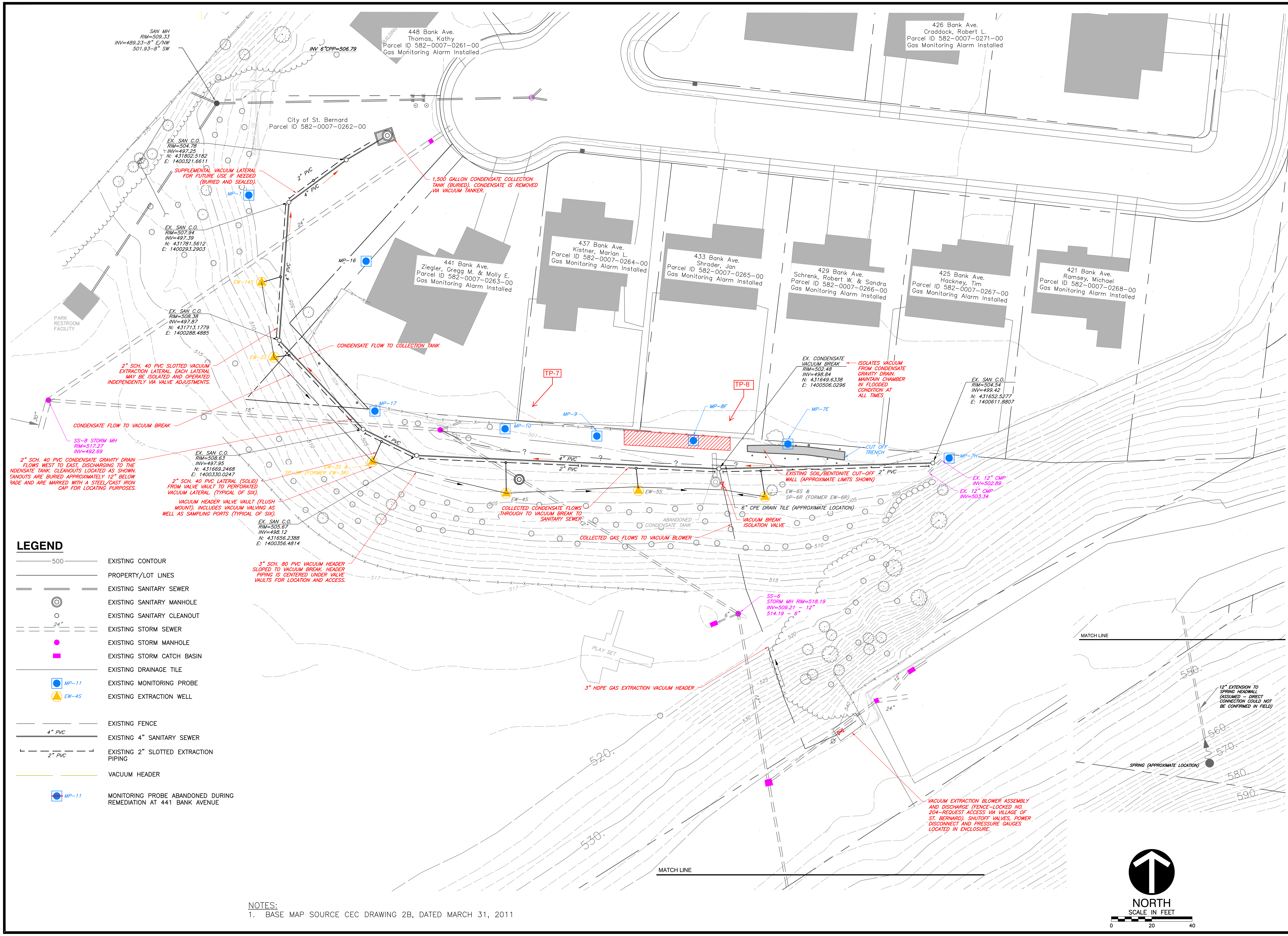
James J. Walsh, P.E.
Principal
SCS ENGINEERS

cc: Chuck DeJonckheere, Hamilton County Public Health
Nick Schapman, GHD
John Estep, Mayor, Village of St. Bernard
Tom Paul, Service Director, Village of St. Bernard

Enclosures

ATTACHMENT A

FIGURES



NOTES:
1. BASE MAP SOURCE CEC DRAWING 2B, DATED MARCH 31, 2011

REV.	DATE	DESCRIPTION	CK. BY

SHEET TITLE: MONITORING NETWORK

PROJECT TITLE: ST. BERNARD LANDFILL VILLAGE OF ST. BERNARD, OHIO

CLIENT: VILLAGE OF ST. BERNARD 110 WASHINGTON AVENUE ST. BERNARD, OHIO 45217

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.
2060 READING ROAD, CINCINNATI, OH 45202
PH. (513) 421-5353 FAX. (513) 421-2847

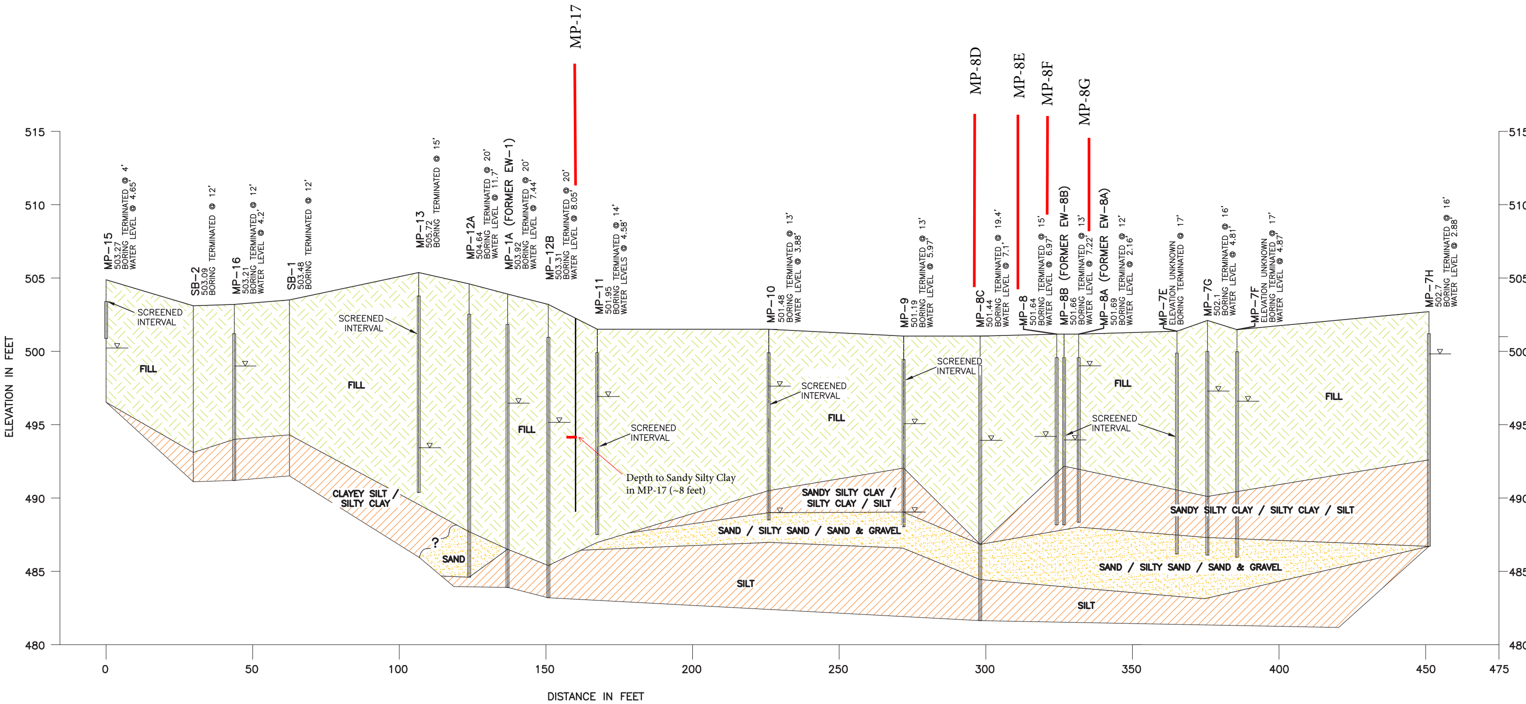
PROJ. NO. 23212007.02 | DWN. BY: FDB | Q/A RVW BY: JJW | DSN. BY: CES | CHK. BY: RCM | APP. BY:

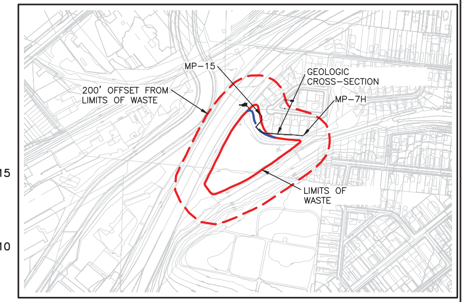
CADD FILE: FIG 5

DATE: SEPTEMBER 2014

SCALE: AS SHOWN

DRAWING NO. FIG 1





LOCATION MAP
NOT TO SCALE

REVISION RECORD

NO	DATE	DESCRIPTION

THE WATER LEVELS PRESENTED HEREIN ARE APPLICABLE TO THE LOCATION AND TIME OF MEASUREMENT. WATER LEVELS MAY FLUCTUATE THROUGH TIME

LEGEND

- FILL (GAS MIGRATION ZONE)
- CLAY / SILTY CLAY / SANDY SILTY CLAY / SILT
- SAND / SILTY SAND / SAND & GRAVEL
- INITIAL WATER LEVEL RECORDED DURING PROBE INSTALLATION

NOTES:

1. WATER LEVELS MEASURED ON 03/04/2011.
2. SEE DRAWING NO. 2 FOR PROBE LOCATIONS. CROSS-SECTION TRACE INTERCEPTS PROBE LOCATIONS SHOWN.
3. FILL OR DEBRIS INDICATED IS OUTSIDE OF LIMITS OF WASTE PLACEMENT. FILL SHOWN WAS OBSERVED TO CONSIST PRIMARILY OF INERT FILL WITH INCIDENTAL QUANTITIES OF ORGANIC DEBRIS.

Scale: 1"=4'
Scale: 1"=20'

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BANK AVENUE LANDFILL
ST. BERNARD, OHIO
HAMILTON COUNTY

DRAWN BY: MLB	CHECKED BY: RJS	APPROVED BY: RH
DATE: 03/31/2011	DWG SCALE: AS SHOWN	PROJECT NO: 100-194

GEOLOGIC CROSS-SECTION — DRAWING NO.: 4B

FIGURE 2. CEC 2011 Northern Geologic Cross Section

ATTACHMENT B

CONTINGENCY MONITORING RESULTS

TABLE 1. SUMMARY OF CONTINGENCY MONITORING RESULTS AT MP-10
METHANE CONCENTRATION (PERCENT BY VOLUME)

Date	Initial Reading		Verification Reading		30-minute Evacuation Readings	
	Initial	Sustained	Initial	Sustained	Initial	Sustained
06/08/17	0.2	30.5	30.0	29.1	22.0	3.9
06/14/17	19.5	22.2	22.0	21.5	18.0	3.1
06/21/17	22.6	23.1	22.6	21.9	19.0	3.1
06/27/17	2.2	2.2	- -	- -	- -	- -
07/01/17	30.1	33.5	20.0	28.3	28.3	3.8
07/05/17	7.3	8.1	8.3	8.4	7.9	1.4
07/12/17	37.7	38.0	36.9	38.0	23.9	0.6
07/19/17	39.5	39.8	39.4	39.1	33.0	2.0
07/25/17	54.4	54.9	54.4	53.5	42.9	3.4
08/02/17	43.3	43.4	43.1	42.1	30.5	5.6

ATTACHMENT C

BORING & TEST PIT LOGS

Civil & Environmental Consultants, Inc.
Cincinnati, OH (513) 985-0226 • (800) 759-5814
Pittsburgh, PA (412) 921-3402 • (800) 365-2324

CITY OF ST. BERNARD

St. Bernard, Ohio

JOB NO.: 200610

LOG OF MP-10

Sheet 1 of 1

LOGGED BY: PCS

DRILLER: Jersey West Drilling

DATE DRILLED: 08/14/00

DRILL METHOD: 4 1/4 IN. HSA

GROUND SURFACE ELEVATION:

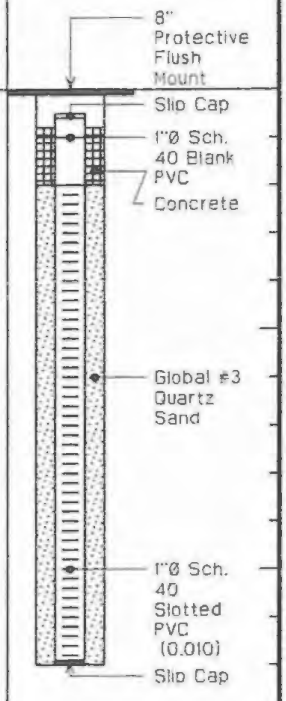
TOP OF CASING ELEVATION:

INITIAL WATER LEVEL: 12.5 ft. BGS DATE: 08/14/00

STATIC WATER LEVEL: DATE:

HNu (ppm)	Recovery (in.)	Blow Counts	Elevation, MSL	Depth (ft.)	Graphic Log	Materials Description
1.8						No sample, Vapor reading from soil cuttings
1.2	17	5-18 5-5		5		Gray silty CLAY w/ fine to medium sand, glass, concrete, metal, rubber, and fine gravel, wet in conrete fragments at 6.7 to 7 feet, very stiff (FILL)
0	18	1-3 4-4				Gray silty CLAY w/ roots and black organic stains, moist, medium stiff (FILL)
1.0	22	1-1 2-1		10		Soft
1.9	16	1-1 1-2				Gray fine sandy silty CLAY w/ medium sand, moist, very soft Gray fine SAND, wet, very loose
				15		Boring terminated at 13 feet
				20		
				25		

Well Completion



Project Name: St. Bernard Landfill	SCS Project Number: 23212007.01	**Test Pit No.: 7 & "L"**	
Project Location: St. Bernard, Ohio	Date Started: 4/16/2013	Page 1 of _1__	
Logged By: R. Mills	Date Completed: 4/16/2013	GW Depth (ft) / Date / Time	
Excavated By: Petro	Sampling Method:		
Excavation Method: Cat 308E	Weather:		
Backfill: excavated and off-site soil			
Total Test Pit Depth: 8 feet			

Depth (ft.)	Sample No.	Methane Reading (%vol)	PID Scan (ppm)	PID Headspace (ppm)*	Description
0--					Approximately 0.5 feet topsoil.
--					Tan soil fill: CLAY & SILT, little Sand, little Gravel, moist, with occasional brick
1--				1.5	fragments and small pieces of metal. Less than 5% non-soil debris.
--					
2--					
--		0	0.4		At approximately 2.5 feet, grey soil fill: SILT & CLAY, some to little Sand, little Gravel,
3--					moist, with glass fragments, brick fragments, slight petroleum odor.
--					Tire encountered at 3 feet. 5 to 10% non-soil debris.
4--					
--					
5--				8	Fill includes slabs of concrete, small pieces of rusted metal, metal tubing, road sign,
--				0.4	car mirror.
6--					2nd tire and inner tube in initial test pit.
--					
7--					Approximately 6 foot square slab of concrete in west end of "L" at 7.5 feet.
--					
8--					At 8 feet, native soil: olive grey Clayey SILT, some fine Sand, some organic matter.
--					
9--					Bottom of test pit at 8.5 feet.
--					
10--					
--					
11--					

* Unless otherwise indicated, headspace samples were collected from excavated soil fill stockpile prior to backfilling.