APPENDICES

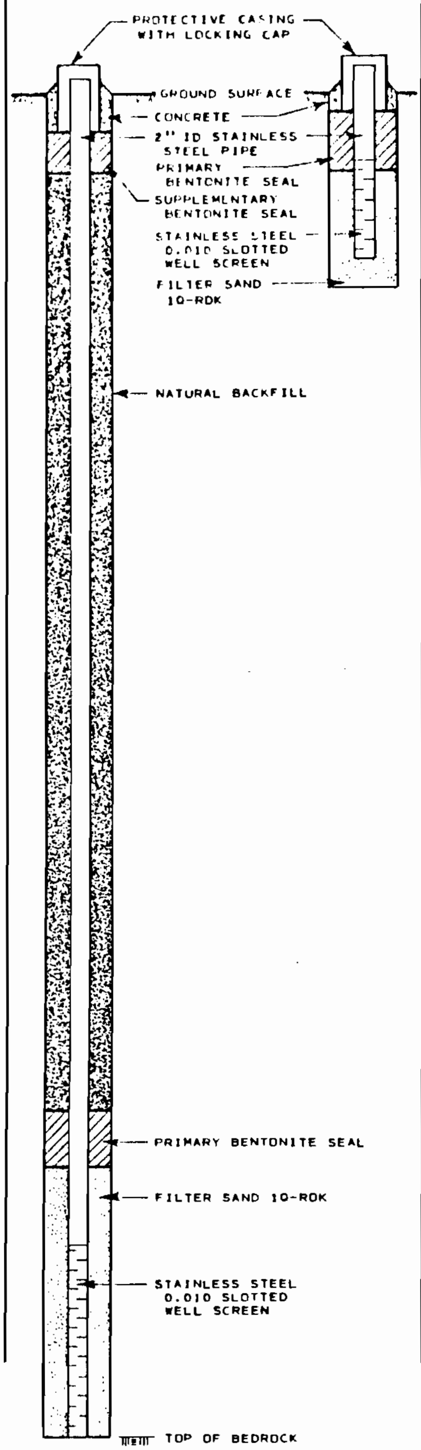
APPENDIX A
CONSTRUCTION LOGS
FOR THE
FILL/UPPER SAND
MONITORING WELLS

1985 Phase II Report

BORING OW-1
NASH ROAD SITE

WELL SCHEMATICS

OW-1B OW-1



SAMPLING

BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE RQD	FRACTURES
5	1				
15	2				
15	3				
35	4				
15	5				
9	6				
10	7				
2	8				
2	9				
	10				
	11				
9	1B:1				
4	1B:2				
38/6"	1B:3				
55/6"	1B:4				
16/6"	1B:5				
20/6"	1B:6				
98	1B:7				
55/6"	1B:8				
65/6"	1B:9				
76/6"	1B:10				

DEPTH IN FEET: 0 – 65

GRAPHIC LOG: ML, CL, CH, GM

DESCRIPTIVE GEOLOGIC NOTES

SURFACE CONDITIONS: GRASSY, WET.

(ML) LIGHT BROWN MOIST MEDIUM SILT AND CLAY, TRACE OF SAND, OCCASIONAL BLACK ORGANIC STAINS

(CL) GRAY MOIST STIFF LAYERED CLAY AND SILT WITH OCCASIONAL SEAMS OF FINE TO MEDIUM SAND, 1/8" IN THICKNESS

GRADES TO LESS STIFF

(CH) GRAY MOIST MEDIUM LAYERED CLAY, RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT IRREGULAR INTERVALS

GRADES TO VERY SOFT CLAY

GRADES TO SOFT

GRADES TO VERY SOFT

(GM) BROWN, MOIST SILT AND COARSE TO FINE GRAVEL, LITTLE CLAY, LITTLE FINE SAND (TILL)

GRADES TO WET

GRADES TO MOIST, DENSE SILT, SOME FINE TO COARSE SAND, LITTLE FINE GRAVEL

GRADES TO WET

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-I

NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE NO & TYPE	SAMPLING: RUN NO	SAMPLING: CORE REC	SAMPLING: CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF BEDROCK AT 68.6'. BEDROCK IS DOLOSTONE.
		1B;11					70		BORING TERMINATED AT A DEPTH OF 68.6' ON JUNE 11, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RQD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

1989 Phase II Report

ENGINEERING-SCIENCE DRILLING RECORD

DRILLING CONTRACTOR: Rochester Drilling Co.
er: M Legare / C Reynolds
pector: L Dobson - Eng. Science
Type Mobile B61
ling Method HSA 4.25" I.D.

PROJECT NAME Nash Road
PROJECT NO. SY012.19

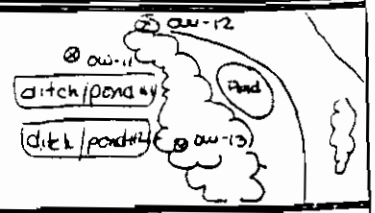
BORING NO. DW-13
Sheet 1 of 1
Location downgradient of ditch/pond (2)

ROUND WATER OBSERVATIONS (from TOC)

ater Level	3.00		
Time	1400		
Date	12/02/88		
ling Depth	5'		

Weather Sunny, 30°F
Date/Time Start 1/29/88 1130
Date/Time Finish 1/29/88 1200

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0	0-2	S-1	5	Top Soil - Roots/organic material & very fine sand, trace angular gravel
	rec = 6.0"		1	
	SS		3	
			1	
0.2	2-4	S-2	29	Orange/Grey m-c sand, well sorted saturated.
	rec = 6.0"		4	
	SS		10	
			12	
0	4-6	S-3	15	Orange/Brown m-c sand grading into stiff clay with silt, trace gravel
	rec = 12"		15	
	SS		9	
			13	
				End of Boring 6.0' @ 1200

WELL SCHEMATIC

Grout	2" PVC RISER		1
Bentonite			2½
SAND		3'	
	2" PVC SCREEN		5'

Comments: High blow count due to tree root

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Driller: M. Leggare-Rochester Drilling
Inspector: L. Dobson - Eng. Sci.
Rig Type: Mobile B-61
Drilling Method: HSA 4.25" I.D.

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: Nash Rd
PROJECT NO.: SY012.19

BORING NO.: 4-B (shallow) (2)
Sheet 1 of 1
Location: mound 15' out from edge of pond.

GROUND WATER OBSERVATIONS

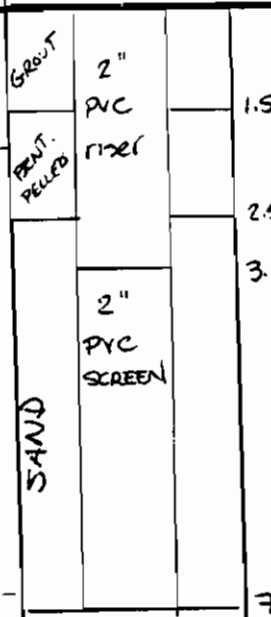
Water Level			
Time			
Date			
Casing Depth			

Weather: 25°F Partly Sunny
Date/Time Start: 2/04/88 1130
Date/Time Finish: 2/04/88 1230

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0.8	0-2	S-1	5	fine medium gray sand, trace angular gravel upper 6" frozen rest saturated
	rec=10"		3	
	SS		2	
			6	
0.6	2-4	S-2	10	v.f. gray sand with some clay grading into a m-c orange/brown sand (wet)
	rec=12"		10	
	SS		20	
			19	
0.	4-6	S-3	13	med. brown/orange m-c sand (wet)
	rec=12"		24	
	SS		26	
			23	
0.1	6-8	S-4	3	m-c brown sand trace rounded black gravel grading into stiff red/gray clay @ 7.0'
			7	
			15	
			21	
–	8-10		19	No sample
			~~20~~ 12	
			20	
			18	Boring terminated 10' @ 1230

WELL SCHEMATIC



Comments: No return on 1st or 2nd attempts in SS.

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
B = BIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼" ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD.
PROJECT NO.: 5401Z.19

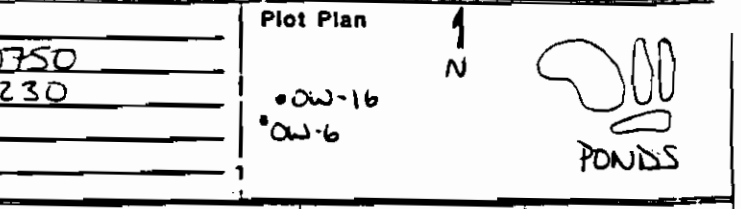
BORING NO. OW-16 (2)
Sheet 1 of 1
Location: WEST END OF SITE

GROUND WATER OBSERVATIONS

Water Level	8.5'	1.0'
Time	0919	0735
Date	12/8	12/10
Casing Depth	10.'	10.'

Weather:
Date/Time Start: 12/8/87 0750
Date/Time Finish: 12/8/87 1230

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0.0	0-2	S-1	2	BROWN CLAY, SOME SAND, TRACE SILT	BENT. PEL. / CEMENT/BENT. GROUT; 2" ID PVC RISER; 3'; 4'	
	REC= 12		3			
			4			
			15			
0.0	2-4	S-2	11			
	REC= 6		13			
			4			
			8			
0.5	4-6	S-3	1			
	REC= 10		1			
			2	WET BROWN & GREY SILT, SOME SAND, TRASH PRESENT.		
			6			
0.0	6-8	S-4	6		#4 Q-ROCK; 2" ID SLOTTED PVC SCREEN; 5'; 10'	S-4: WOOD IN NOSE
	REC= 3		9			
			2			
			4			
0.0	8-10	S-5	7	MOIST BROWN CLAY, SOME SILT.		
	REC= 7		8			
			3			
			10			
				Boring terminated at 10'		

SPT = STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary: SOIL FILL TO 4.5' OVER SOIL AND NON-SOIL FILL TO 8' SILTY CLAY.

2013 Site Characterization Report

SOIL BORING LOG

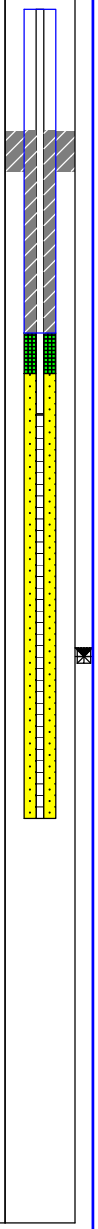
ID NO. **SB-D/OW-21**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	2.7	NA	3.5/4.0'	Gray, Silty Clay. Moist		4" Steel protective standpipe set in concrete
					Tan-Brown, fine to medium Sand, little to some Silt, trace organics. Moist		2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.5		4.0/4.0'	Tan-Brown, fine to medium Sand. Saturated.	Lab sample collected 4-8'.	#00N Silica Sand Filter Sand
		0.1			Brown Clay. Hard.		2" PVC, 10 slot screen 3-8'
10	S#3, 8-12'	0.0		3.0/4.0'		Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

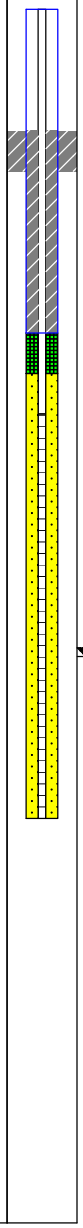
ID NO. **SB-C/OW-22**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	4.1	NA	2.0/4.0'	Fill - Brown, Silty Clay, trace to little f-c Sand & f-c Gravel, trace debris, trace organics. Moist		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	4.7		0/4.0'	No Recovery 4-8'. Collected slough from S#3 for field screening, presumed from 4-8 interval. Slough consisted of a mixture of Fill and sand.		#00N Silica Sand Filter Sand
	S#3, 8-12'	0.4		4.0'/4.0	Brown, Clay, trace Silt. Faint solvent odor. Moist.		2" PVC, 10 slot screen 3-8'
10						Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

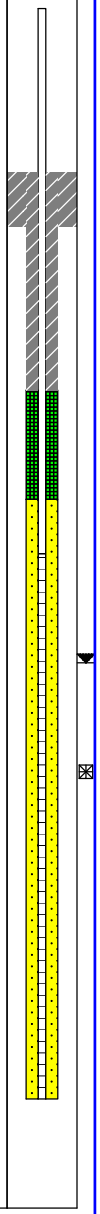
ID NO. **SB-F/MW-23**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	4.0/4.0'	Brown-gray, Silty Clay, trace organics. Moist.		4" Steel protective standpipe set in concrete
		0.5			Black, fine to medium Sand, trace Silt. Moist to wet. Grades to tan from 3-4'.		2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.6		3.0/4.0'	Tan, fine to medium Sand. Wet.	Lab sample collected 4-6'.	#00N Silica Sand Filter Sand
		0.0			Brown, CLAY. Hard.		2" PVC, 10 slot screen 3-8'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

2014 Supplemental Site Characterization Report

SOIL BORING LOG

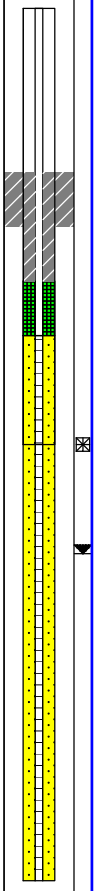
ID NO. **SB-S/OW-31**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/15/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.0	NA	75%	Brown, SILT and CLAY, little f.Sand, tr organics. Wet.		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface
		0.3			Tan-brown, f-m SAND, little Silt. Moist to wet.	Lab sample collected 1-3'.	Hydrated bentonite chips
5	S#2, 4-8'	0.0		100%	Brown, hard CLAY. Moist.		#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 1-6'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

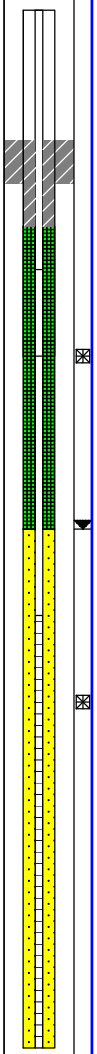
ID NO. **SB-T/OW-32**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/15/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	75%	FILL - Brown, Silty CLAY w/Debris. Debris includes metal, plastic, glass. Shiny metallic balls, size of coarse sand.	Lab sample collected 0-3'	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
		0.3			Tan, f-m SAND, tr Silt. Moist		
5	S#2, 4-8'	0.4		100%	Brown, f.Silty SAND. Grades to grey at 6-7 ftbg. Wet. Slight odor observed.	Lab sample collected 4-8'	#00N Silica Sand Filter Sand
	S#3, 8-12'	0.0		100%	Grey, f.SAND, tr Silt. Wet.		
10					Grey, hard CLAY. Moist.		2" PVC, 10 slot screen 5-10'



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

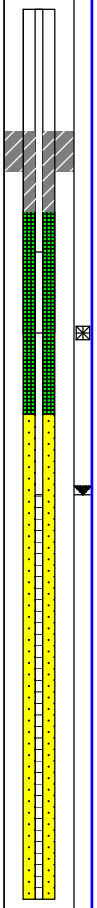
ID NO. **SB-W/OW-33**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/16/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	50%	FILL - 6" Clayey Silt topcover, over glass, plastic, ash, cinders, sand & gravel, tile, wood. Dry to Moist.	Lab sample collected 0-3'	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.1		90%	Tan-brown, fine SAND. Contains trace seashells (clams) Wet. Grades to f-m Sand at 6 ftbg.	Lab sample collected 4-8'	#00N Silica Sand Filter Sand
	S#3, 8-12'	0.0		100%			2" PVC, 10 slot screen 4-9'
10		0.0			Grey, hard CLAY. Moist.	Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

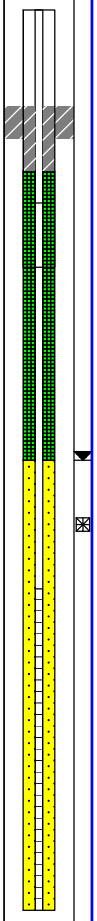
ID NO. **SB-Y/OW-34**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **16 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	100%	Brown, Sandy SILT, tr Clay, tr organics. Dry.		4" Steel protective standpipe set in 2' PVC riser to approx 2 ft above surface
					Dark brown, fine SAND. Moist.		
					Brown, Clayey SILT, tr-little f.SAND. Dry to moist.		
	S#2, 4-8'	0.3		100%	Grey-brown, silty f.SAND. Moist.		Hydrated bentonite chips
5					Grey-brown, f-m SAND. Wet-saturated.	Lab sample collected 5-7'	
					Grey-brown, silty f.SAND. Moist.		
	S#3, 8-12'	0.4		75%	Grey-brown, f-m SAND. Wet-saturated.		#00N Silica Sand Filter Sand
10		0.2					
	S#4, 12-16'			100%			2" PVC, 10 slot screen 7-12'
15					Brown, Hard CLAY. Moist.		
						Boring Terminated at 16'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

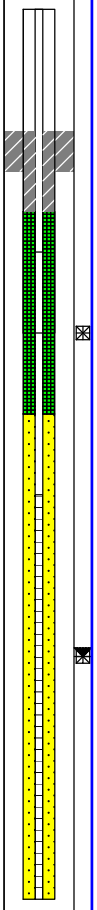
ID NO. **SB-BB/OW-35**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.6	NA	75%	Brown, Clayey SILT, tr-little f-c Sand, tr organics, tr brick fragments, tr glass fragments. Dry.		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface
5	S#2, 4-8'	1.9		100%	Grey-brown, f-m SAND, tr Silt. Moist to wet. Wet at 6 ftbg.	Lab sample collected 5-7'	Hydrated bentonite chips
	S#3, 8-12'	0.0		80%			#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 4-9'
10					Brown, Hard CLAY. Moist.		
						Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

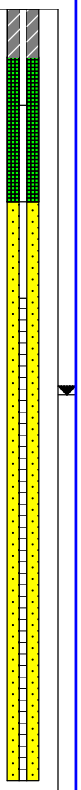
ID NO. **SB-DD/OW-36**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	9.3	NA	40%	FILL - Brown, Clayey SILT, tr-little debris (glass, metal, plastic, wood), some f-c Sand. Moist. Slight solvent odor.		Hydrated bentonite chips
	S#2, 4-8'	15.8		10%		Lab sample collected 4-8'.	
5					Grey, f-m SAND. Wet. Slight solvent odor.		#00N Silica Sand Filter Sand
	S#3, 8-12'	1.2		100%	Brown, hard, CLAY. Moist.		2" PVC, 10 slot screen 4-9'
10						Boring Terminated at 12 ftbg.	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

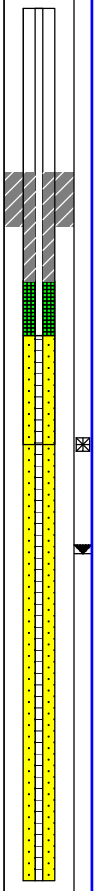
ID NO. **SB-II/OW-37**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/21/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.5	NA	50%	FILL - brown to black, clayey silt w/debris - plastic, metal, glass, cinders. Moist.	Lab sample collected 1-3'.	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
	S#2, 4-8'	0.5		90%	Black-brown, f-m SAND, tr-little clayey Silt. Wet.		
5		0.0			Brown, hard CLAY. Moist.		#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 1-6'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

2017 Remedial Investigation

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Brian Delude

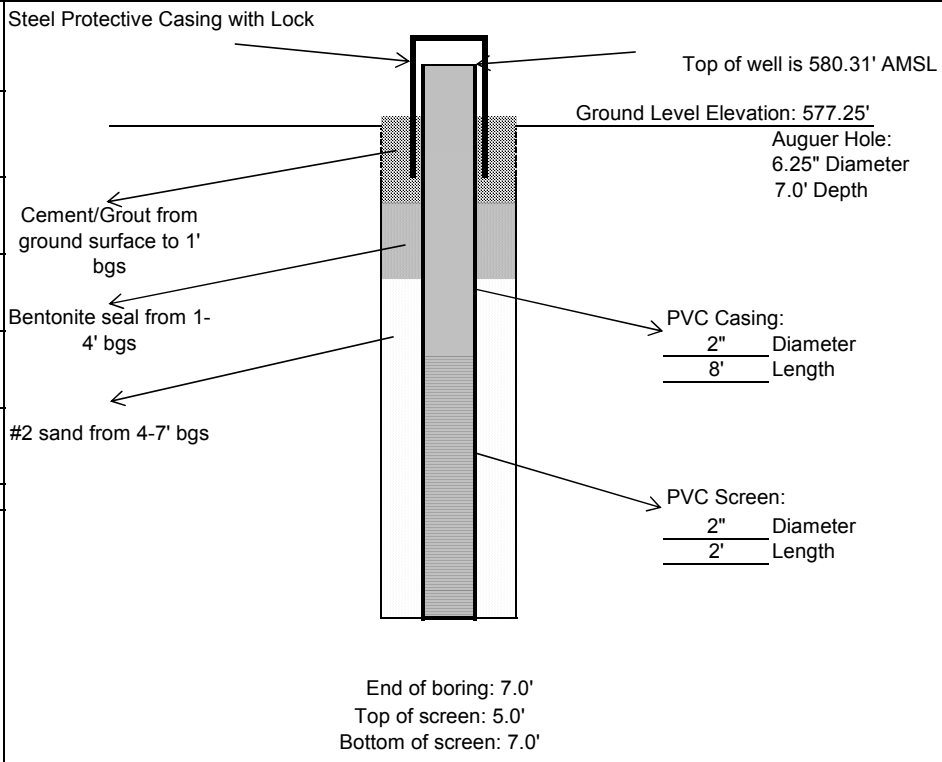
Rig Make/Model:
Diedrich D-50

Date:
8/15/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 4'-7' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 4' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 4', bentonite seal from 4' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-01S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

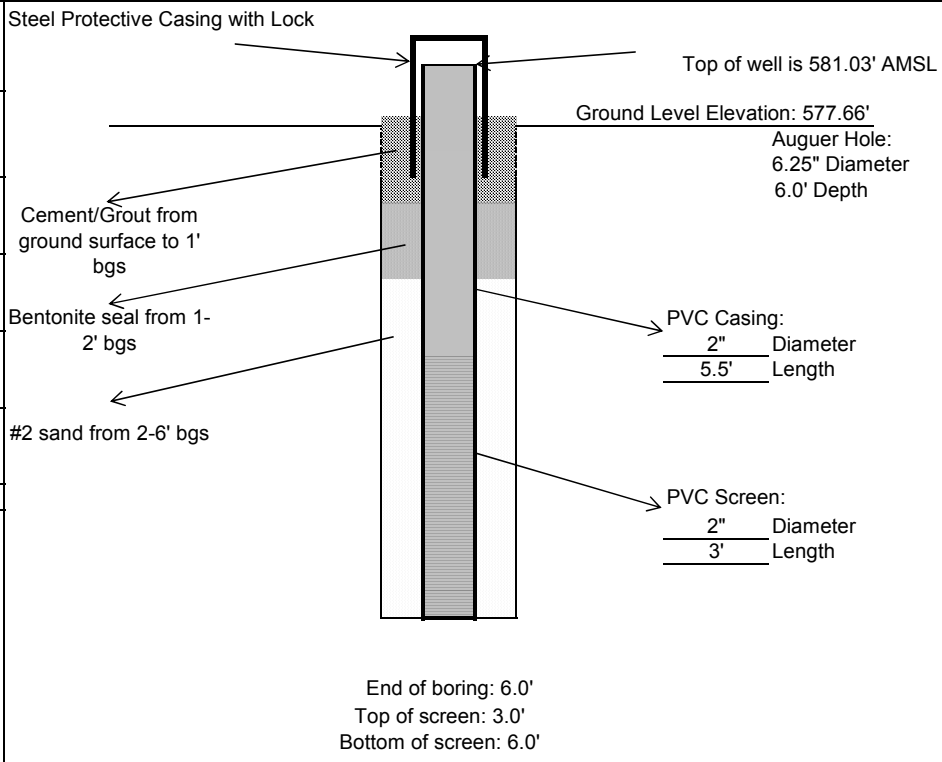
Rig Make/Model:
N/A

Date:
7/27/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-6' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 6.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 6' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-02S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

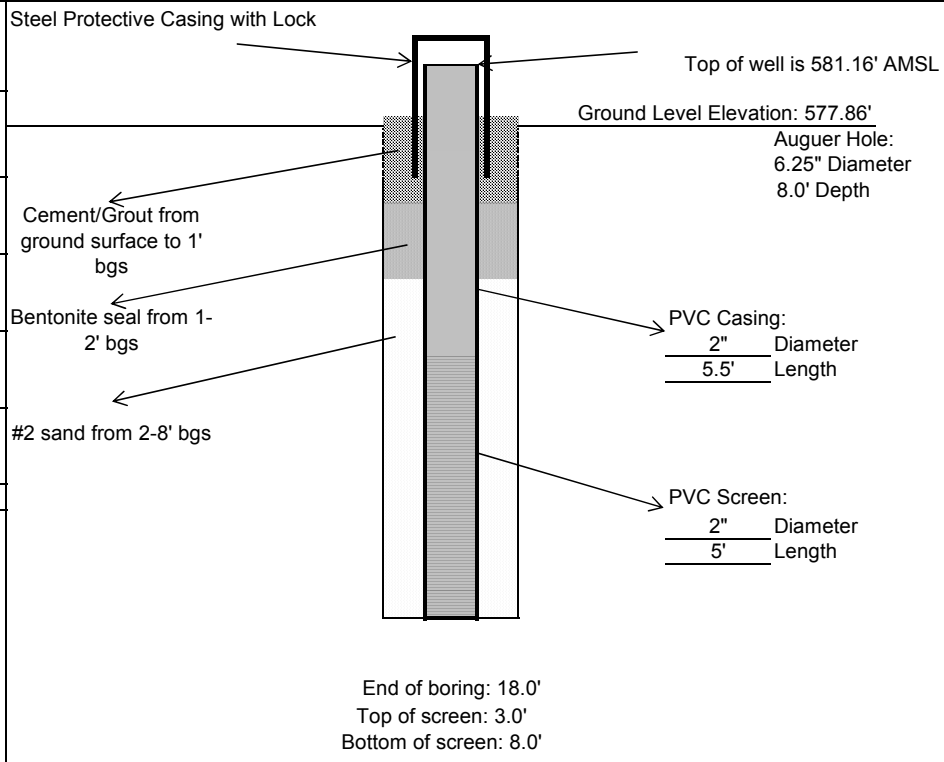
Rig Make/Model:
N/A

Date:
7/25/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See Boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-8' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 18.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 8' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-03S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

Rig Make/Model:
N/A

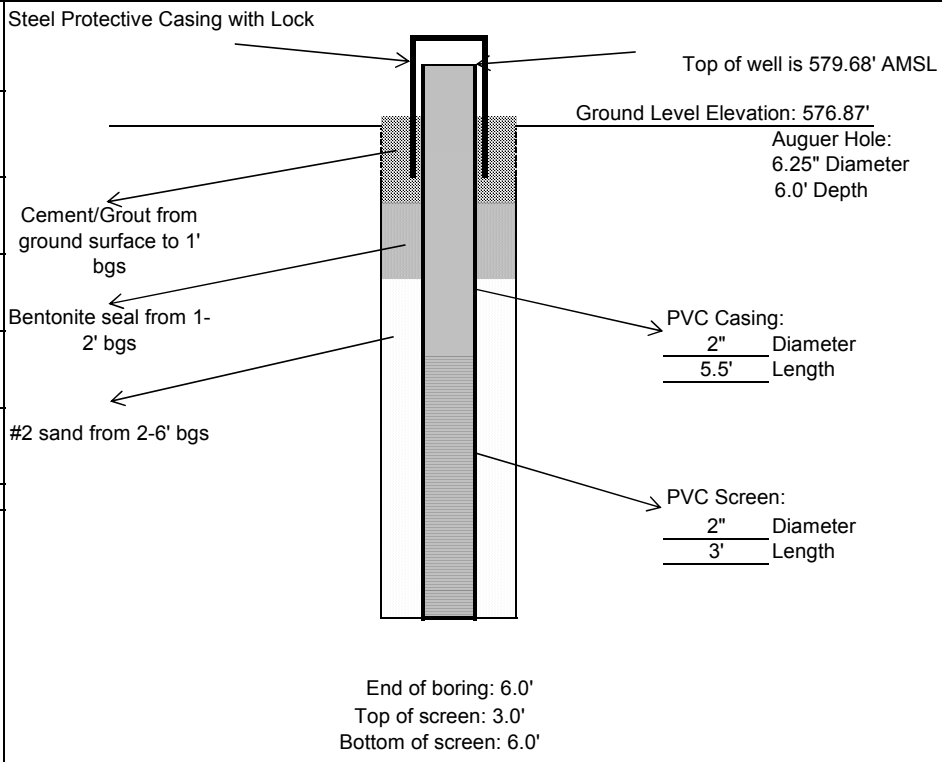
Date:
7/26/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-6' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 6.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 6' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-04S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

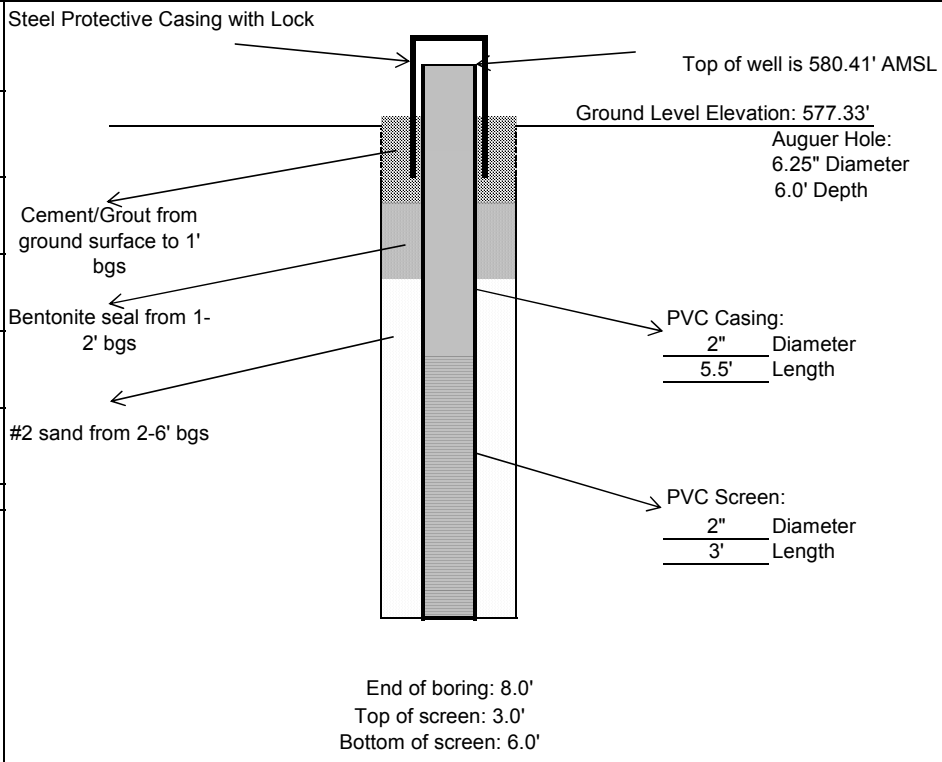
Rig Make/Model:
N/A

Date:
7/25/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-6' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 8.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 6' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-05S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

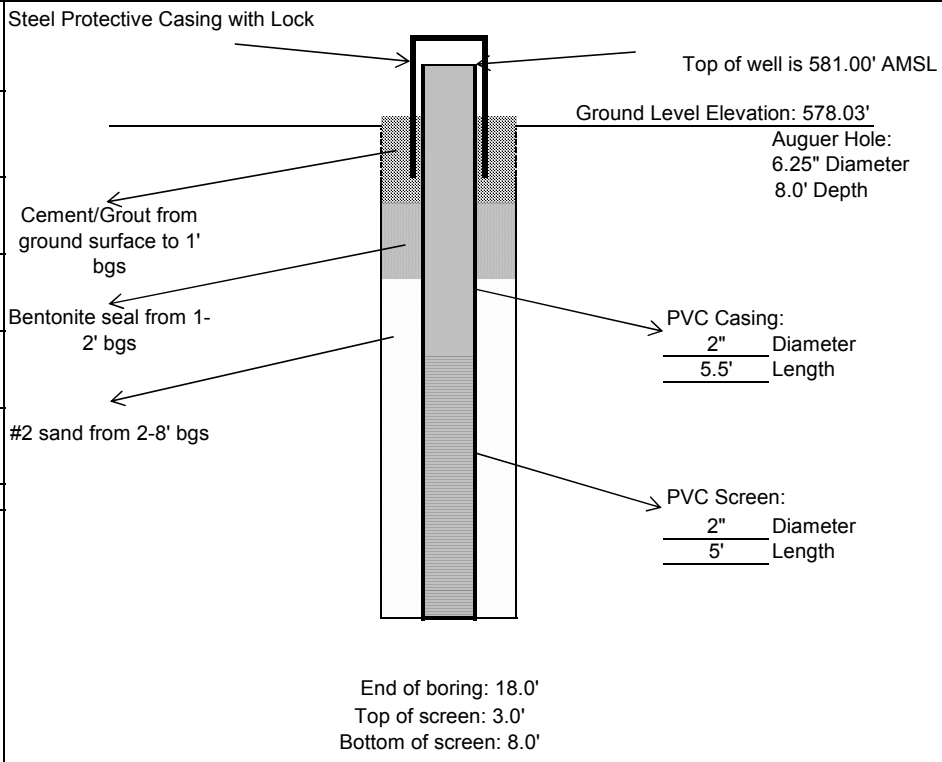
Rig Make/Model:
N/A

Date:
7/26/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boing log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-8' bgs
		SEAL MATERIAL
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	Type: Bentonite Setting: 1'- 2' bgs
		Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 18.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 8' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-06S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

Rig Make/Model:
N/A

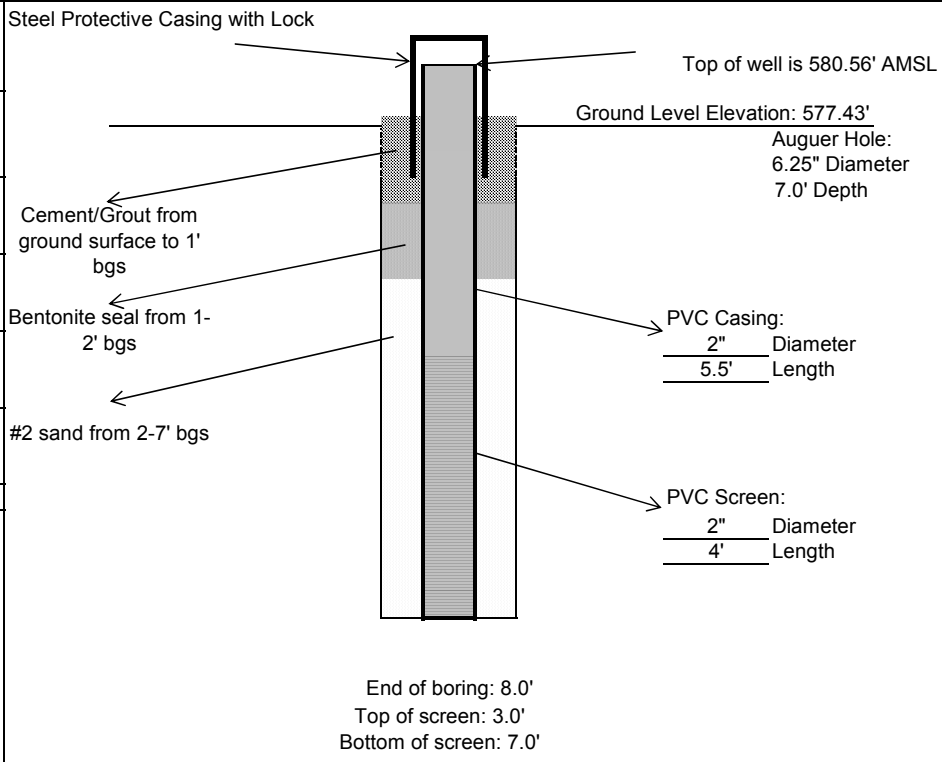
Date:
7/26/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-7' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-07S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Brian Delude

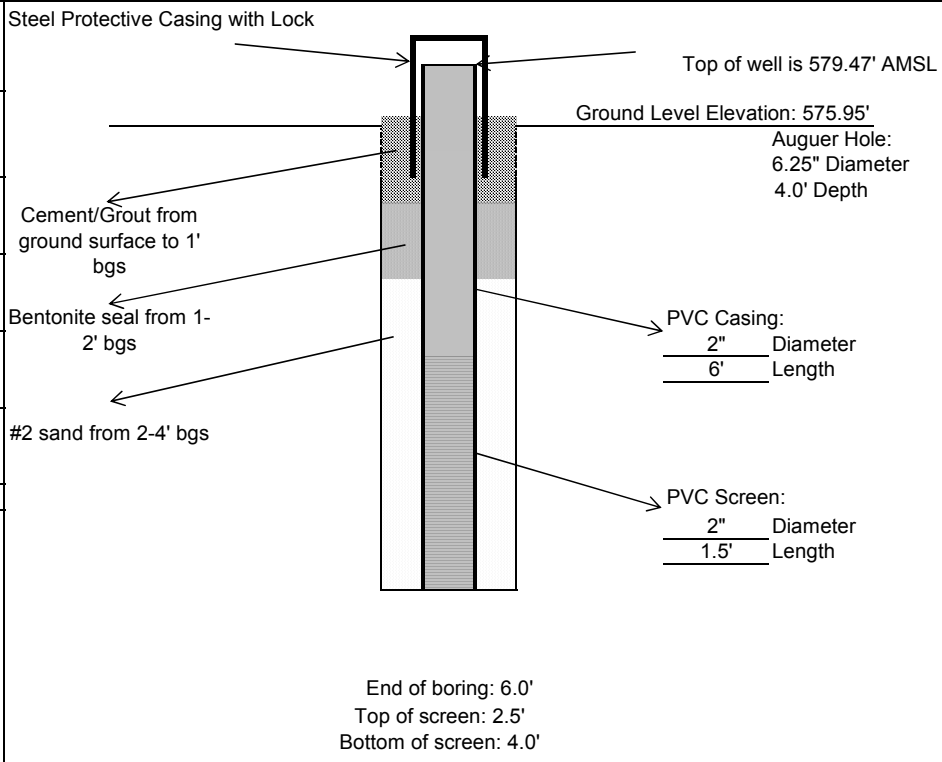
Rig Make/Model:
Diedrich D-50

Date:
8/15/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



End of boring: 6.0'
Top of screen: 2.5'
Bottom of screen: 4.0'

NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-4' bgs
		SEAL MATERIAL
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	Type: Bentonite Setting: 1'- 2' bgs
		Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 4.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 4' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-08S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

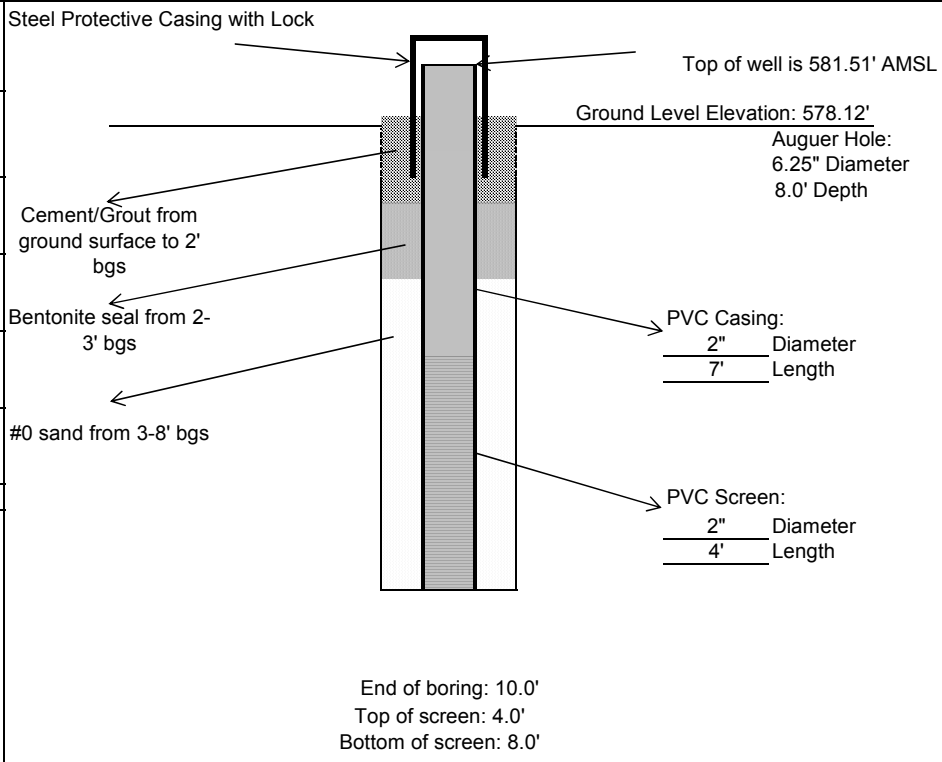
Rig Make/Model:
CME 550X

Date:
9/13/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



End of boring: 10.0'
Top of screen: 4.0'
Bottom of screen: 8.0'

NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 3'-8' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2'- 3' bgs Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 8.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 8' to 3', bentonite seal from 3' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-09S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

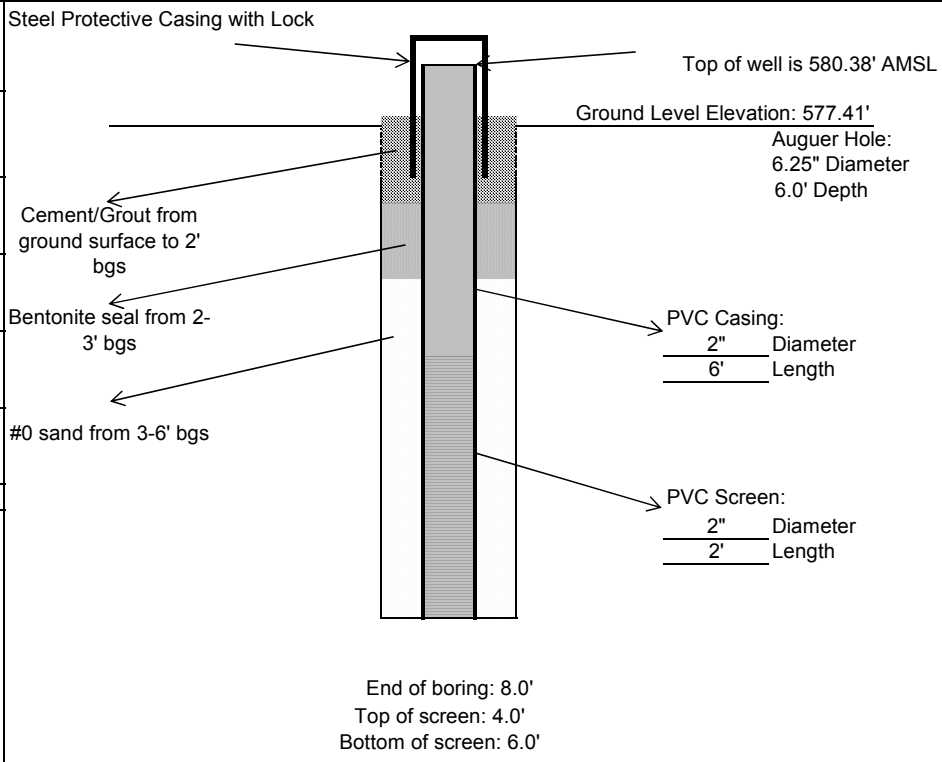
Rig Make/Model:
CME 550X

Date:
9/14/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring logs

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 3'-6' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2'- 3' bgs Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 6.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 6' to 3', bentonite seal from 3' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-10S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

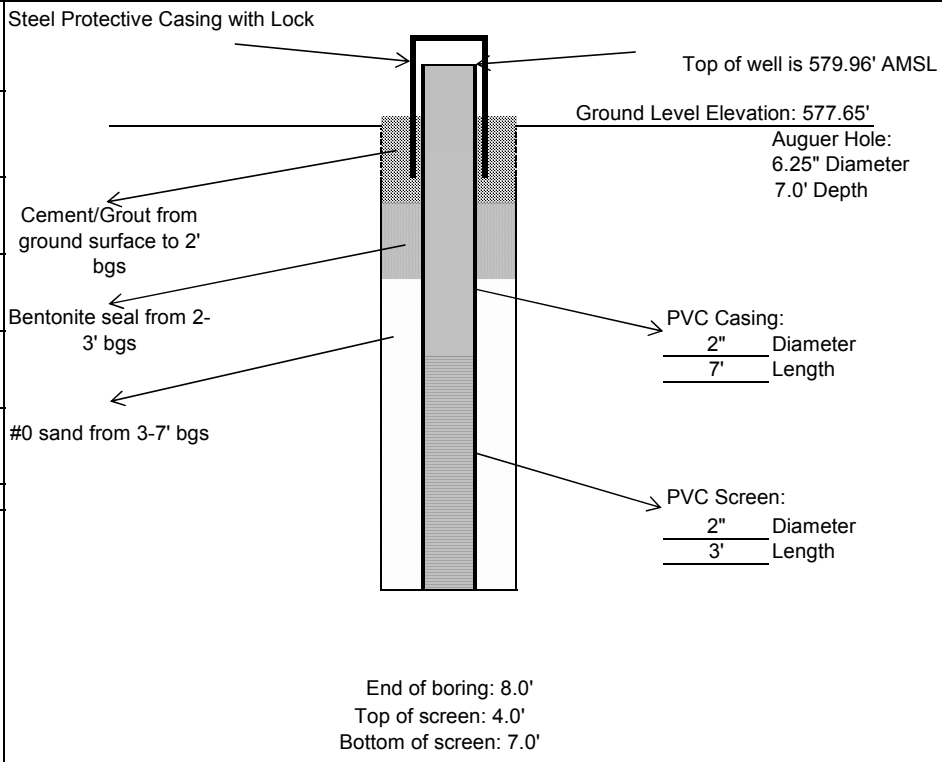
Rig Make/Model:
CME 550X

Date:
9/13/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring logs

MONITORING WELL CONSTRUCTION LOG



End of boring: 8.0'
Top of screen: 4.0'
Bottom of screen: 7.0'

NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 3'-7' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2'- 3' bgs Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 3', bentonite seal from 3' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-11S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

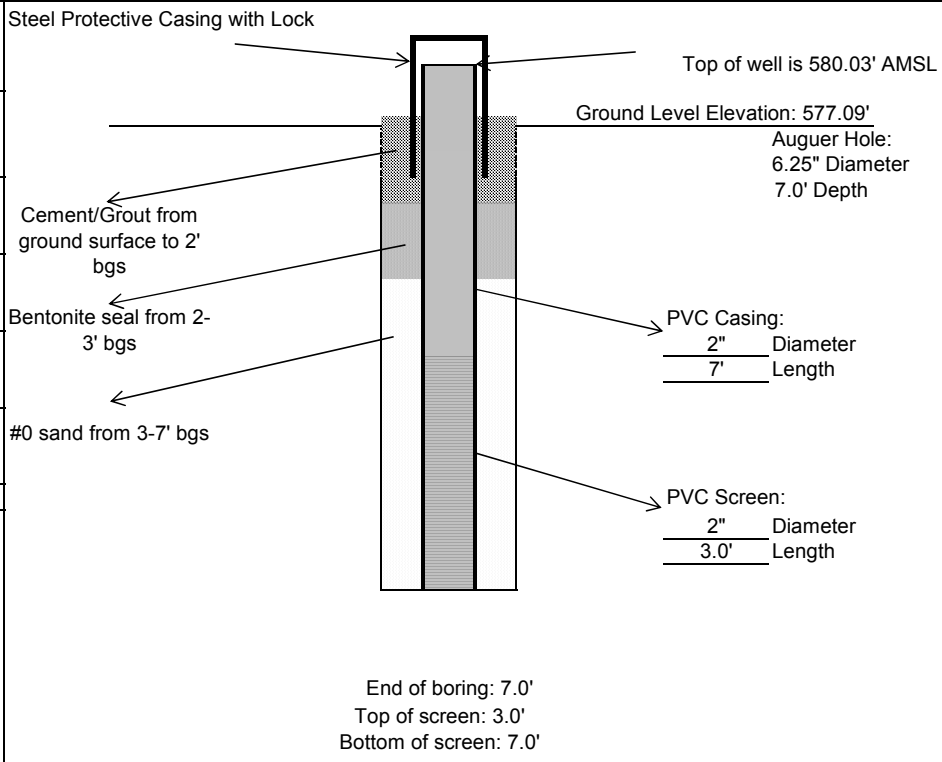
Rig Make/Model:
CME 550X

Date:
9/13/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 3'-7' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2'- 3' bgs Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 3', bentonite seal from 3' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-12S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

Rig Make/Model:
CME 550X

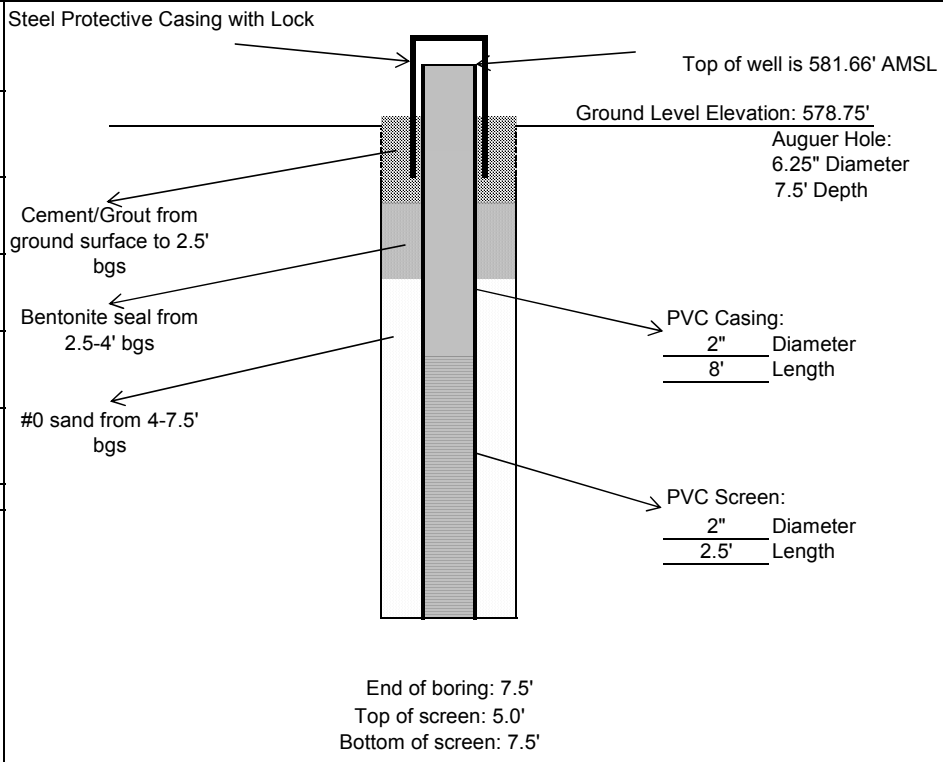
Date:
9/13/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 4'-7.5' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2.5'- 4' bgs Type: Cement Grout Setting: 0' - 2.5' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.5' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7.5' to 4', bentonite seal from 4' to 2.5' and slurry mix from 2.5' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-13S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Brian Delude

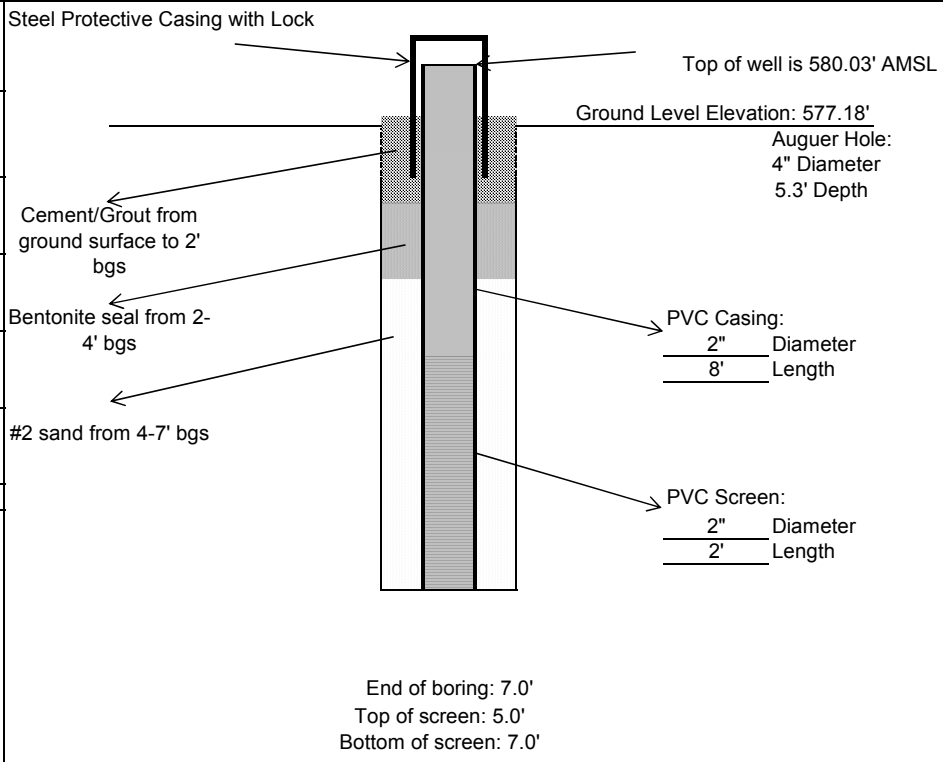
Rig Make/Model:
Diedrich D-50

Date:
8/15/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 4'-7' bgs
		SEAL MATERIAL
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	Type: Bentonite Setting: 2'- 4' bgs
		Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 4', bentonite seal from 4' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **OW-14BR**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Eric Miller

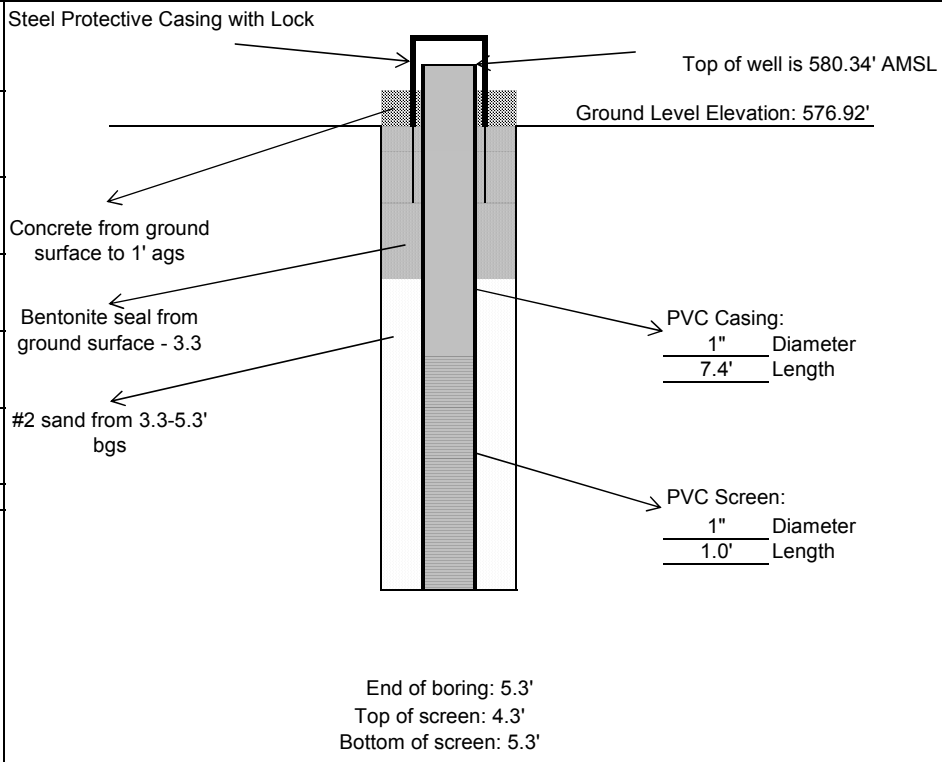
Rig Make/Model:
Hand Auger

Date:
8/24/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



End of boring: 5.3'
Top of screen: 4.3'
Bottom of screen: 5.3'

NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.3'-5.3' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 3.3' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.3' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.3' to 3.3', bentonite seal from 3.3' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-01**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Eric Miller

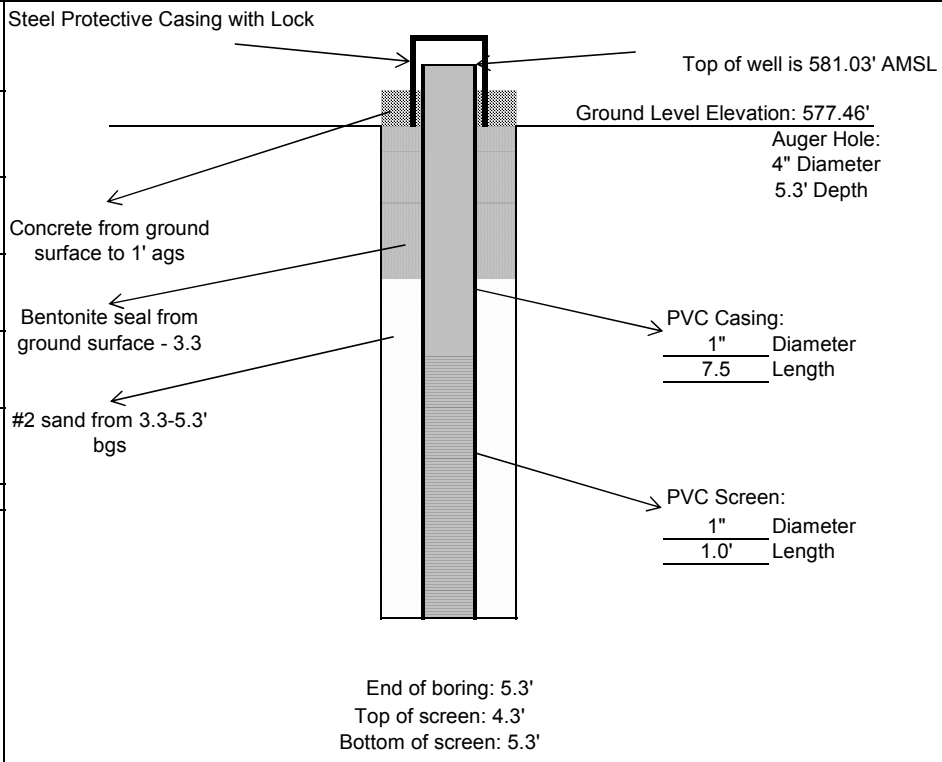
Rig Make/Model:
Hand Auger

Date:
8/24/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.3'-5.3' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 3.3' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.3' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.3' to 3.3', bentonite seal from 3.3' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-02**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Andrew Koons

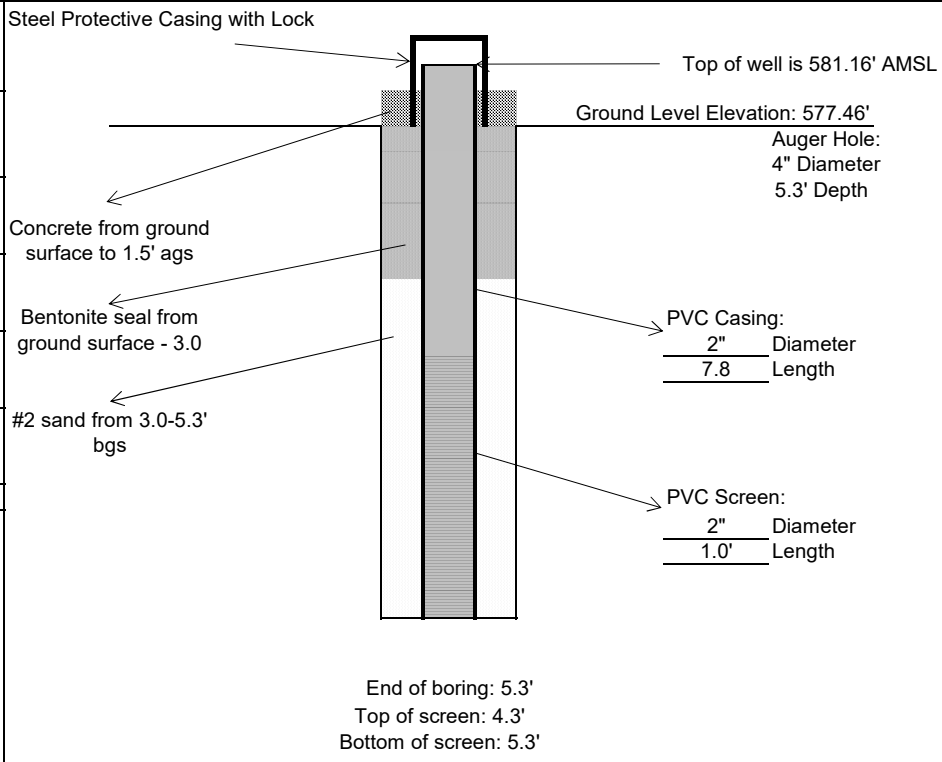
Rig Make/Model:
Hand Auger

Date:
11/20/2019

GEOLOGIC LOG

Depth (ft.)	Description

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.3'-5.3' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 3.3' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.3' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.3' to 3.0', bentonite seal from 3.0' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-02R**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Eric Miller

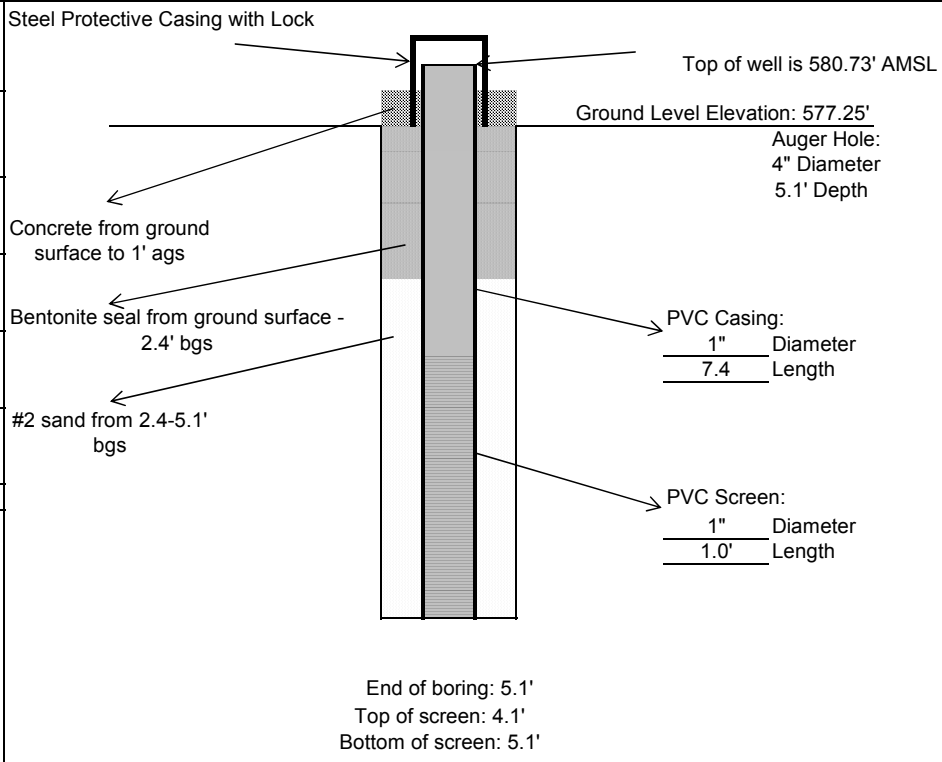
Rig Make/Model:
Hand Auger

Date:
8/24/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring logs

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 2.4'-5.1' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 2.4' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.1' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.1' to 2.4', bentonite seal from 2.4' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-03**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Eric Miller

Rig Make/Model:
Hand Auger

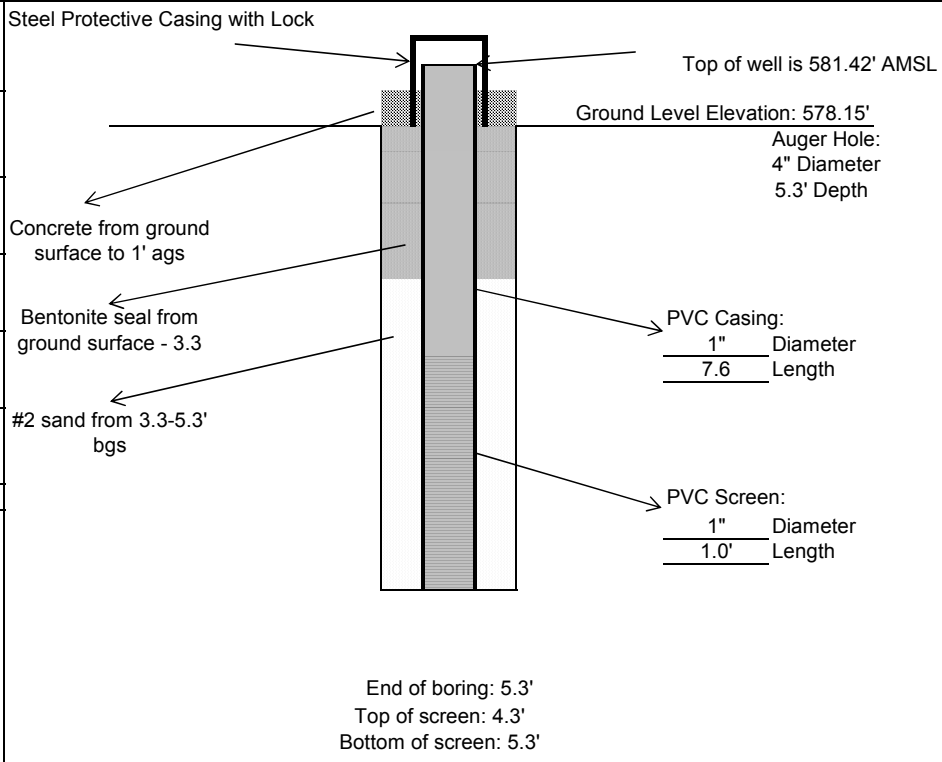
Date:
8/24/2017-8/25/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.3'-5.3' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 3.3' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.3' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.3' to 3.3', bentonite seal from 3.3' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-04**

APPENDIX B
2019/2020 GROUNDWATER PURGE AND SAMPLE LOGS

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-01

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 1/9/2020

Staff: BW DH
(person who collected the sample)

Time: 12:30
(sample collected)

A). Total casing and screen length in feet: 11.40

B). Water level below top of casing in feet: 2.90

C). Number of feet standing water [A-B]: 8.50

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 1.445

F). Volume of water to remove (gal.) [Ex3]: 4.3

G). Volume of water actually removed (gal.): 1.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:00	3.21	7.89	-30	1.170	265.0	5.50	NR	slightly turbid
12:10	**2.43**	**8.12**	**-53**	**1.040**	**118.0**	**8.70**	**NR**	**slightly turbid**

Comments: **Bold readings are sampling parameters**

Sampling ID: OW-01

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-14B

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019

Staff: DS DH
(person who collected the sample)

Time: 14:20
(sample collected)

A). Total casing and screen length in feet: Not Recorded

B). Water level below top of casing in feet: 5.45

C). Number of feet standing water [A-B]:

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]:

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:03	14.70	7.69	74	3.430	>1000	9.71	NR	very turbid
14:08	13.72	7.54	-22	3.070	146.0	8.88	NR	slightly turbid
14:13	13.4	7.6	-2	3.130	6.0	7.37	NR	clear
14:18	**13.50**	**7.62**	**-2**	**3.150**	**0.0**	**10.54**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**

Sampling ID: OW-14B

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-14BR

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 10:45
(sample collected)

A). Total casing and screen length in feet: 9.56

B). Water level below top of casing in feet: 6.95

C). Number of feet standing water [A-B]: 2.61

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.4437

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:25	12.08	7.81	-33	2.180	0.0	5.80	NR	clear
10:30	12.05	7.73	-37	2.140	0.0	7.06	NR	clear
10:35	12.64	7.6	-24	2.210	0.0	6.88	NR	clear
10:40	**12.74**	**7.52**	**-16**	**2.200**	**0.0**	**6.29**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**

Sampling ID: OW-14BR

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-16

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019-10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 13:15
(sample collected)

A). Total casing and screen length in feet: 12.80

B). Water level below top of casing in feet: 9.92

C). Number of feet standing water [A-B]: 2.88

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.4896

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:15	12.65	7.26	-9	2.770	36.3	8.16	NR	clear
12:20	**12.74**	**7.51**	**-62**	**2.810**	**13.4**	**7.11**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled
VOCs and SVOCs samples on 10/24, Pesticides and metals sampled on 10/25

Sampling ID: OW-16

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-21

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019-10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 13:10
(sample collected)

A). Total casing and screen length in feet: 10.19

B). Water level below top of casing in feet: 8.40

C). Number of feet standing water [A-B]: 1.79

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.304

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:02	13.54	7.49	-27	2.990	101.0	17.00	NR	slightly turbid
11:07	**13.11**	**7.28**	**-39**	**2.890**	**737.0**	**14.81**	**NR**	**very turbid**

Comments: **Bold readings are sampling parameters**
VOCs and SVOCs samples on 10/23, Pesticides, PCBs and metals sampled on 10/24

Sampling ID: OW-21

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-31

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 1/9/2020

Staff: BW DH
(person who collected the sample)

Time: 11:30
(sample collected)

A). Total casing and screen length in feet: 8.40

B). Water level below top of casing in feet: 3.80

C). Number of feet standing water [A-B]: 4.60

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.782

F). Volume of water to remove (gal.) [Ex3]: 2.35

G). Volume of water actually removed (gal.): 1.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:00	0.42	7.29	-10	0.509	558.0	0.00	NR	turbid
11:20	**1.52**	**8.12**	**-53**	**0.484**	**475.0**	**11.70**	**NR**	**turbid**

Comments: **Bold readings are sampling parameters**

Sampling ID: OW-31

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-35

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 13:40
(sample collected)

A). Total casing and screen length in feet: 12.30

B). Water level below top of casing in feet: 8.48

C). Number of feet standing water [A-B]: 3.82

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.649

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:50	12.04	7.43	-50	2.280	>1000	9.80	NR	very turbid
10:55	12.20	7.30	-82	2.190	32.0	9.15	NR	clear
11:00	**12..22**	**7.55**	**-65**	**2.180**	**27.7**	**9.69**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**

Sampling ID: OW-35

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-36

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 12:00
(sample collected)

A). Total casing and screen length in feet: 10.30

B). Water level below top of casing in feet: 7.54

C). Number of feet standing water [A-B]: 2.76

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.469

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:22	12.06	7.17	-45	1.420	67.2	5.50	NR	clear
11:27	12.06	7.13	-93	1.470	5.9	7.13	NR	clear
11:32	12.08	7.21	-87	1.530	5.2	6.88	NR	clear
11:40	**12.20**	**7.04**	**-84**	**1.560**	**30.3**	**11.06**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled.
Sulfur odor noted.

Sampling ID: OW-36

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-37

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 12:00
(sample collected)

A). Total casing and screen length in feet: 8.80

B). Water level below top of casing in feet: 7.00

C). Number of feet standing water [A-B]: 1.80

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.306

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:00	11.49	7.54	19	2.120	16.6	9.84	NR	clear
10:05	**11.45**	**7.46**	**-70**	**2.010**	**0.0**	**13.03**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled.

Sampling ID: OW-37

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-01S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019

Staff: DS DH
(person who collected the sample)

Time: 14:45
(sample collected)

A). Total casing and screen length in feet: 9.94

B). Water level below top of casing in feet: 5.98

C). Number of feet standing water [A-B]: 3.96

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.673

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:37	13.59	7.42	28	2.140	0.0	6.03	NR	clear
14:42	13.56	7.48	9	2.070	0.0	8.81	NR	clear
14:47	13.50	7.5	3	2.070	0.0	9.88	NR	clear
14:52	**13.50**	**7.56**	**-1**	**2.080**	**0.0**	**7.27**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
MS/MSD sample taken at this location
Sulfur odor noted.

Sampling ID: LPZ-01S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-03S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/22/2019

Staff: DS
(person who collected the sample)

Time: 10:00
(sample collected)

A). Total casing and screen length in feet: 10.74

B). Water level below top of casing in feet: 8.63

C). Number of feet standing water [A-B]: 2.11

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.359

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:17	14.48	6.97	-3	1.370	0.0	12.56	NR	clear
8:23	15.03	6.85	-9	1.390	0.0	3.94	NR	clear
8:28	**14.82**	**6.89**	**-14**	**1.400**	**0.0**	**4.84**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Duplicate sample taken at this location
Well purged dry then sampled.

Sampling ID: LPZ-03S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-04S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/22/2019

Staff: DS
(person who collected the sample)

Time: 14:00
(sample collected)

A). Total casing and screen length in feet: 9.06

B). Water level below top of casing in feet: 6.55

C). Number of feet standing water [A-B]: 2.51

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.427

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:23	15.80	7.18	122	4.510	113.0	13.55	NR	clear
13:40	15.44	7.30	114	4.650	68.0	13.32	NR	clear
13:50	**15.53**	**7.43**	**100**	**4.510**	**7.8**	**11.47**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**

Sampling ID: LPZ-04S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-05S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/22/0219

Staff: DS DH
(person who collected the sample)

Time: 14:40
(sample collected)

A). Total casing and screen length in feet: 9.19

B). Water level below top of casing in feet: 7.24

C). Number of feet standing water [A-B]: 1.95

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.332

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:08	15.23	7.04	2	2.660	2.7	4.14	NR	clear
14:20	14.98	7.16	-35	2.480	41.6	6.29	NR	clear
14:30	**15.07**	**7.40**	**17**	**2.510**	**18.9**	**12.36**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled.

Sampling ID: LPZ-05S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-06S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019

Staff: DS DH
(person who collected the sample)

Time: 9:00
(sample collected)

A). Total casing and screen length in feet: 10.88

B). Water level below top of casing in feet: 6.35

C). Number of feet standing water [A-B]: 4.53

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.770

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:28	12.35	7.02	115	1.550	3.9	7.31	NR	clear
8:33	12.33	6.93	111	1.560	0.0	15.97	NR	clear
8:38	12.27	7.2	109	1.580	0.0	15.75	NR	clear
8:43	12.61	7.18	104	1.610	4.4	11.03	NR	clear
8:48	**12.85**	**7.31**	**102**	**1.620**	**39.9**	**14.80**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
MS/MSD sample taken at this location

Sampling ID: LPZ-06S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-08S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 14:45
(sample collected)

A). Total casing and screen length in feet: 7.20

B). Water level below top of casing in feet: 5.50

C). Number of feet standing water [A-B]: 1.70

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.289

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:03	12.50	6.86	-23	4.770	205.0	8.18	NR	slightly turbid
10:08	12.84	7.10	-71	4.140	1.5	11.45	NR	clear
10:15	12.79	7.1	-58	4.150	0.0	5.91	NR	clear
10:18	**12.99**	**6.92**	**-53**	**4.170**	**0.0**	**5.91**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
MS/MSD sample taken at this location
Sulfur odor noted.

Sampling ID: LPZ-08S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-11S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 10:15
(sample collected)

A). Total casing and screen length in feet: 9.80

B). Water level below top of casing in feet: 5.90

C). Number of feet standing water [A-B]: 3.90

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.663

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:52	12.52	7.79	135	1.300	2.0	8.18	NR	very turbid
9:57	12.65	7.61	134	1.470	0.0	8.80	NR	turbid
10:02	12.74	7.6	118	1.490	0.0	10.88	NR	clear
10:07	12.74	7.57	96	1.480	0.0	11.69	NR	clear
10:12	**12.74**	**7.55**	**70**	**1.490**	**0.0**	**14.43**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Duplicate sample taken at this location.

Sampling ID: LPZ-11S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-12S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 9:30
(sample collected)

A). Total casing and screen length in feet: 10.00

B). Water level below top of casing in feet: 6.02

C). Number of feet standing water [A-B]: 3.98

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.6766

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:00	9.64	7.70	44	1.640	>1000	7.99	NR	very turbid
9:15	10.45	7.43	-61	1.150	469.0	8.65	NR	turbid
9:20	10.31	7.4	-66	1.510	55.8	8.80	NR	clear
9:25	**11.13**	**7.26**	**-80**	**1.520**	**20.6**	**13.09**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Duplicate sample taken at this location.

Sampling ID: LPZ-12S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LDP-01

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019

Staff: DS DH
(person who collected the sample)

Time: 15:20
(sample collected)

A). Total casing and screen length in feet: 8.36

B). Water level below top of casing in feet: 4.78

C). Number of feet standing water [A-B]: 3.58

D). Volume of water/foot of casing (gal.): 0.04

E). Volume of water in casing (gal. [CxD]: 0.1432

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
1:40	**13.96**	**8.09**	**74**	**1.910**	**527.0**	**16.12**	**NR**	**slightly turbid**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled

Sampling ID: LDP-01

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LDP-02R

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 1/9/2020

Staff: BW DH
(person who collected the sample)

Time: 10:30
(sample collected)

A). Total casing and screen length in feet: 8.82

B). Water level below top of casing in feet: 4.59

C). Number of feet standing water [A-B]: 4.23

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.719

F). Volume of water to remove (gal.) [Ex3]: 2.16

G). Volume of water actually removed (gal.): 1.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:00	-1.14	8.10	40	0.595	303.0	16.40	NR	slightly turbid
10:20	**-0.64**	**7.06**	**106**	**0.463**	**282**	**0**	**NR**	**slightly turbid**

Comments: **Bold readings are sampling parameters**

Sampling ID: LDP-02R

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LDP-03

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 15:00
(sample collected)

A). Total casing and screen length in feet: 7.75

B). Water level below top of casing in feet: 7.03

C). Number of feet standing water [A-B]: 0.72

D). Volume of water/foot of casing (gal.): 0.04

E). Volume of water in casing (gal. [CxD]: 0.0288

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:30	**12.41**	**8.33**	**124**	**1.180**	**>1000**	**13.20**	**NR**	**turbid**

Comments: **Bold readings are sampling parameters**
Only enough water for VOC samples

Sampling ID: LDP-03

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LDP-04**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 12/10/2019

Staff: A. Koons, D. Henson

Time: 15:00 (sample collected)

A). Total casing and screen length in feet: 8.62

B). Water level below top of casing in feet: 4.90

C). Number of feet standing water [A-B]: 3.72

D). Volume of water/foot of casing (gal.): 0.04

E). Volume of water in casing (gal.) [CxD]: 0.15

F). Volume of water to remove (gal.) [Ex3]: 0.45

G). Volume of water actually removed (gal.): 0.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:57	**6.34**	**7.30**	**-110**	**1.36**	**97**	**14.36**	**NR**	**clear**

Comments:
Bold readings are sampling parameters

Sampling ID: LDP-04

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)