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CBS Corporation

Environmental Remediation
National City Center
20 Stanwix Street, 10th Floor
Pittsburgh, PA 15222

September 4, 2009

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William P. Murray, P.E.
Environmental Engineer I
New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation
Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

Re: Letter Report, Phase 1 Closure of 001 Segment of Groundwater Collection System, NYSDEC Site 9-15-066, Cheektowaga, New York

Dear Mr. Murray:

On behalf of the Respondents to the Order on Consent and Settlement Agreement, Index No. B9-0381-91-8 (the "Order"), CBS Corporation (CBS) submits this letter report describing the field activities and results of monitoring performed to date relative to the Phase 1 closure of the 001 segment of the groundwater collection system at New York State Department of Environmental Conservation (NYSDEC) Site No. 9-15-066 in Cheektowaga, New York (the "Site"). Pursuant to an Agreement among the Respondents, CBS is managing the Remedial Program defined in the Order.

Under contract to CBS, Conestoga-Rovers & Associates (CRA) conducted the described Phase 1 closure activities in accordance with the *Revised Work Plan, Partial Closure of Groundwater Collection System*, dated November 7, 2008 (the "Work Plan"), as clarified in correspondence to NYSDEC dated February 27, 2009. The work was completed with the cooperation and assistance of the Niagara Frontier Transportation Authority (NFTA) to allow the needed access to controlled areas of the Buffalo-Niagara International Airport. Figure 1 provides a Site plan showing the groundwater collection system and monitoring wells at the Site.

MANHOLE CLOSURE

The Phase 1 closure of the 001 groundwater collection system involved the permanent sealing of manholes MH-001-02 and MH-001-06 following the procedures described in the Work Plan. These manholes are located midway along the 001 segment profile and are the

nearest upstream manholes above locations where water levels had, over the nine years of operation of the groundwater collection system, risen to levels that were less than about 4 feet below the ground surface (ft-bgs). Sealing these manholes was designed to split the 001 segment of the collection system, separating the upper portions, where water levels remained relatively deep below grade (*i.e.*, greater than 4 ft-bgs) from the lower portions where water levels are near or at the ground surface. Closure involved both filling the manholes and sealing permeable pipe bedding materials around the outside of the manholes. Also, in accordance with the Work Plan, an additional groundwater monitoring well, MW-35, was installed just downstream of the pumping sump for the 001 segment of the collection system (*i.e.*, CSMH-001 or "Sump 001").

CEMENTING OF MANHOLES

On July 17, 2009, manholes MH-001-02 and MH-001-06 were filled with Portland cement concrete to levels at least one foot above the highest crown elevation of the associated manhole piping. The concrete was placed using a pumper truck to introduce the concrete into the bottom of the manhole through a 4-inch flexible hose and tremie pipe. The concrete was supplied by Great Lakes Concrete of Cheektowaga. The mix was specified with a 2.5- to 3-inch slump and contained one percent of an accelerating admixture (*i.e.*, Pozzutec 20) to speed the rate of hardening. Approximately 10 cubic yards of concrete were placed in MH-001-02, and approximately 14 cubic yards were placed in MH-001-06. The final measured top of concrete in MH-001-02 is 11.5 feet below the top of the rim, compared to the original measured manhole depth of 22.2 feet below the rim. The final measured top of concrete in MH-001-06 is 7.6 feet below the top of the rim, whereas the original measured manhole depth was 18.8 feet below the rim.

GROUTING OF MANHOLE BEDDING

Over the period of July 14 to July 20, 2009, CRA and its subcontractor SJB Services, Inc. (SJB), injected cement-bentonite grout into the bedding around the upstream and downstream pipe entries into the MH-001-02 and MH-001-06 manholes. This grouting was designed to plug the bedding and provide a barrier to migration of groundwater along the exterior of the piping to the lower part of the 001 collection system. Two grout injection holes were located on the upstream side of each manhole, and two were located on the downstream side. The locations of the injection points in relation to the manholes are shown in Figure 2. All four holes at each manhole were drilled to a depth equal to the bottom of the respective manhole. Table 1 summarizes the grout injections at each of the eight holes.

SJB provided a rotary drill rig and hollow-stem augers to drill the grout injection holes. At most locations, auger refusal was encountered at a depth of 5.5 to 6.0 ft-bgs. Auger refusal was assumed to be caused by a subsurface concrete slab, *i.e.*, either remnants of the original building floor slab or a concrete collar placed when the runway extension was constructed and manhole sections were added atop the original manholes.¹

¹ In redeveloping the Site for runway and taxiway construction, NFTA largely removed the original building floor slab and placed about 6 feet of soil fill to the area of the 001 collection system.

At the MH-001-06 manhole, the augers were used to drill through the slab. After penetrating the slab, the augers were advanced to just above the interval to be grouted (*i.e.*, 18± ft-bgs). The drill rods were then pulled, and a Geoprobe® rod with a sacrificial drive point was attached to the bottom of the drill rods. The rods were then reinserted through the hollow-stem augers and driven to below the augers. The rods were retracted a short distance to allow pumping of the cement-bentonite grout through the rods and into the pipe bedding at the interval corresponding to the bottom of the piping (*i.e.*, 18± ft-bgs). After completing the grouting of this deeper zone, the rods were withdrawn to a depth corresponding to the top of these pipes (*i.e.*, 14± ft-bgs). Additional grouting was then conducted at this shallow interval.

At the MH-001-02 manhole, the augers could not penetrate the subsurface concrete slab, and a roller bit was used to drill through the concrete. After penetrating the concrete, the rods were hydraulically pushed to the target depth, where the rods were then retracted a short distance to allow pumping of the cement-bentonite grout. At MH-001-02, the upper interval (*i.e.*, 18± ft-bgs) was grouted first, followed by the deeper interval (*i.e.*, 22± ft-bgs).

The cement-bentonite grout was mixed and pumped using the pump on the drill rig. The grout was pumped under pressure into the boreholes through a pressure tight connection at the top of the drill rods. The grout was mixed in batches that included three or four 94-pound bags of Portland cement in 40 gallons of water. Five pounds of bentonite per bag of cement were added to the mix. A quantity of 120 gallons of grout, containing 10 bags (940 pounds) of cement and 50 pounds of bentonite, was set as a practical target for each grouting zone. This quantity was injected at each grouting zone unless back pressure became excessive or there was grout return to the surface. At grout hole C, which was the first location grouted, an additional 40-gallon trial batch (containing two bags of cement) was first injected to test grouting procedures.

After grouting in each hole, the drilling equipment was withdrawn and the borehole was backfilled to about 1 ft-bgs with grout. The top one foot of each hole was backfilled with high-strength (*i.e.*, 4,000 pounds per square inch) Portland cement concrete mix.

MONITORING WELL INSTALLATION

One new monitoring well, designated MW-35, was installed to refusal (*i.e.*, presumed top of bedrock) at a depth of 30.3 ft-bgs. This well is located approximately 36.5 feet south and slightly west of the CSMH-001 (Sump 001) manhole (Figure 1). No obvious water-bearing zones were noted during installation of the well. Upon completing drilling at refusal, a 2-inch diameter polyvinyl chloride (PVC) monitoring well was installed. The well includes a 10-foot long, 20-slot PVC well screen and #0 sand pack around the screen. To maximize groundwater recovery in the low-permeability materials encountered, the sand pack was extended 6 feet above the top of the screen. Bentonite chips were used to provide the seal above the sand pack, and the annulus around the riser was backfilled with additional

bentonite and cement. A flush-mounted road box was installed and cemented in place to complete the well. A well log for MW-35 is provided as Attachment A.

Upon completion, no groundwater was observed in the well. The well was bailed dry three times over the three weeks following installation, with a total of seven well volumes (*i.e.*, 8± gallons) removed.

MONITORING

In accordance with the Work Plan, post-closure water level monitoring has been conducted at selected manholes associated with the 001 segment of the groundwater collection system. The post-closure monitoring program also includes quarterly groundwater monitoring at wells MW-30, MW-31, MW-34S, and MW-35.

WATER LEVEL MONITORING

Following the closure of manholes MH-001-02 and MH-001-06, water levels have been measured in manholes CSMH-001 (Sump 001), MH-001-01, MH-001-09, MH-001-10, MH-001-13, and MH-001-14, and in monitoring wells MW-30, MW-31, MW-34, MW-34D, and MW-35. Water level measurement data are summarized in Table 2. Table 3 compares post-closure water levels to pre-closure levels, and Figure 3 presents hydrographs for selected manholes and monitoring wells. Figure 3 includes rainfall data for the post-closure monitoring period.

As shown in these tables and figure, immediately after closing manholes MH-001-02 and MH-001-06, and with continued pumping at Sump 001, the water level in downstream manholes dropped by more than 6.5 feet. The water level rose somewhat at MH-001-09, but the level remained well below grade. The water level at MH-001-13 was less affected.

Following the readings on July 21, 2009, dewatering of the downstream section took a setback, as CRA had to turn off the pump in Sump 001 between July 24 and July 29, 2009 due to a pH control problem at the treatment plant. As a result of dewatering being suspended, water levels rose in downstream manholes. Even though pumping was shut down for five days, however, the water levels in the downstream section remained almost 4 feet below pre-closure levels and 3 to 6 feet lower than water levels in manholes upstream of the closure. The Site region experienced 2.56 inches of rain between July 21 and July 29, 2009. The 0.6 to 0.7 foot rise in the upstream manholes is believed to reflect the effects of the heavy rains, as evidenced by the fact that water levels in wells MW-30 and MW-34S rose 1.5 to 4.8 feet over this timeframe.

With resumed pumping at Sump 001, water levels in manholes downstream of closed manholes MH-001-02 and MH-001-06 decreased by 2.6 feet over the 9-day sampling interval between July 29 and August 7, 2009. Water levels fluctuated in upstream manholes,

with the level in MH-001-09 rising by 1.9 feet, but the water level at MH-001-13 falling by 2.2 feet. Water levels at wells MW-30 and MW-34S dropped by just over one foot.

The final set of data collected on August 14, 2009 showed some increases in water levels by about 0.4 feet in downstream manholes, presumably due to the 2.78 inches of rainfall received between August 7 and August 14, 2009. The water level at MH-001-09 stabilized with an increase of just 0.1 feet over this period.

GROUNDWATER MONITORING

Groundwater monitoring at well is scheduled for the week of September 7, 2009. The timing of this sampling should allow sufficient time following installation of MW-35 for this well to equilibrate with local groundwater. Low-flow sampling methods will be used, if possible. Collected samples will be analyzed for Site volatile organic compounds (VOCs) and metals.²

SUMMARY

The Phase 1 closure of the 001 system has achieved the primary design objective of effectively segregating this groundwater collection system into upper and lower portions, thereby eliminating the overtopping at Sump 001 and providing the ability to control water levels in the lower portion. The monitoring data shows the following:

- Water levels in downstream manholes have separated from water levels in upstream manholes.
- The relative water levels between downstream manholes and nearby monitoring wells (*e.g.*, MW-34 located 43 feet from MH-001-14) have reversed since closure of manholes MH-001-02 and MH-001-06. Rather than a hydraulic gradient outward from the collection system, the gradient is now inward toward the collection system.
- Water levels in upstream manholes appear to have stabilized at elevations well below grade (*i.e.*, approximately 4 to 6 ft-bgs).

With NYSDEC approval, CBS now plans to complete Phase 1 as specified in the Work Plan by closing and sealing manholes MH-002-09 and MH-002-10 on the 002 segment of the groundwater collection system. This effort should decrease the potential for overtopping at Sump 002 and reduce the conveyance of groundwater containing VOCs via storm sewers installed by NFTA as part of airport development.

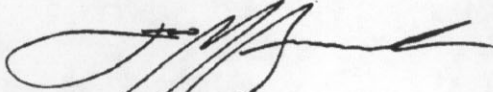
² Consistent with the Site groundwater monitoring program, analytes include cis-1,2-dichloroethylene; toluene; 1,1,1-trichloroethane; trichloroethylene; vinyl chloride; cadmium; and lead.

William P. Murray, P.E.
September 4, 2009
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We trust this submittal satisfies your requirements at this time. If you have questions regarding this letter report, please contact me.

Respectfully submitted,



Leo M. Brausch
Consultant/Project Engineer

LMB:

Attachments

cc: M. L. Doster, P.E., NYSDEC
J. K. Kay, CRA
K. P. Lynch, CRA
K. Minkel, NFTA

TABLES

**Table 1
Summary of Grout Injections to Seal Pipe Bedding**

Injection Hole	Injection Zone	Grout Injected	
		Dry Weight of Cement (lbs)	Grout Volume (gallons)
CSMH-001-06			
A	Lower	212	30
	Upper	71	10
B	Lower	940	120
	Upper	141	20
C	Lower	1,128	160
	Upper	282	40
D	Lower	940	120
	Upper	141	20
CSMH-001-02			
E	Lower	940	120
	Upper	940	120
F	Lower	940	120
	Upper	940	120
G	Lower	940	120
	Upper	940	120
H	Lower	940	120
	Upper	940	120

Notes:

1. For grout injection hole locations, see Figure 2.
2. Injection zones were at the following depths:

<u>Manhole</u>	<u>Upper Zone</u>	<u>Lower Zone</u>
CSMH-001-06	14 ft-bgs	18 ft-bgs
CSMH-001-06	18 ft-bgs	22 ft-bgs

3. All grout mixes contained approximately 5 pounds of bentonite per 94-pound bag of cement.

Table 2
Summary of Water-Level Measurements
Phase 1 Closure of 001 System

Monitoring Location	Elevation (ft-msl)		Water Levels Measured											
	Rim or Top of Riser	Ground Surface	Pre-Closure			Post-Closure								
			04/24/08		07/21/09		07/29/09		08/07/09		08/14/09			
Depth (ft)	Elevation (ft-msl)	Depth (ft)	Elevation (ft-msl)	Depth (ft)	Elevation (ft-msl)	Depth (ft)	Elevation (ft-msl)	Depth (ft)	Elevation (ft-msl)	Depth (ft)	Elevation (ft-msl)	Depth (ft)	Elevation (ft-msl)	
CSMH-001	701.34	701.23	0.40	700.94	6.95	694.39	4.17	697.17	6.80	694.54	6.41	694.93		
MH-001-01	701.95	701.83	0.90	701.05	7.55	694.40	4.73	697.22	7.38	694.57	6.98	694.97		
MH-001-09	709.01	709.10	8.22	700.79	6.37	702.64	5.65	703.36	3.75	705.26	3.62	705.39		
MH-001-10	708.51	708.49	7.60	700.91	NM	NM	NM	NM	5.24	703.27	4.89	703.62		
MH-001-13	704.43	704.33	4.60	699.83	4.27	700.16	3.64	700.79	5.85	698.58	NM	NM		
MH-001-14	704.36	704.28	3.20	701.16	10.00	694.36	7.18	697.18	9.82	694.54	9.43	694.93		
MW-30	694.65	695.30	5.33	689.32	5.54	689.11	3.98	690.67	5.06	689.59	4.64	690.01		
MW-31	686.82	688.25	3.18	685.07	12.18	676.07	9.13	679.12	6.01	682.24	5.05	683.20		
MW-34S	702.81	703.80	3.51	699.30	10.00	692.81	5.16	697.65	6.43	696.38	5.83	696.98		
MW-34D	701.64	703.03	5.40	696.24	6.36	695.28	5.74	695.90	7.02	694.62	6.39	695.25		
MW-35	--	--	--	--	Dry @ 29.7 ft-bgs	--	23.81	--	15.71	--	15.91	--		

Notes:

1. For manhole and monitoring well locations, see Figure 1.
2. In manholes, depths to water are measured from the top of rim.
3. In wells, depths to water are measured from the top of casing, except for MW-31, where depths are measured from the ground surface.
4. "NM" indicates not measured.
5. Due to very slow recharge rate, water levels at well MW-31 are not stable and measured values may not be reliable.
6. Surveyed elevation not yet available for top of casing at well MW-35.

Table 3
Changes in Water Levels in Selected Manholes and Monitoring Wells
Following Phase 1 Closure of 001 System

Monitoring Location	Water Elevation at Manhole (ft-msl)					Difference from Pre-Closure (feet)			
	Pre-Closure	Post-Closure							
		Jul 21	Jul 29	Aug 7	Aug 14	Jul 21	Jul 29	Aug 7	Aug 14
Manholes Downstream of Closed Section									
CSMH-001	700.94	694.39	697.17	694.54	694.93	-6.55	-3.77	-6.40	-6.01
MH-001-01	701.05	694.40	697.22	694.57	694.97	-6.65	-3.83	-6.48	-6.08
MH-001-14	701.16	694.36	697.18	694.54	694.93	-6.80	-3.98	-6.62	-6.23
Manholes Upstream of Closed Section									
MH-001-09	700.79	702.64	703.36	705.26	705.39	1.85	2.57	4.47	4.60
MH-001-10	700.91	NM	NM	703.27	703.62	NA	NA	NA	2.71
MH-001-13	699.83	700.16	700.79	698.58	NM	0.33	0.96	-1.25	NA
Monitoring Wells									
MW-30	689.32	689.11	690.67	689.59	690.01	-0.21	1.35	0.27	0.69
MW-34S	699.30	692.81	697.65	696.38	696.98	-6.49	-1.65	-2.92	-2.32
MW-34D	696.24	695.28	695.90	694.62	695.25	-0.96	-0.34	-1.62	-0.99

Notes:

1. For manhole and monitoring well locations, see Figure 1.
2. "NM" indicates not measured.
3. "NA" indicates not available.

FIGURES

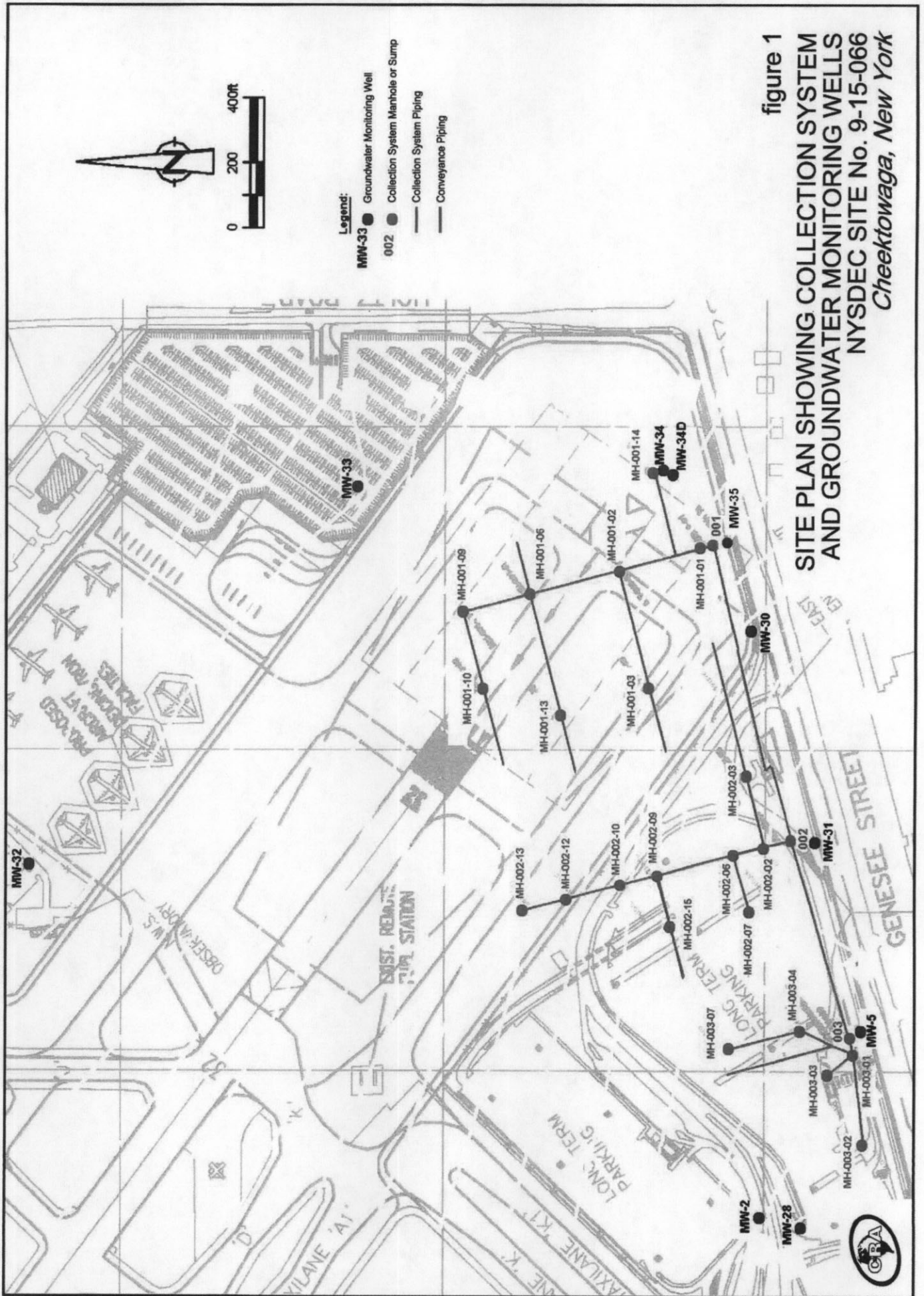


figure 1
 SITE PLAN SHOWING COLLECTION SYSTEM
 AND GROUNDWATER MONITORING WELLS
 NYSDEC SITE No. 9-15-066
 Cheektowaga, New York

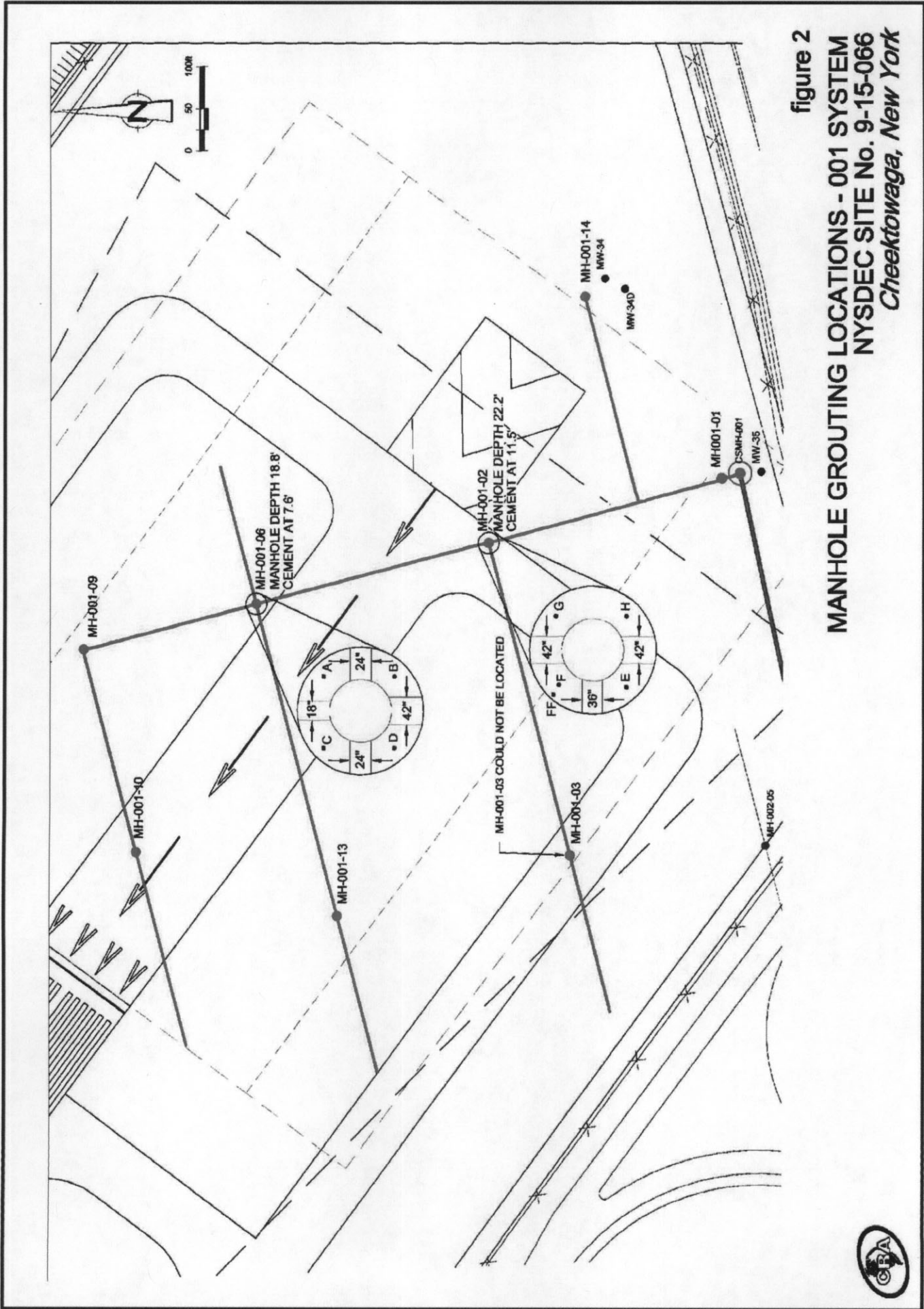
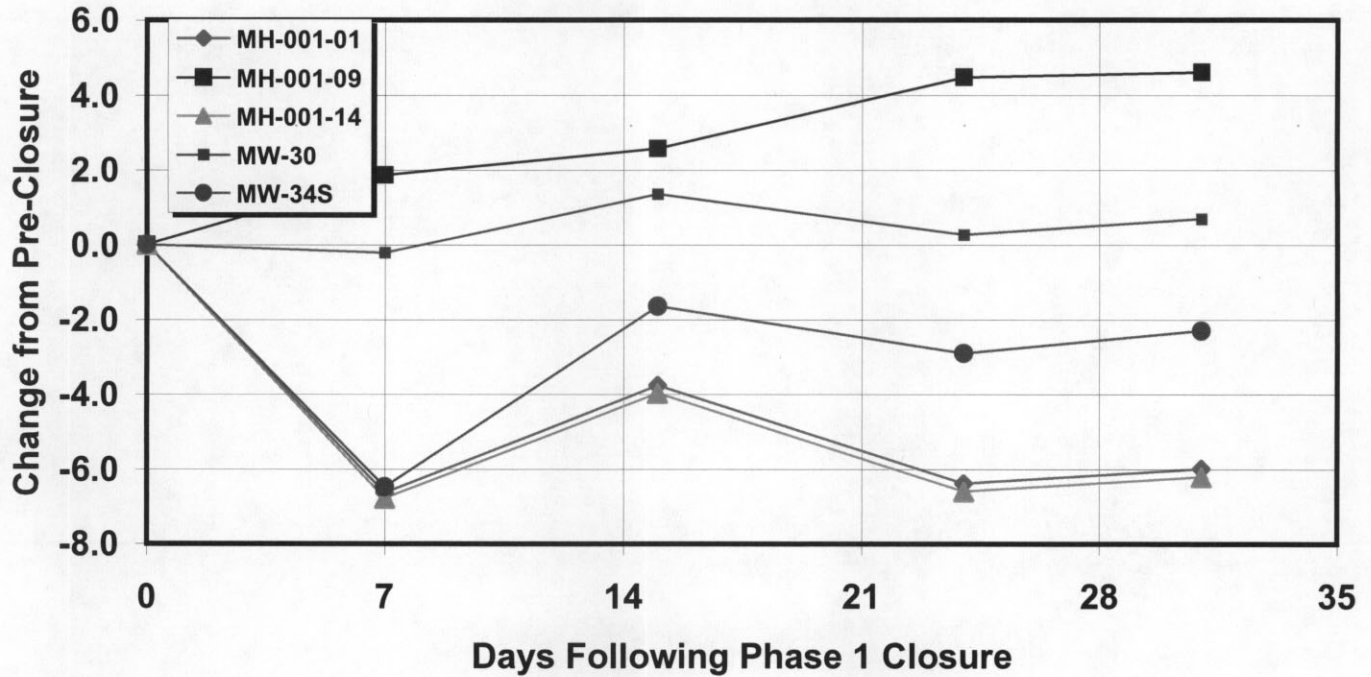


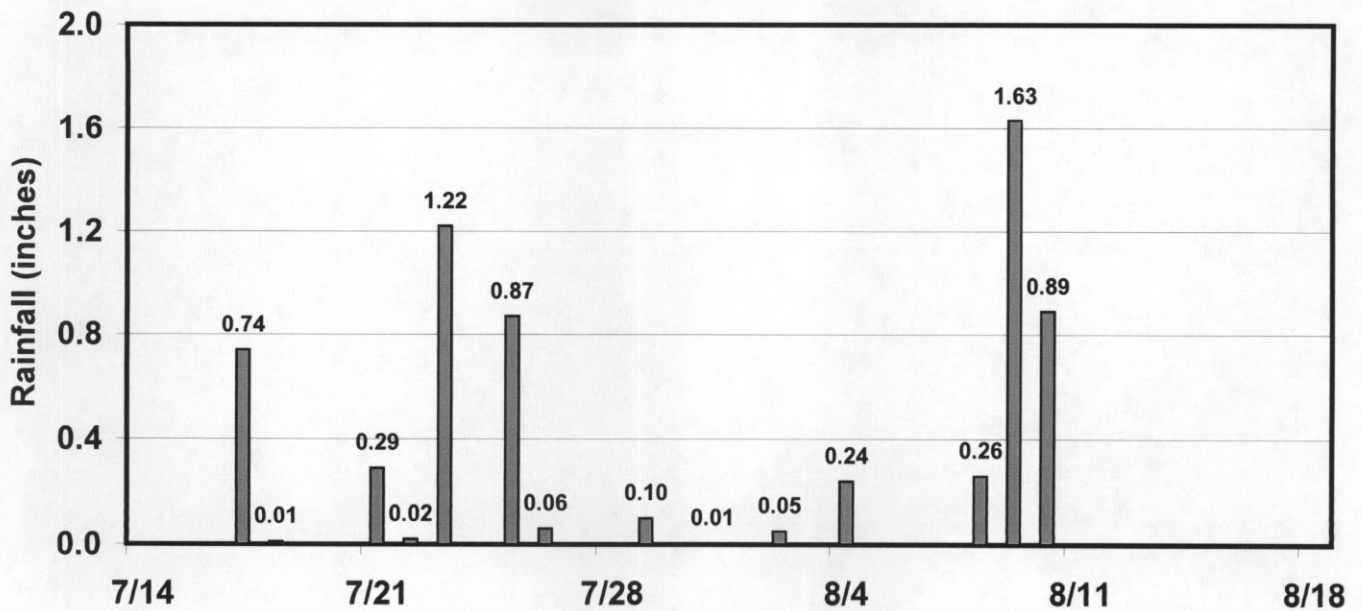
figure 2
MANHOLE GROUTING LOCATIONS - 001 SYSTEM
 NYSDEC SITE No. 9-15-066
Cheektowaga, New York



Figure 3: Select Manhole and Monitoring Well Post-Closure Hydrographs



Daily Precipitation



ATTACHMENT A
MONITORING WELL LOG
MW-35



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Former Westinghouse Site
 PROJECT NUMBER: 018036
 CLIENT: CBS
 LOCATION: Cheektowaga, NY

HOLE DESIGNATION: MW-35
 DATE COMPLETED: July 21, 2009
 DRILLING METHOD: HSA
 FIELD PERSONNEL: K. Lynch

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE			
				NUMBER	INTERVAL	REC (ft)	'N' VALUE
2	NOT SAMPLED - augered		<p style="font-size: small;">CONCRETE CEMENT BENTONITE 2" PVC WELL CASING WELL SCREEN SAND PACK 8" BOREHOLE</p>				
10	ML-SILT, little clay, little fine gravel, hard, moist, appears reworked (FILL) - Hard drilling @ 11.5 ft BGS. Moved 5 ft west to continue. Augered to 12 ft BGS at new location and began sampling.	10.00			SS1	1.0	>50
12	No Recovery - trace silt and gravel, wet in shoe. Trace weathered concrete observed near bottom of interval (~14 ft BGS)	12.00			SS2	0.0	35
14	CL-SILTY CLAY, trace fine, rounded gravel, red-brown, dry to moist (NATIVE)	14.00			SS3	2.0	19
18	- slightly softer, slightly siltier, moist to wet below 18 ft BGS				SS4	2.0	30
20	- wet between 19.7 and 20 ft BGS - soft to medium stiff, dry to moist below 20 ft BGS				SS5	2.0	17
22	- moist below 22 ft BGS				SS6	2.0	15
24					SS7	2.0	16
26					SS8	2.0	11
28	- slightly siltier, trace to little fine gravel below 28 ft BGS				SS9	2.0	24
30	- dry to moist @ 30.3 ft BGS END OF BOREHOLE @ 30.3ft BGS	30.30		<p style="font-size: x-small;">WELL DETAILS Screened interval: 20.00 to 30.00ft BGS Length: 10ft Diameter: 2in Slot Size: 20 Material: PVC</p>	SS10	2.0	10
32				SS11	0.7	>50	

OVERBURDEN LOG 018036.GPJ CRA_CORP.GDT 8/19/09

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ∇



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Former Westinghouse Site
 PROJECT NUMBER: 018036
 CLIENT: CBS
 LOCATION: Cheektowaga, NY

HOLE DESIGNATION: MW-35
 DATE COMPLETED: July 21, 2009
 DRILLING METHOD: HSA
 FIELD PERSONNEL: K. Lynch

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE			
				NUMBER	INTERVAL	REC (ft)	'N' VALUE
36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68							
			Seal: 5.00 to 14.00ft BGS Material: BENTONITE Sand Pack: 14.00 to 30.30ft BGS Material: 00 SAND				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ∇