932001

EA Engineering, Science, and Technology

7037 Fly Road
East Syracuse, NY 13057-9659
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15 April 2002

Mr. Michael Resh
Manager of Environmental Remediation
BOC Gases
100 Mountain Avenue
Murray Hill, New Jersey 07974

RE: First Quarter Year 2002 Monitoring Event Letter Report, Site No. 932001,
Airco Properties Inc., Witmer Road Landfill, Niagara Falls, New York
EA Project No. 12040.69

Dear Mr. Resh:

EA Engineering, P.C. and its affiliate EA Engineering, Science, and Technology are pleased to provide a copy of the First Quarter Year 2002 Monitoring Event Letter Report. During December 2000, the post-closure monitoring and facility maintenance program was initiated at the Witmer Road Landfill located in Niagara Falls, New York. Post-closure monitoring and facility maintenance is required by New York State Solid Waste Management Facilities Regulations (6 NYCRR Part 360-2.15[k][4]) and stipulated in the Order on Consent No. B9-0470-94-12. The purpose of this monitoring event letter report is to summarize the analytical results of the first quarter Year 2002 ground-water monitoring event that was completed at this site in March 2002.

OBJECTIVES

In accordance with the Revised Final Post-Closure Monitoring and Facility Maintenance Plan (EA 2001)[1], environmental monitoring points will be maintained and sampled during the post-closure monitoring period. This includes collection of ground-water, surface water, and leachate samples. The Revised Final Post-Closure Monitoring and Facility Maintenance Plan documents sampling locations and sampling parameters and methods, in addition to other required maintenance activities, such as landfill cap inspections. It is anticipated that within 5 years of the start of post-closure monitoring, this plan will be re-evaluated based on the data collected at the site so that the monitoring plan will be focused to address site-specific issues that may be identified.

1. EA Engineering, Science, and Technology. 2001a. Interim Remedial Measure Report Documenting Closure of the Witmer Road Landfill, Niagara Falls, New York. Appendix A – Revised Final Post-Closure Monitoring and Facility Maintenance Plan. January.

The objectives of the Post-Closure Monitoring and Facility Maintenance Program are to:

- Collect representative ground-water and surface water samples in order to monitor any potential leachate migration from the landfill, and to document the effectiveness of the recently installed landfill capping system.

- Evaluate these data to determine whether any potential impacts may be occurring that could affect human health or the environment

- Provide this information to the BOC Group and the New York State Department of Environmental Conservation (NYSDEC).

As noted in the Revised Final Post-Closure Monitoring and Facility Maintenance Plan (EA 2001a), the results of the quarterly sampling events will be summarized in a letter report detailing the findings of the environmental sampling. Monitoring event letter reports will be limited to documenting the results of each sampling round. This letter report summarizes the findings of the sixth post-closure monitoring event completed at this site.

BACKGROUND

The Witmer Road Landfill is part of the Vanadium Corporation of America site that is located in the Town of Niagara Falls, New York (Figure 1). The Vanadium site is approximately 150 acres. This quarterly sampling event focused on the 25-acre Airco parcel operated by the BOC Group. The site contains waste material from the operation of onsite and nearby production facilities.

An Immediate Investigative Work Assignment was conducted by NYSDEC for a portion of the 150-acre parcel in August 1997. Approximately 70 acres from the Niagara Mohawk Power Corporation and New York Power Authority (NYPA) parcel were investigated. During the investigation, NYSDEC determined that the site had been used by Vanadium Corporation of America (the owners of the site from 1924 to 1964) to dispose of wood, brick, ash, lime slag, ferrochromium silicon slag, and ferrochromium silicon dust. According to the Immediate Investigative Work Assignment, much of the surface material consisted of fill, including fly ash, dust, slag, and cinder materials.

Analysis of site ground water during the Immediate Investigative Work Assignment indicated that surface water and ground-water standards were exceeded for hexavalent chromium and pH. Based on the Immediate Investigative Work Assignment and other investigations, the facility has been listed as a Class 2 Hazardous Waste Site in the New York State Registry of Inactive Hazardous Waste Sites (Site No. 932001). A Class 2 listing indicates a significant threat to public health and the environment, and requires remedial action.

Remedial measures were completed at the Witmer Road Landfill during 2000, which included completion of an impermeable cap and leachate relief system. A complete description of the

history of the site, and the construction details of the landfill capping system, can be found in the Interim Remedial Measure Report (EA 2001)[2].

MONITORING EVENT FIELD ACTIVITIES

Monitoring Well Gauging

The site monitoring wells (MW-1B through MW-8B) were gauged prior to sampling on 13 March 2002. The depth to water ranged from 3.41 ft at MW-6B to 12.22 ft at MW-2B. Gauging data are summarized in the table below:

Monitoring Well	Depth to Water (ft btoc)	Well Elevation (ft AMSL)	Corrected Water Elevation (ft AMSL)
MW1B	9.41	617.77	608.36
MW2B	12.22	615.88	603.66
MW3B	7.81	611.22	603.41
MW4B	6.01	606.68	600.67
MW5B	4.11	605.48	601.37
MW6B	3.41	603.47	600.06
MW7B	8.71	609.48	600.77
MW8B	5.35	611.62	606.27

NOTE: btoc = Below top of casing.
AMSL = Above mean sea level.

Figure 2 provides the interpreted ground-water potentiometric surface contour map based on gauging data collected on 13 March 2002 generated using Spatial Analyst.

Ground-Water Sampling Procedures

Monitoring wells were sampled on 14 March 2002. Eight ground-water samples were collected from the site monitoring wells. Monitoring wells MW-2B, MW-4B, and MW-5B were purged using dedicated bailers due to low recharge and well volume. These wells were bailed dry at least once and allowed to recharge prior to sample collection. Monitoring wells MW-1B, MW-3B, MW-6B, MW-7B and MW-8B had adequate recharge rates; consequently, 4 well volumes were removed and water quality readings allowed to stabilize prior to sample collection. One leachate sample was also collected. Samples were submitted to Environmental Laboratory Services of North Syracuse, New York for analysis of phenolics by U.S. Environmental Protection Agency (EPA) Method 420.2, sulfate by EPA Method 375.3, ammonia (expressed as nitrogen) by EPA Method 350.2, and Target Analyte List metals by EPA Series 6010/620, including hexavalent chromium.

Ground-water sampling results were compared to NYSDEC Ambient Water Quality Standards (AWQS)[3] and guidance values for GA waters. Leachate samples were compared to NYSDEC

2. EA. 2001b. Interim Remedial Measure Report Documenting Closure of the Witmer Road Landfill, Niagara Falls, New York. January.
3. New York State Department of Environmental Conservation. 1999. Water Quality Regulations – Surface Water and Groundwater Classifications and Standards New York State Codes, Rules and Regulations Title 6, Chapter X

AWQS for Class D waters. If no Class D standards were applicable for a particular compound, analytical results were compared to the more stringent Class C standards. Analytical results are summarized on the table provided in Attachment A. Copies of the field notebook, including the results for well gauging, purging, and sampling, are provided in Attachment B. Laboratory chain-of-custody records are provided in Attachment C. Laboratory Form I analytical results are included in Attachment D.

ANALYTICAL RESULTS

Based on the analytical results collected during the Fourth Quarter 2000 and First Quarter 2001, NYSDEC approved a reduction in the sampling requirements. As per a letter to NYSDEC dated 5 June 2000, samples were analyzed for water quality parameters; ammonia, phenolics, and sulfate, and total (unfiltered) metals.

Summary tables listing analytical results compared to applicable NYSDEC AWQS are included in Attachment A and a tag map is provided as Figure 3. Notable results of chemical analyses are as follows.

Metals

Unfiltered metals samples were collected from each of the site monitoring wells. Notable results included the following:

- Chromium, hexavalent chromium, iron, lead, magnesium, manganese, selenium, sodium, and thallium were detected in one or more of the ground-water samples at concentrations in excess of NYSDEC AWQS
- Iron and selenium were detected in the surface water sample at concentrations in excess of NYSDEC AWQS
- Hexavalent chromium was detected in excess of the NYSDEC AWQS in the leachate sample.

Water Quality Parameters

Water quality parameters, including pH, temperature, conductivity, dissolved oxygen, turbidity, and salinity were collected in the field. In addition, water quality parameters, including ammonia (expressed as N), phenolics, and sulfate were also analyzed by the laboratory. Notable results included the following:

- Sulfate was detected in excess of NYSDEC AWQS in samples collected from monitoring well MW-8B

- pH measurements exceeded NYSDEC AWQS in monitoring wells MW-2B, MW-3B, as well as the surface water and leachate samples.

A hydrogeochemical evaluation that couples the analytical results with the ground-water elevation data collected during the sampling event provides an alternative interpretation of ground-water flow patterns (Figure 4).

LANDFILL INSPECTION

During the December 2001 landfill inspection, EA noted that a fence post adjacent to monitoring well MW-7B was damaged and that a portion of the perimeter fence had been cut in the southeast corner of the site. Fence repairs were performed in January 2002. In addition to the repairs, warning signs were installed every 40-50 ft along the perimeter of the fence.

Landfill cap inspection was conducted on 27 March 2002. The Landfill Cap Inspection Checklist is provided as Attachment E. No deterioration or damage to the landfill, cap, drainage swales, or access roads was noted during the engineering inspection.

If you have any questions regarding the results of this First Quarter 2002 Monitoring Event, please do not hesitate to contact Charles McLeod at (845) 565-8100.

Sincerely,

EA ENGINEERING, P.C.

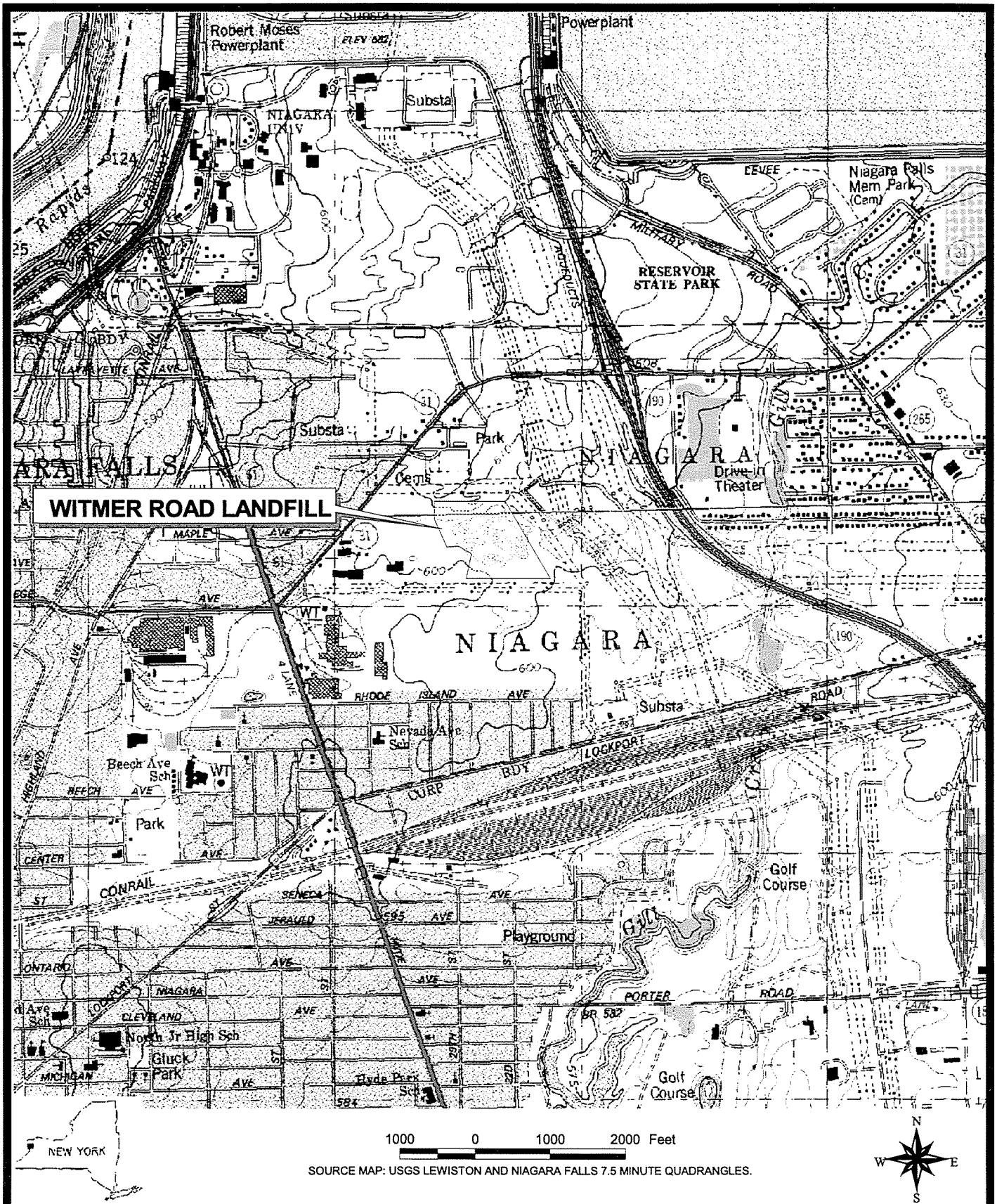
Charles E. McLeod, Jr., P.E.
Vice President

EA ENGINEERING, SCIENCE,
AND TECHNOLOGY

Scott Graham
Project Geologist

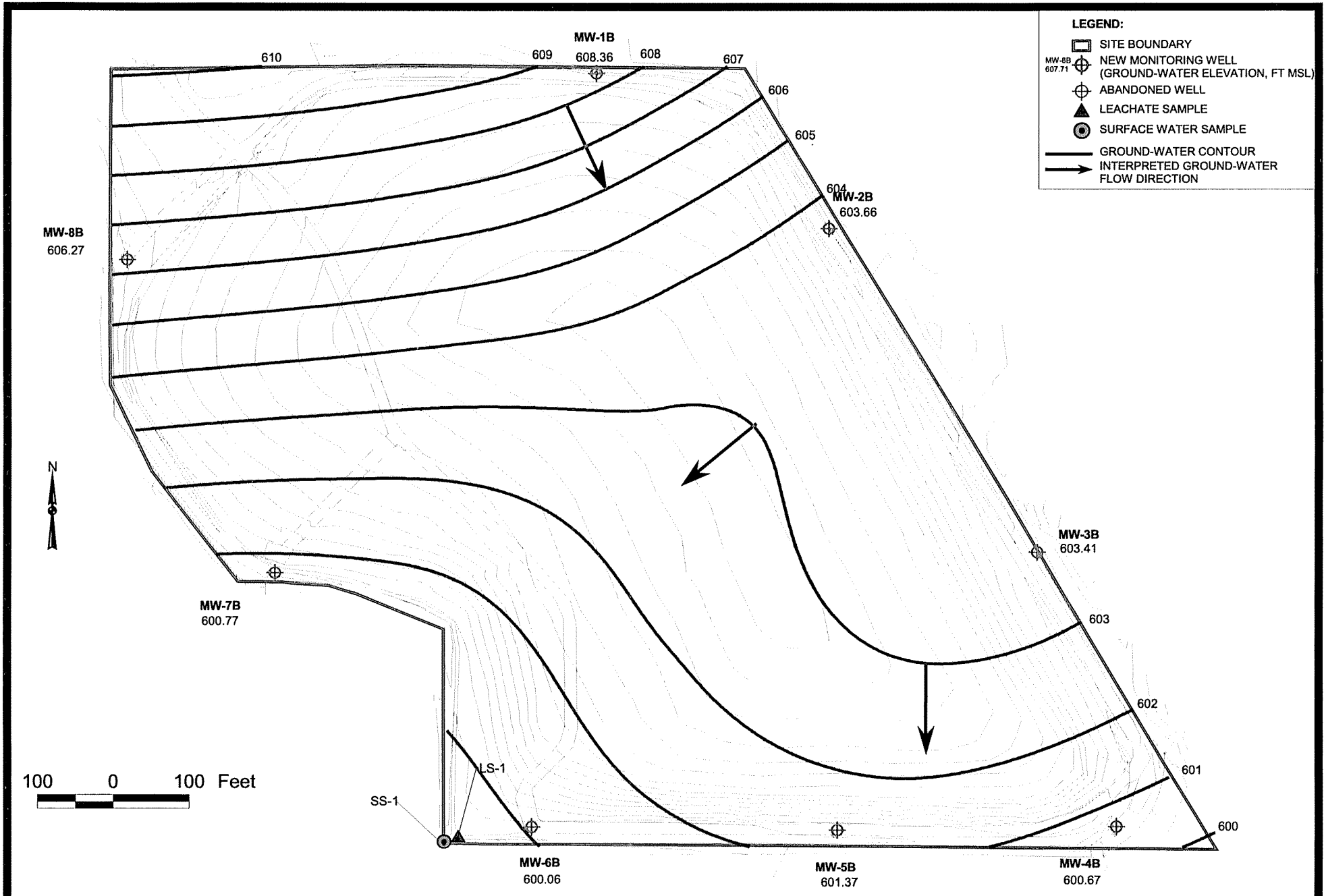
CEM/jam
Attachments

cc: M. Hinton (NYSDEC)
D. Hettrick (NYSDOH)
Town of Niagara Falls (Town Clerk)

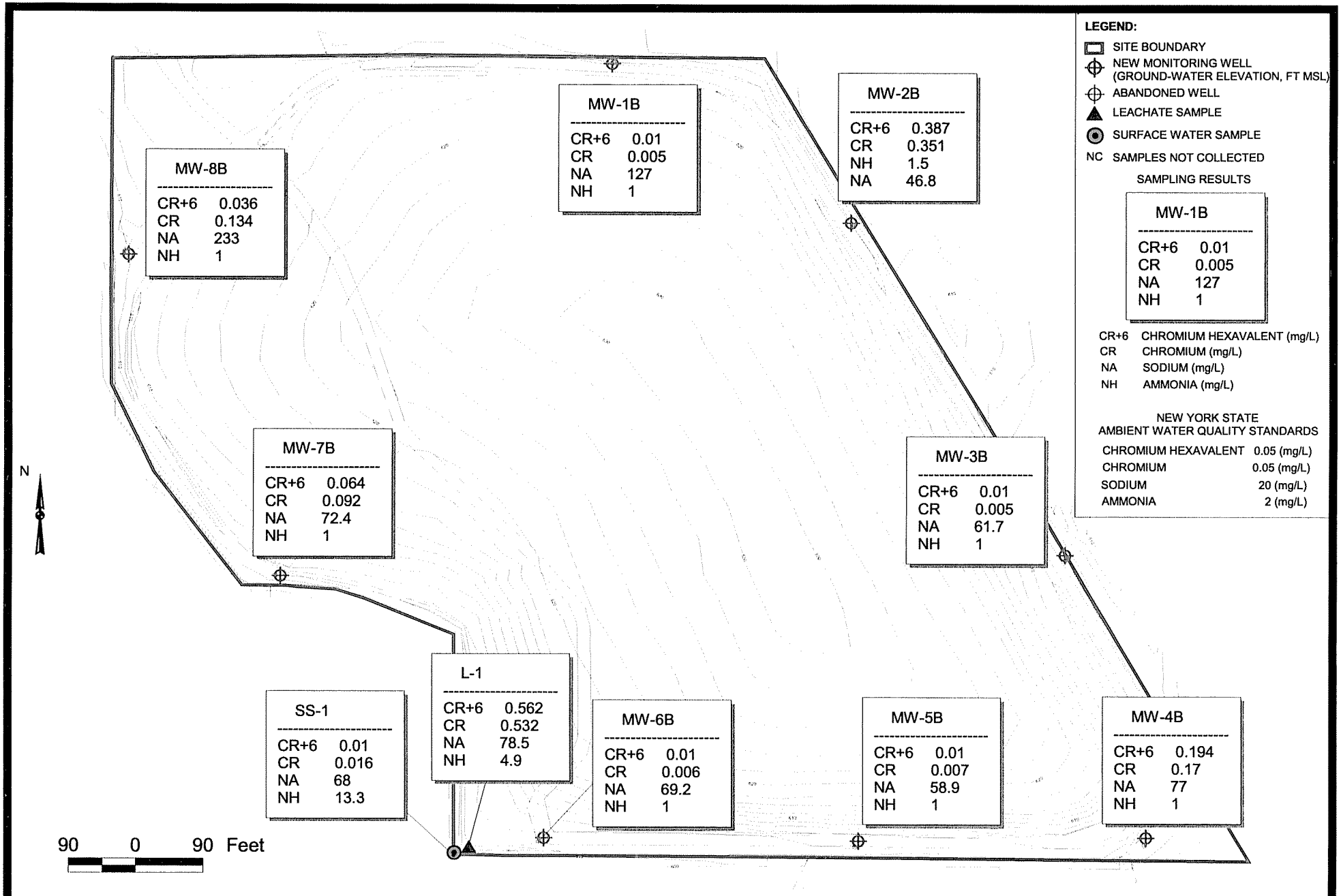


EA ENGINEERING, SCIENCE, AND TECHNOLOGY	WITMER ROAD LANDFILL NIAGARA FALLS, NEW YORK	FIGURE 1 SITE LOCATION MAP

PROJECT MGR	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	DATE	PROJECT No	FILE No
CEM	BT	BT	CEM	AS SHOWN	21 MARCH 2002	12040.69	I:\BOC-NIAGARA\FINAL.APR



EA ENGINEERING, SCIENCE, AND TECHNOLOGY			WITMER ROAD LANDFILL NIAGARA FALLS, NEW YORK			FIGURE 2 SPATIAL ANALYST CONTOUR MAP MARCH 2002	
PROJECT MGR	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	DATE	PROJECT No	FILE No
CEM	BT/RSC	BT/RSC	SLG	AS SHOWN	12 MARCH 2002	12040.69	I:\BOC-NIAGARA-GIS\ FINAL.APR

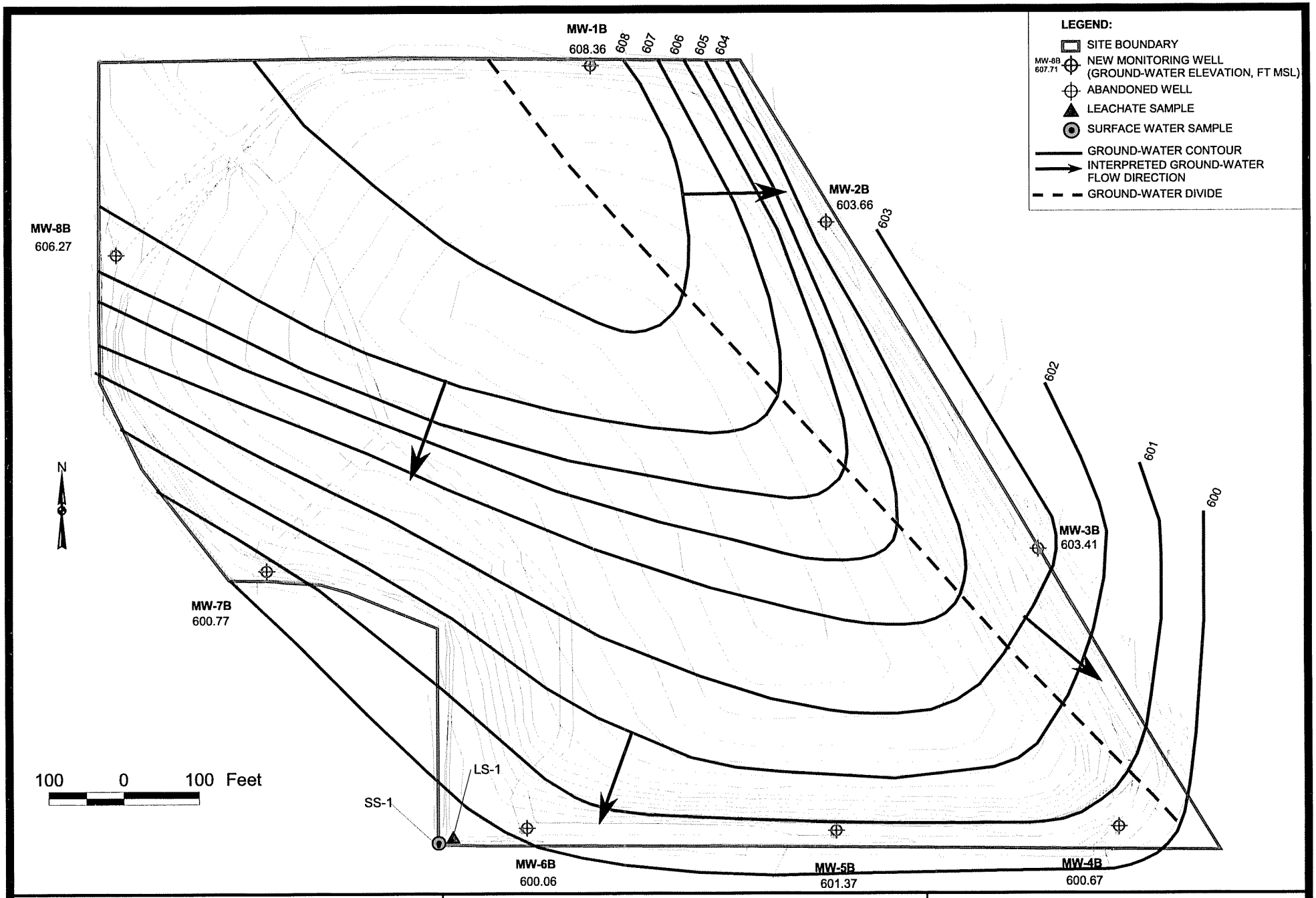


EA ENGINEERING, SCIENCE, AND TECHNOLOGY

WITMER ROAD LANDFILL
NIAGARA FALLS, NEW YORK

FIGURE 3 MARCH 2002 SAMPLING RESULTS

PROJECT MGR	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	DATE	PROJECT No	FILE No
CEM	BT/JAM	BT/BLH	SLG	AS SHOWN	03 MARCH 2002	12040.69	I:\BOC-NIAGARA-GIS\ FINAL.APR



EA ENGINEERING, SCIENCE, AND TECHNOLOGY	WITMER ROAD LANDFILL NIAGARA FALLS, NEW YORK				FIGURE 4 INTERPRETED GROUND-WATER CONTOUR MAP MARCH 2002		
PROJECT MGR	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	DATE	PROJECT No	FILE No
CEM	BT/JAM	BT/BLH	SLG	AS SHOWN	11 APRIL 2002	12040.69	I:\BOC-NIAGARA-GIS\ FINAL.APR

Attachment A

Summary of Analytical Results of Ground-Water, Surface Water, and Leachate Samples

ATTACHMENT A SUMMARY OF ANALYTICAL RESULTS OF GROUND-WATER, SURFACE WATER, AND LEACHATE SAMPLES COLLECTED IN MARCH 2002, WITMER ROAD LANDFILL, NIAGARA FALLS, NEW YORK

Ground Water

Baseline Metals by EPA Method 6010/6020 (mg/L)

Total (Unfiltered)

Compound/Element	AWQS	MW-1B	MW-2B	MW-3B	MW-4B	MW-5B	MW-6B	MW-6B (Dup)	MW-7B	MW-8B
Chromium	0.05	(<0.005U)	**0.351**	(<0.005U)	**0.17**	0.007	0.006	0.006	**0.092**	**0.134**
Chromium, Hexavalent	0.05	(<0.01U)	**0.387**	(<0.01U)	**0.194**	(<0.01U)	(<0.01U)	(<0.01U)	**0.064**	0.036
Iron	0.3	**0.376**	**1**	0.244	**0.798**	**2.3**	**0.861**	**0.695**	**4.2**	**13.4**
Lead	0.025	(<0.005U)	0.005	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	**0.032**
Magnesium	35*	**58.6**	1	2.5	**49**	**74.4**	**84.1**	**82.5**	12.8	**62.3**
Manganese	0.3	**0.722**	0.024	0.007	0.013	0.054	0.134	0.114	0.139	**0.532**
Selenium	0.01	(<0.005U)	0.009	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	**0.052**
Silica	---	17.6	9.6	20.8	19.5	24.4	18.9	15.5	29.5	35.1
Sodium	20	**127**	**46.8**	**61.7**	**77**	**58.9**	**69.2**	**65.1**	**72.4**	**233**
Thallium	0.0005*	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	(<0.005U)	**0.009**
Zinc	2*	0.192	0.026	(<0.005U)	0.014	0.045	(<0.005U)	0.006	0.012	0.661

Water Quality Parameters (mg/L)

Compound/Element	AWQS	MW-1B	MW-2B	MW-3B	MW-4B	MW-5B	MW-6B	MW-6B (Dup)	MW-7B	MW-8B
Ammonia (expressed as N)	2	(<1U)	1.5	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)
Phenolics	0.001	(<0.002U)	(<0.002U)	(<0.002U)	(<0.002U)	(<0.002U)	(<0.002U)	(<0.002U)	(<0.002U)	(<0.002U)
Sulfate	250	177	12.8	61.5	144	169	233	224	48.4	**457**

Surface Water

Baseline Metals by EPA Method 6010/6020 (mg/L)

Total (Unfiltered)

Compound/Element	AWQS	SS
Chromium	---	0.016
Chromium, Hexavalent	0.016	(<0.01U)
Iron	0.3	**0.674**
Lead	---	(<0.005U)
Magnesium	---	41.1
Manganese	---	0.019
Selenium	0.0046	**0.006**
Silica	---	18.3
Sodium	---	68
Thallium	0.02	0.008
Zinc	---	(<0.005U)

Water Quality Parameters (mg/L)

Compound/Element	AWQS	SS
Ammonia (expressed as N)	---	13.3
Phenolics	---	0.011
Sulfate	---	406

Leachate

Baseline Metals by EPA Method 6010/6020 (mg/L)

Total (Unfiltered)

Compound/Element	AWQS	L1
Chromium	---	0.532
Chromium, Hexavalent	0.016	**0.562**
Iron	0.3	(<0.025U)
Lead	---	(<0.005U)
Magnesium	---	(<1U)
Manganese	---	(<0.005U)
Selenium	0.0046	**0.023**
Silica	---	0.4
Sodium	---	78.5
Thallium	0.02	(<0.005U)
Zinc	---	(<0.005U)

Water Quality Parameters (mg/L)

Compound/Element	AWQS	L1
Ammonia (expressed as N)	---	4.9
Phenolics	---	0.01
Sulfate	---	10.4

QA/QC

Baseline Metals by EPA Method 6010/6020 (mg/L)

Total (Unfiltered)

Compound/Element	AWQS	Rinse Blank	Source Water Blank
Chromium	---	(<0.005U)	(<0.005U)
Chromium, Hexavalent	---	(<0.01U)	(<0.01U)
Iron	---	(<0.025U)	(<0.025U)
Lead	---	(<0.005U)	(<0.005U)
Magnesium	---	(<1U)	(<1U)
Manganese	---	(<0.005U)	(<0.005U)
Selenium	---	(<0.005U)	(<0.005U)
Silica	---	(<0.107U)	(<0.107U)
Sodium	---	(<1U)	(<1U)
Thallium	---	0.007	(<0.005U)
Zinc	---	(<0.005U)	(<0.005U)

Water Quality Parameters (mg/L)

Compound/Element	AWQS	Rinse Blank	Source Water Blank
Ammonia (expressed as N)	---	(<1U)	(<1U)
Phenolics	---	(<0.002U)	(<0.002U)
Sulfate	---	(<2U)	(<2U)

TABLE NOTES

AWQS	=	New York State Ambient Water Quality Standards and Guidance Values from Water Quality Regulations, Title 6, Chapter X Parts 700-706 August 1999.
*	=	Indicates guidance value.
---	=	Indicates no standard or guidance value exists.
U	=	Not detected. Sample quantitation limits shown as (<__U).

Only those analytes detected in at least one of the samples is shown on this table.
Results shaded and in boldface indicate concentrations in excess of New York State Ambient Water Quality Standards or Guidance Values.

Analytical Methods for Water Quality Parameters

Ammonia (expressed as Nitrogen)	=	EPA 350.2
Phenolics	=	EPA 420.2
Sulfate	=	EPA 375.3

Attachment B

Ground-Water Sampling Purge Forms

EA Engineering, Science and Technology

GROUND WATER SAMPLING
PURGE FORM

Well I.D.: WRL-MW1B	**EA Personnel:** JC/BC	**Client:** BOC GASES
Location: NIAGARA FALLS	**Well Condition:** LOCKED	**Weather:** PARTLY CLOUDY, MID 40'S
Sounding Method: WLI	**Gauge Date:** 3/13/02	**Measurement Ref:** TOC
Stick Up/Down (ft): UP	**Gauge Time:**	**Well Diameter (in):** 4"

Purge Date:	3/14/02	**Purge Time:**	930
Purge Method:	2" SUB/LOW FLOW	**Field Technician:**	JC/BC

Well Volume

A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 9.41	**E. Well Volume (gal) C*D):**	**Pump Type:** GRUNDFUS REDI-FLO 2
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (gal)	Rate (gpm)	pH (pH units)	Sal %	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
930	12.56		0.25	7.31	0.1	10.88	0.17	6.24	730
934	12.45	1	0.25	7.24	0.1	12.52	0.17	0.16	200
938	12.57	2	0.25	7.25	0.1	13.05	0.17	0.1	85
942	12.56	3	0.25	7.25	0.1	13.18	0.17	0.03	64
946	12.56	4	0.25	7.24	0.1	13.23	0.17	0	40
950	12.56	5	0.25	7.24	0.1	13.25	0.17	0	45

Total Quantity of Water Removed (gal): 5
Samplers: JC/BC
Sampling Date: 14-Mar-02

Sampling Time: 955
Split Sample With:
Sample Type: GRAB

COMMENTS AND OBSERVATIONS:

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EA Engineering, Science and Technology

GROUND WATER SAMPLING PURGE FORM

Well I.D.:	EA Personnel:	Client:
WRL-MW2B	JC/BC	BOC GASES
Location:	**Well Condition:**	**Weather:**
NIAGARA FALLS	LOCKED	PARTLY CLOUDY, MID 40'S
Sounding Method:	**Gauge Date:**	**Measurement Ref:**
WLI	3/13/02	TOC
Stick Up/Down (ft):	**Gauge Time:**	**Well Diameter (in):**
UP		4"

Purge Date:	3/13/02	**Purge Time:**	1210
Purge Method:	HAND BAIL	**Field Technician:**	JC/BC

Well Volume

A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 12.22	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (gal)	Rate (gpm)	pH (pH units)	Sal (%)	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
INITIAL	12.22			13.57	0.2	9.68	0.44	4.26	44
ENDING		~3.5		13.61	0.2	10.89	0.46	8.38	570

Total Quantity of Water Removed (gal): ~3.5 gal.
Samplers: JC/BC
Sampling Date: 14-Mar-02
Sampling Time: 1020
Split Sample With:
Sample Type: GRAB

COMMENTS AND OBSERVATIONS: NOT ENOUGH WATER TO PUMP. WELL BAILED DRY ON 13 MAR02 AND SAMPLED ON 14 MAR02.

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EA Engineering, Science and Technology

GROUND WATER SAMPLING
PURGE FORM

Well I.D.: WRL-MW3B	**EA Personnel:** JC/BC	**Client:** BOC GASES
Location: NIAGARA FALLS	**Well Condition:** LOCKED	**Weather:** PARTLY CLOUDY, MID 40'S
Sounding Method: WLI	**Gauge Date:** 3/13/02	**Measurement Ref:** TOC
Stick Up/Down (ft): UP	**Gauge Time:**	**Well Diameter (in):** 4"

Purge Date:	3/14/02	**Purge Time:**	1035
Purge Method:	2" SUB/LOW FLOW	**Field Technician:**	JC/BC

Well Volume

A. Well Depth (ft): 7.81	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft):	**E. Well Volume (gal) C*D):**	**Pump Type:** GRUNDFUS REDI-FLO 2
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (gal)	Rate (gpm)	pH (pH units)	Sal %	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
1040	8.96		0.25	11.62	0	9.01	49	4.27	130
1044	10.45	1	0.25	11.6	0	11.08	47	0	89
1048	10.45	2	0.25	11.39	0	11.94	46	0	76
1052	10.3	3	0.25	11.24	0	12.67	46	0	66
1056	10.03	4	0.25	11.12	0	12.42	46	0	63

Total Quantity of Water Removed (gal): 4 gal.
Samplers: JC/BC
Sampling Date: 14-Mar-02
Sampling Time: 1100
Split Sample With:
Sample Type: GRAB

COMMENTS AND OBSERVATIONS:

EA Engineering, Science and Technology

GROUND WATER SAMPLING PURGE FORM

Well I.D.: WRL-MW4B	**EA Personnel:** JC/BC	**Client:** BOC GASES
Location: NIAGARA FALLS	**Well Condition:** LOCKED	**Weather:** PARTLY CLOUDY, MID 40'S
Sounding Method: WLI	**Gauge Date:** 3/13/02	**Measurement Ref:** TOC
Stick Up/Down (ft): UP	**Gauge Time:**	**Well Diameter (in):** 4"

Purge Date:	3/14/02	**Purge Time:**	1200
Purge Method:	HAND BAIL	**Field Technician:**	JC/BC

Well Volume

A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 6.01	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (gal)	Rate (gpm)	pH (pH units)	Sal %	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
INITIAL	6.01			8.05	0.1	8.12	0.12	5.78	86
ENDING		~2		8.1	0.1	9.49	0.12	4.38	> 990

Total Quantity of Water Removed (gal): ~2 gal.
Samplers: JC/BC
Sampling Date: 14-Mar-02
Sampling Time: 1110
Split Sample With:
Sample Type: GRAB

COMMENTS AND OBSERVATIONS: NOT ENOUGH WATER TO PUMP. WELL BAILED DRY ON 13 MAR02 AND SAMPLED ON 14 MAR02

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EA Engineering, Science and Technology

GROUND WATER SAMPLING PURGE FORM

Well I.D.:	EA Personnel:	Client:
WRL-MW5B	JC/BC	BOC GASES
Location:	**Well Condition:**	**Weather:**
NIAGARA FALLS	LOCKED	PARTLY CLOUDY, MID 40'S
Sounding Method:	**Gauge Date:**	**Measurement Ref:**
WLI	3/13/02	TOC
Stick Up/Down (ft):	**Gauge Time:**	**Well Diameter (in):**
UP		4"

Purge Date:	3/13/02	**Purge Time:**	1150
Purge Method:	HAND BAIL	**Field Technician:**	JC/BC

Well Volume

A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 4.11	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (gal)	Rate (gpm)	pH (pH units)	Sal %	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
INITIAL	4.11			7.42	0.1	7.32	0.17	2.69	20
ENDING		~2.5		7.85	0.1	8.53	0.15	11.49	> 990

Total Quantity of Water Removed (gal): ~2.5 gal.
Samplers: JC/BC
Sampling Date: 14-Mar-02
Sampling Time: 1120
Split Sample With:
Sample Type: GRAB

COMMENTS AND OBSERVATIONS: NOT ENOUGH WATER TO PUMP. WELL BAILED DRY ON 13 MAR02 AND SAMPLED ON 14 MAR02

C:\Forms\Lowflow.xls

EA Engineering, Science and Technology

GROUND WATER SAMPLING PURGE FORM

Well I.D.: WRL-MW6B	**EA Personnel:** JC/BC	**Client:** BOC GASES
Location: NIAGARA FALLS	**Well Condition:** LOCKED	**Weather:** PARTLY CLOUDY, MID 40'S
Sounding Method: WLI	**Gauge Date:** 3/13/02	**Measurement Ref:** TOC
Stick Up/Down (ft): UP	**Gauge Time:**	**Well Diameter (in):** 4"

Purge Date:	3/14/02	**Purge Time:**	1130
Purge Method:	2" SUB/LOW FLOW	**Field Technician:**	JC/BC

Well Volume

A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 3.41	**E. Well Volume (gal) C*D):**	**Pump Type:** GRUNDFOS REDI-FLO 2
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (gal)	Rate (gpm)	pH (pH units)	Sal %	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
1130	3.96		0.25	8.6	0.1	10.16	0.13	6.4	130
1134	4.81	1	0.25	7.76	0.1	10.08	0.13	0	310
1138	4.82	2	0.25	7.67	0.1	10.24	0.13	0	180
1142	4.83	3	0.25	7.65	0.1	9.65	0.13	0	160
1146	4.81	4	0.25	7.66	0.1	9.59	0.31	0	160

Total Quantity of Water Removed (gal): 4 gal.
Samplers: JC/BC
Sampling Date: 14-Mar-02
Sampling Time: 1150
Split Sample With:
Sample Type: GRAB

COMMENTS AND OBSERVATIONS: WRL-DUP-0302 ALSO COLLECTED FROM 6B.

EA Engineering, Science and Technology

GROUND WATER SAMPLING PURGE FORM

Well I.D.: WRL-MW7B	**EA Personnel:** JC/BC	**Client:** BOC GASES
Location: NIAGARA FALLS	**Well Condition:** LOCKED	**Weather:** PARTLY CLOUDY, MID 40'S
Sounding Method: WLI	**Gauge Date:** 3/13/02	**Measurement Ref:** TOC
Stick Up/Down (ft): UP	**Gauge Time:**	**Well Diameter (in):** 4"

Purge Date:	3/14/02	**Purge Time:**	1305
Purge Method:	2" SUB/LOW FLOW	**Field Technician:**	JC/BC

Well Volume

A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 8.71	**E. Well Volume (gal) C*D):**	**Pump Type:** GRUNDFOS REDI-FLO 2
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (gal)	Rate (gpm)	pH (pH units)	Sal %	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
1305	10.07		0.25	9.94	0	11.93	38	5.78	350
1309	11.09	1	0.25	9.83	0	9.84	38	0.1	300
1313	11.25	2	0.25	9.81	0	10.75	39	0	290
1317	11.31	3	0.25	9.79	0	11.18	38	0	230
1321	12.14	4	0.25	9.75	0	11.24	38	0	230

Total Quantity of Water Removed (gal): 4 gal.
Samplers: JC/BC
Sampling Date: 14-Mar-02
Sampling Time: 1330
Split Sample With:
Sample Type: GRAB

COMMENTS AND OBSERVATIONS: WRL-DUP-0302 ALSO COLLECTED FROM 6B.

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EA Engineering, Science and Technology

GROUND WATER SAMPLING PURGE FORM

Well I.D.: WRL-MW8B	**EA Personnel:** JC/BC	**Client:** BOC GASES
Location: NIAGARA FALLS	**Well Condition:** LOCKED	**Weather:** PARTLY CLOUDY, MID 40'S
Sounding Method: WLI	**Gauge Date:** 3/13/02	**Measurement Ref:** TOC
Stick Up/Down (ft): UP	**Gauge Time:**	**Well Diameter (in):** 4"

Purge Date:	3/14/02	**Purge Time:**	1335
Purge Method:	2" SUB/LOW FLOW	**Field Technician:**	JC/BC

Well Volume

A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 5.35	**E. Well Volume (gal) C*D):**	**Pump Type:** GRUNDFOS REDI-FLO 2
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (gal)	Rate (gpm)	pH (pH units)	Sal %	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
1335	4.5		0.25	8.21	0.1	9.68	0.18	6.47	390
1339	4.99	1	0.25	7.98	0.1	9.34	0.18	4.1	290
1343	5.11	2	0.25	7.92	0.1	10.05	0.18	4.24	290
1347	11.31	3	0.25	7.9	0.1	10.18	0.18	3.91	320
1351	12.14	4	0.25	7.85	0.1	11.24	0.18	3.7	330

Total Quantity of Water Removed (gal): 4 gal.
Samplers: JC/BC
Sampling Date: 14-Mar-02
Sampling Time: 1355
Split Sample With:
Sample Type: GRAB

COMMENTS AND OBSERVATIONS:

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Attachment C

Chain-of-Custody Records

Environmental
LABORATORY SERVICES

7280 Caswell Street, Hancock Air Park North Syracuse, NY 13212
(315) 458-8033 FAX (315) 458-0249 (800) 843-8265

CHAIN OF CUSTODY RECORD
and Authorization for Analysis

Name	Title
Company	Dept.
Address	Job/PO No.
City, State, Zip	

The following services may result in additional charges:

☐ Telephone Results Telephone No. ______

☐ Fax Results Fax No. ______

Express Service
Advance Agreement Required
☐ 1 Week ☐ 48 Hour

To be completed by Sampler. Please remember to record this information on the container label.

ELS Number	*Date	*Time	*Comp.	*Grab	*Matrix	*Sampling Location	Number of Containers	Plastic/No Preservatives	Plastic/HNO_3	Plastic/H_2SO_4	Plastic/NaOH+Ascorbic Acid	Plastic/NaOH+Zinc Acetate	Glass/No Preservative	Glass/Sodium Thiosulfate	Amber Glass/No Pres.	Amber Glass/H_2SO_4	Other: (specify)	Analyses Required, Remarks, and/or Special Instructions (tests)
	3/14/02	1330		X	GW	WRL-MW8B-0302	1									1L		Phenolics + NITRATE NITRITE
							1	1L										~~Nitrate Nitrite~~ Sulfate
							1		5L									Total Cd, Cr, Fe, Pb Mg, Mn
		↓				↓												Si, Sa, Na, Ti, Zn
		1355				WRL-MW8B-0302	1									1L		Phenolics + NITRATE, NITRITE
							1	1L										~~Nitrate Nitrite~~ Sulfate
							1		5L									Total Cd, Cr, Fe, Pb Mg, Mn
		↓			↓	↓												Si, Sa, Na, Ti, Zn
		1210			LEACHATE	WRL-L1-0302	1									1L		Phenolics + NITRATE, NITRITE
							1	1L										~~Nitrate Nitrite~~ Sulfate
							1		5L									Total Cd, Cr, Fe, Pb Mg, Mn
	↓	↓		↓	↓	↓												Si, Sa, Na, Ti, Zn

Containers Dispensed by:	Date	Time	Container(s) Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Your signature authorizes ELS to analyze the sample(s) as indicated. Relinquished by:	Date	Time	Received at Lab by: Matthew H. [signature]	Date 3/14/02	Time 17:12
Sampler Signature:					

White - LABORATORY Canary - ACCOMPANIES RESULTS Pink - CLIENT

Please return completed form and all sample containers to Environmental Laboratory Services.

2217.ELS..202.9310

Environmental LABORATORY SERVICES

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☐ Telephone Results Telephone No. _____

☐ Fax Results Fax No. _____

Express Service
Advance Agreement Required
☐ 1 Week ☐ 48 Hour

ELS Number	To be completed by Sampler. Please remember to record this information on the container label.						Number of Containers	Container Type/Preservative										Analyses Required, Remarks, and/or Special Instructions
	*Date	*Time	*Comp.	*Grab	*Matrix	*Sampling Location		Plastic/No Preservatives	Plastic/HNO_3	Plastic/H_2SO_4	Plastic/NaOH+Ascorbic Acid	Plastic/NaOH+Zinc Acetate	Glass/No Preservative	Glass/Sodium Thiosulfate	Amber Glass/No Pres.	Amber Glass/H_2SO_4	Other: (specify)	
	3/14/02	0955		X	GW	WRL-MW1B-0302	1	5L										Chromium, Hexavalent
		1020		X		WRL-MW2B-0302	1	5L										Chromium, Hexavalent
		1100				WRL-MW3B-0302	1	5L										Chromium, Hexavalent
		1110				WRL-MW4B-0302	1	5L										Chromium, Hexavalent
		1120				WRL-MW5B-0302	1	5L										Chromium, Hexavalent
		1150				WRL-MW6B-0302	1	5L										Chromium, Hexavalent
		1320				WRL-MW7B-0302	1	5L										Chromium, Hexavalent
		1355			↓	WRL-MW8B-0302	1	5L										Chromium, Hexavalent
		1210			LEACHATE	WRL-L1-0302	1	5L										Chromium, Hexavalent
		1220			SURFACE WATER	WRL-SS-0302	1	5L										Chromium, Hexavalent
		1155			GROUNDWATER	WRL-RB-0302	1	5L										Chromium, Hexavalent
		1140			SURFACE WATER	WRL-SW-0302	1	5L										Chromium, Hexavalent
	↓	—		↓	GW	WRL-DUP-0302	1	5L										Chromium, Hexavalent
								5L										Chromium, Hexavalent

Containers Dispensed by:	Date	Time	Container(s) Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Your signature authorizes ELS to analyze the sample(s) as indicated. Relinquished by:	Date	Time	Received at Lab by:	Date	Time
Sampler Signature:					

White - LABORATORY Canary - ACCOMPANIES RESULTS Pink - CLIENT

Please return completed form and all sample containers to Environmental Laboratory Services.

Environmental LABORATORY SERVICES

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(315) 458-8033 FAX (315) 458-0249 (800) 843-8265

CHAIN OF CUSTODY RECORD
and Authorization for Analysis

Name	Title
Company	Dept.
Address	Job/PO No.
City, State, Zip	

The following services may result in additional charges:

☐ Telephone Results Telephone No. _____

☐ Fax Results Fax No. _____

Express Service
Advance Agreement Required
☐ 1 Week ☐ 48 Hour

ELS Number	To be completed by Sampler. Please remember to record this information on the container label. *Date	*Time	*Comp.	*Grab	*Matrix	*Sampling Location	Number of Containers	Container Type/Preservative: Plastic/No Preservatives	Plastic/HNO_3	Plastic/H_2SO_4	Plastic/NaOH+Ascorbic Acid	Plastic/NaOH+Zinc Acetate	Glass/No Preservative	Glass/Sodium Thiosulfate	Amber Glass/No Pres.	Amber Glass/H_2SO_4	Other: (specify)	Analyses Required, Remarks, and/or Special Instructions
	3/14/02	1110		X	GW	WRL-MW4B-0302	1									1L		Phenolics + NITRATE, NITRITE
	↓	↓		↓	↓	↓	1	1L										Sulfate
	↓	↓		↓	↓	↓	1		5L									Total Cd, Cr, Fe, Pb, Mg, Mn
	↓	↓		↓	↓	↓												Sb, Se, Na, Tl, Zn
	↓	1120		↓	↓	WRL-MW5B-0302										1L		Phenolics + NITRATE, NITRITE
	↓	↓		↓	↓	↓	1	1L										Sulfate
	↓	↓		↓	↓	↓	1		5L									Total Cd, Cr, Fe, Pb, Mg, Mn
	↓	↓		↓	↓	↓												Sb, Se, Na, Tl, Zn
	↓	1150		↓	↓	WRL-MW6B-0302	1									1L		Phenolics + NITRATE, NITRITE
	↓	↓		↓	↓	↓	1	1L										Sulfate
	↓	↓		↓	↓	↓	1		5L									Total Cd, Cr, Fe, Pb, Mg, Mn
	↓	↓		↓	↓	↓												Sb, Se, Na, Tl, Zn

Containers Dispensed by:	Date	Time	Container(s) Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Your signature authorizes ELS to analyze the sample(s) as indicated. Relinquished by:	Date	Time	Received at Lab by:	Date 3/14/02	Time 1712
Sampler Signature:					

White - LABORATORY Canary - ACCOMPANIES RESULTS Pink - CLIENT

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CHAIN OF CUSTODY RECORD
and Authorization for Analysis

Name	Title
Company	Dept.
Address	Job/PO No.
City, State, Zip	

The following services may result in additional charges: Express Service

☐ Telephone Results Telephone No. _____ Advance Agreement Required

☐ Fax Results Fax No. _____ ☐ 1 Week ☐ 48 Hour

ELS Number	To be completed by Sampler. Please remember to record this information on the container label.						Number of Containers	Container Type/Preservative										Analyses Required, Remarks, and/or Special Instructions
	*Date	*Time	*Comp.	*Grab	*Matrix	*Sampling Location		Plastic/No Preservatives	Plastic/HNO_3	Plastic/H_2SO_4	Plastic/NaOH+Ascorbic Acid	Plastic/NaOH+Zinc Acetate	Glass/No Preservative	Glass/Sodium Thiosulfate	Amber Glass/No Pres.	Amber Glass/H_2SO_4	Other: (specify)	
	3/14/02	1220		X	SURFACE WATER	WRL-SS-0302	1									1L		Phenolics + NITRATE NITRITE
							1	1L										Nitrate-Nitrite & Sulfate
							1		1L									Total Cd Cr Fe Pb Mg Mn
																		Sb Se Na Tl Zn
		1155		X	SURFACE WATER	WRL-RB-0302	1									1L		Phenolics + NITRATE NITRITE
							1	1L										Nitrate-Nitrite & Sulfate
							1		1L									Total Cd Cr Fe Pb Mg Mn
																		Sb Se Na Tl Zn
		1140		X	SURFACE WATER	WRL-SW-0302	1									1L		Phenolics + NITRATE NITRITE
							1	1L										Nitrate-Nitrite & Sulfate
							1		1L									Total Cd Cr Fe Pb Mg Mn
																		Sb Se Na Tl Zn

Containers Dispensed by:	Date	Time	Container(s) Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Your signature authorizes ELS to analyze the sample(s) as indicated. Relinquished by:	Date	Time	Received at Lab by:	Date 3/14/02	Time 17:12
Sampler Signature:					

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☐ Telephone Results Telephone No. _____ Advance Agreement Required

☐ Fax Results Fax No. _____ ☐ 1 Week ☐ 48 Hour

ELS Number	To be completed by Sampler. Please remember to record this information on the container label.						Number of Containers	Container Type/Preservative										Analyses Required, Remarks, and/or Special Instructions
	*Date	*Time	*Comp.	*Grab	*Matrix	*Sampling Location		Plastic/No Preservatives	Plastic/HNO_3	Plastic/H_2SO_4	Plastic/NaOH+Ascorbic Acid	Plastic/NaOH+Zinc Acetate	Glass/No Preservative	Glass/Sodium Thiosulfate	Amber Glass/No Pres.	Amber Glass/H_2SO_4	Other: (specify)	
	3/14/02	—		X	GW	WEI - DP 0202	1									1L		Phenolics, NITRATE, NITRITE
	↓	↓		↓	↓	↓	1	1L										Nitrate, Nitrite & Sulfate
							1		5L									Total Cd, Cr, Fe, Pb, Mg, Mn
																		Sb, Se, Na, Tl, Zn
							1									1L		Phenolics
							1	1L										Nitrate, Nitrite & Sulfate
							1		5L									Total Cd, Cr, Fe, Pb, Mg, Mn
																		Sb, Se, Na, Tl, Zn
							1									1L		Phenolics
							1	1L										Nitrate, Nitrite & Sulfate
							1		5L									Total Cd, Cr, Fe, Pb, Mg, Mn
																		Sb, Se, Na, Tl, Zn

Containers Dispensed by:	Date	Time	Container(s) Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Your signature authorizes ELS to analyze the sample(s) as indicated. Relinquished by:	Date	Time	Received at Lab by:	Date	Time
Sampler Signature:					

White - LABORATORY Canary - ACCOMPANIES RESULTS Pink - CLIENT

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Environmental LABORATORY SERVICES

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(315) 458-8033 FAX (315) 458-0249 (800) 843-8265

CHAIN OF CUSTODY RECORD
and Authorization for Analysis

Name		Title	
Company		Dept.	
Address		Job/PO No.	
City, State, Zip			

The following services may result in additional charges: Express Service

☐ Telephone Results Telephone No. _____ Advance Agreement Required

☐ Fax Results Fax No. _____ ☐ 1 Week ☐ 48 Hour

To be completed by Sampler. Please remember to record this information on the container label.

ELS Number	*Date	*Time	*Comp.	*Grab	*Matrix	*Sampling Location	Number of Containers	Container Type/Preservative: Plastic/No Preservatives	Plastic/HNO_3	Plastic/H_2SO_4	Plastic/NaOH+Ascorbic Acid	Plastic/NaOH+Zinc Acetate	Glass/No Preservative	Glass/Sodium Thiosulfate	Amber Glass/No Pres.	Amber Glass/H_2SO_4	Other: (specify)	Analyses Required, Remarks, and/or Special Instructions
	3/14/02	09:55		X	GW	WRL-MW1B-0302	1									L		+ NITRATE NITRITE
	↓	↓		↓	↓	↓	1	L										
							1		L									
		↓				↓												
		10:20				WRL-MW2B-0302	1									L		+ NITRATE NITRITE
							1	L										
		↓				↓	1		L									
		↓				↓												
		11:00				WRL-MW3B-0302	1									L		+ NITRATE, NITRITE
		↓				↓	1	L										
							1		L									
	↓	↓		↓	↓	↓												

Containers Dispensed by:	Date	Time	Container(s) Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Your signature authorizes ELS to analyze the sample(s) as indicated. Relinquished by:	Date	Time	Received at Lab by:	Date 3/14/02	Time 17:12
Sampler Signature:					

White - LABORATORY Canary - ACCOMPANIES RESULTS Pink - CLIENT

Please return completed form and all sample containers to Environmental Laboratory Services.

Attachment D

Laboratory Analytical Results

E.A. ENGINEERING, SCIENCE & TECHNOLOGY
737 Fly Road

East Syracuse, NY 13057
ATTN: Mr. Scott Graham

PO#:
SPILL#:
CLIENT JOB NUMBER:

PROJECT #: 200472
RECEIVED: 03/14/2002

TEST PERFORMED	RESULTS	UNITS	DATE/TIME PERFORMED	METHOD NUMBER	PERFORMED BY
SAMPLE #318827 CLIENT SAMPLE ID: WRL-SS-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	13.3	MG/L	03/20/02		AHY
PHENOLICS	0.011	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318828 CLIENT SAMPLE ID: WRL-SS-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	406	MG/L	03/28/02	EPA 375.2	AHY
SAMPLE #318829 CLIENT SAMPLE ID: WRL-SS-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	0.016	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.019	MG/L	03/22/02	EPA 6020	NSH
Selenium	0.006	MG/L	03/22/02	EPA 6020	NSH
Thallium	0.008	MG/L	03/22/02	EPA 6020	NSH
Zinc	<0.005	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	0.674	MG/L	03/19/02	EPA 6010	NSH
Magnesium	41.1	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	18.3	MG/L	03/19/02	EPA 6010	NSH
Sodium	68.0	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318830 CLIENT SAMPLE ID: WRL-RB-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	<0.01	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318831 CLIENT SAMPLE ID: WRL-RB-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318832 CLIENT SAMPLE ID: WRL-RB-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	<2	MG/L	03/28/02	EPA 375.2	AHY
SAMPLE #318833 CLIENT-SAMPLE ID: WRL-RB-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	<0.005	MG/L	03/22/02	EPA 6020	NSH

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TEST PERFORMED	RESULTS	UNITS	DATE/TIME PERFORMED	METHOD NUMBER	PERFORMED BY
SAMPLE #318833 CLIENT SAMPLE ID: WRL-RB-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					NSH
Selenium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Thallium	0.007	MG/L	03/22/02	EPA 6020	NSH
Zinc	<0.005	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	<0.025	MG/L	03/19/02	EPA 6010	NSH
Magnesium	<1.0	MG/L	03/19/02	EPA 6010	NSH
Silica (SiO2)	<0.107	MG/L	03/19/02	EPA 6010	NSH
Sodium	<1.0	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318834 CLIENT SAMPLE ID: WRL-SW-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	<0.01	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318835 CLIENT SAMPLE ID: WRL-SW-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318836 CLIENT SAMPLE ID: WRL-SW-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	<2	MG/L	03/28/02	EPA 375.2	AHY
SAMPLE #318837 CLIENT SAMPLE ID: WRL-SW-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	<0.005	MG/L	03/22/02	EPA 6020	NSH
Selenium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Zinc	<0.005	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	<0.025	MG/L	03/19/02	EPA 6010	NSH
Magnesium	<1.0	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	<0.107	MG/L	03/20/02	EPA 6010	NSH
Sodium	<1.0	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318838 CLIENT SAMPLE ID: WRL-MW4B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	0.194	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY

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SAMPLE #318838 CLIENT SAMPLE ID: WRL-MW4B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	0.194	MG/L	03/15/02 @ 08:15		AHY
SAMPLE #318839 CLIENT SAMPLE ID: WRL-MW4B-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318840 CLIENT SAMPLE ID: WRL-MW4B-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	144	MG/L	03/28/02	EPA 375.2	AHY
SAMPLE #318841 CLIENT SAMPLE ID: WRL-MW4B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	0.170	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.013	MG/L	03/22/02	EPA 6020	NSH
Selenium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Zinc	0.014	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	0.798	MG/L	03/19/02	EPA 6010	NSH
Magnesium	49.0	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	19.5	MG/L	03/20/02	EPA 6010	NSH
Sodium	77.0	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318842 CLIENT SAMPLE ID: WRL-MW5B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	<0.01	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318843 CLIENT SAMPLE ID: WRL-MW5B-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318844 CLIENT SAMPLE ID: WRL-MW5B-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	169	MG/L	03/28/02	EPA 375.2	AHY
SAMPLE #318845 CLIENT SAMPLE ID: WRL-MW5B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH

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SAMPLE #318845 CLIENT SAMPLE ID: WRL-MW5B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					NSH
Chromium	0.007	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.054	MG/L	03/22/02	EPA 6020	NSH
Selenium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Zinc	0.045	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	2.3	MG/L	03/19/02	EPA 6010	NSH
Magnesium	74.4	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	24.4	MG/L	03/20/02	EPA 6010	NSH
Sodium	58.9	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318846 CLIENT SAMPLE ID: WRL-MW6B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	<0.01	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318847 CLIENT SAMPLE ID: WRL-MW6B-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318848 CLIENT SAMPLE ID: WRL-MW6B-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	233	MG/L	03/28/02	EPA 375.2	AHY
SAMPLE #318849 CLIENT SAMPLE ID: WRL-MW6B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	0.006	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.134	MG/L	03/22/02	EPA 6020	NSH
Selenium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Zinc	<0.005	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	0.861	MG/L	03/19/02	EPA 6010	NSH
Magnesium	84.1	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	18.9	MG/L	03/20/02	EPA 6010	NSH
Sodium	69.2	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR

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SAMPLE #318849 CLIENT SAMPLE ID: WRL-MW6B-0302				**DATE SAMPLED:** 03/14/02	
Metals Digestion (Landfills,SHW)					BDR
SAMPLE #318850 CLIENT SAMPLE ID: WRL-MW1B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	<0.01	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318851 CLIENT SAMPLE ID: WRL-MW1B-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318852 CLIENT SAMPLE ID: WRL-MW1B-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	177	MG/L	03/28/02	EPA 375.2	AHY
SAMPLE #318853 CLIENT SAMPLE ID: WRL-MW1B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.722	MG/L	03/22/02	EPA 6020	NSH
Selenium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Zinc	0.192	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	0.376	MG/L	03/19/02	EPA 6010	NSH
Magnesium	58.6	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	17.6	MG/L	03/20/02	EPA 6010	NSH
Sodium	127	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318854 CLIENT SAMPLE ID: WRL-MW2B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	0.387	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318855 CLIENT SAMPLE ID: WRL-MW2B-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	1.5	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318856 CLIENT SAMPLE ID: WRL-MW2B-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	12.8	MG/L	03/25/02	EPA 375.2	AHY

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SAMPLE #318857 CLIENT SAMPLE ID: WRL-MW2B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					NSH
SAMPLE #318857 CLIENT SAMPLE ID: WRL-MW2B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	0.351	MG/L	03/22/02	EPA 6020	NSH
Lead	0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.024	MG/L	03/22/02	EPA 6020	NSH
Selenium	0.009	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Zinc	0.026	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	1.0	MG/L	03/19/02	EPA 6010	NSH
Magnesium	1.0	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	9.6	MG/L	03/20/02	EPA 6010	NSH
Sodium	46.8	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318858 CLIENT SAMPLE ID: WRL-MW3B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	<0.01	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318859 CLIENT SAMPLE ID: WRL-MW3B-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318860 CLIENT SAMPLE ID: WRL-MW3B-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	61.5	MG/L	03/25/02	EPA 375.2	AHY
SAMPLE #318861 CLIENT SAMPLE ID: WRL-MW3B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.007	MG/L	03/22/02	EPA 6020	NSH
Selenium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Zinc	<0.005	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	0.244	MG/L	03/19/02	EPA 6010	NSH

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SAMPLE #318861 CLIENT SAMPLE ID: WRL-MW3B-0302				**DATE SAMPLED:** 03/14/02	
ICP					NSH
Magnesium	2.5	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	20.8	MG/L	03/20/02	EPA 6010	NSH
Sodium	61.7	MG/L	03/19/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318862 CLIENT SAMPLE ID: WRL-MW7B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	0.064	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318863 CLIENT SAMPLE ID: WRL-MW7B-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318864 CLIENT SAMPLE ID: WRL-MW7B-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	48.4	MG/L	03/25/02	EPA 375.2	AHY
SAMPLE #318865 CLIENT SAMPLE ID: WRL-MW7B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	0.092	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.139	MG/L	03/22/02	EPA 6020	NSH
Selenium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Zinc	0.012	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	4.2	MG/L	03/19/02	EPA 6010	NSH
Magnesium	12.8	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	29.5	MG/L	03/19/02	EPA 6010	NSH
Sodium	72.4	MG/L	03/20/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
SAMPLE #318866 CLIENT SAMPLE ID: WRL-MW8B-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	0.036	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318867 CLIENT SAMPLE ID: WRL-MW8B-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	<1	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	<0.002	MG/L	03/25/02	EPA 420.2	AHY

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SAMPLE #318867 CLIENT SAMPLE ID: WRL-MW8B-0302				**DATE SAMPLED:** 03/14/02	
PHENOLICS	<0.002	MG/L	03/25/02		AHY
SAMPLE #318868 CLIENT SAMPLE ID: WRL-MW8B-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	457	MG/L	03/28/02	EPA 375.2	AHY
SAMPLE #318869 CLIENT SAMPLE ID: WRL-MW8B-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	0.134	MG/L	03/22/02	EPA 6020	NSH
Lead	0.032	MG/L	03/22/02	EPA 6020	NSH
Manganese	0.532	MG/L	03/22/02	EPA 6020	NSH
Selenium	0.052	MG/L	03/22/02	EPA 6020	NSH
Thallium	0.009	MG/L	03/22/02	EPA 6020	NSH
Zinc	0.661	MG/L	03/22/02	EPA 6020	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR
ICP					
Iron	13.4	MG/L	03/19/02	EPA 6010	NSH
Magnesium	62.3	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	35.1	MG/L	03/19/02	EPA 6010	NSH
Sodium	233	MG/L	03/20/02	EPA 6010	NSH
SAMPLE #318870 CLIENT SAMPLE ID: WRL-L1-0302				**DATE SAMPLED:** 03/14/02	
CHROMIUM, HEXAVALENT	0.562	MG/L	03/15/02 @ 08:15	SM18 3500-CR D	AHY
SAMPLE #318871 CLIENT SAMPLE ID: WRL-L1-0302				**DATE SAMPLED:** 03/14/02	
AMMONIA NITROGEN	4.9	MG/L	03/20/02	SM18 4500-NH3-E	AHY
PHENOLICS	0.010	MG/L	03/25/02	EPA 420.2	AHY
SAMPLE #318872 CLIENT SAMPLE ID: WRL-L1-0302				**DATE SAMPLED:** 03/14/02	
SULFATE	10.4	MG/L	03/25/02	EPA 375.2	AHY
SAMPLE #318873 CLIENT SAMPLE ID: WRL-L1-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					
Cadmium	<0.005	MG/L	03/22/02	EPA 6020	NSH
Chromium	0.532	MG/L	03/22/02	EPA 6020	NSH
Lead	<0.005	MG/L	03/22/02	EPA 6020	NSH
Manganese	<0.005	MG/L	03/22/02	EPA 6020	NSH
Selenium	0.023	MG/L	03/22/02	EPA 6020	NSH
Thallium	<0.005	MG/L	03/22/02	EPA 6020	NSH

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SAMPLE #318873 CLIENT SAMPLE ID: WRL-L1-0302				**DATE SAMPLED:** 03/14/02	
ICP/MS					NSH
Zinc	<0.005	MG/L	03/22/02	EPA 6020	NSH
ICP					
Iron	<0.025	MG/L	03/19/02	EPA 6010	NSH
Magnesium	<1.0	MG/L	03/20/02	EPA 6010	NSH
Silica (SiO2)	0.400	MG/L	03/19/02	EPA 6010	NSH
Sodium	78.5	MG/L	03/20/02	EPA 6010	NSH
Metals Digestion			03/15/02	EPA 3005A	BDR

Wendy J. Umberger
Laboratory Director

3/28/200
Print Date

All tests performed under NYS ELAP Laboratory Certification # 11375 unless otherwise stated.

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Attachment E

Landfill Cap Inspection Checklist

LANDFILL CAP INSPECTION CHECKLIST
WITMER ROAD LANDFILL, NIAGARA FALLS, NEW YORK

EA Personnel:	Jim Hayward, Chris Canonica
Date:	27 Mar02
Weather:	Cloudy, 30 degrees F

1. Inspection of ground surface for exposure of geotextile cover (cap erosion):
   NO DEFICIENCIES OBSERVED

2. Inspection of ground surface for differential settlement resulting in soil cracking or ponded water:
   NO DEFICIENCIES OBSERVED

3. Identification of stressed vegetation:
   NONE OBSERVED

4. Identification of seeps, rooted vegetation (trees), and/or animal burrows:
   NONE OBSERVED

5. Identification of deteriorating equipment (i.e., monitoring wells, fencing, or drainage structures):
   NONE OBSERVED

6. Inspection of stormwater drainage swales for erosion, sloughing, or flow-through:
   NO DEFICIENCIES OBSERVED

7. Inspection of east side of the landfill (Niagara Mohawk Power Corporation parcel) along the intermittent stream for the presence of erosion or sloughing:
   NO DEFICIENCIES OBSERVED

8. Inspection of access roads:
   NO DEFICIENCIES OBSERVED