SEMI ANNUAL REPORT
OPERATION AND MAINTENANCE
JULY 2011 TO DECEMBER 2011
PFOHL BROTHERS LANDFILL
CHEEKTOWAGA, NY

Submitted to:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
270 MICHIGAN AVENUE
BUFFALO, NEW YORK 14203

Prepared by:

URS CORPORATION
77 GOODELL STREET
BUFFALO, NEW YORK 14203

Prepared for:

TOWN OF CHEEKTOWAGA
ENGINEERING DEPARTMENT
275 ALEXANDER AVE
CHEEKTOWAGA, NEW YORK 14211

MARCH
2012

March 12, 2012

Mr. Jaspal Singh Walia, P.E.
New York State Department of Environmental Conservation
270 Michigan Ave.
Buffalo, NY 14203

Re: Semi-Annual Report
Pfohl Brothers Landfill, Town of Cheektowaga, New York

Dear Mr. Walia:

Enclosed is one copy of the sixteenth Semi-Annual Report for the Pfohl Brothers Landfill in Cheektowaga, New York. A copy has also been sent to Ms. Pamela Tames, P.E. of the United States Environmental Protection Agency. Also enclosed is the Data Applicability Report for laboratory analyses associated with the Semi-Annual Report. PDF copies of the reports are also enclosed.

If you have any questions on this report, please feel free to contact me.

Sincerely,

URS CORPORATION

Jon Sundquist, Ph.D.
Project Manager

Enclosures

cc: Pamela Tames, P.E. - USEPA (w/attachments)
William Pugh, P.E. – Town of Cheektowaga (w/attachments)
File 11172700 (C-1)

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1.0 INTRODUCTION

1.1 Background

The Pfohl Brothers Landfill is located on Aero Drive in the Town of Cheektowaga, New York (Figure 1-1). The site is listed as site No. 9-15-043 on the New York State Department of Environmental Conservation's (NYSDEC's) Registry of Inactive Hazardous Waste Disposal Sites. A Consent Order between NYSDEC and potentially responsible parties (PRPs) for closure of the site was signed in 2001 and remedial construction commenced in 2001. The remedy included consolidation of waste material, capping of the waste disposal and consolidation areas, and encircling the landfill areas with a groundwater collection system to prevent off-site migration. The remedial action was completed in 2002.

Responsibility for implementing the remedy was divided between a "steering committee" of industrial PRPs and the Town of Cheektowaga. The steering committee responsibilities lay generally with the capital construction activities of the remedy including waste consolidation, cap and drainage system installation, etc. The Town of Cheektowaga, which was named as a PRP for disposal of municipal waste at the Pfohl Brothers Landfill when it was operating, is performing the operation and maintenance (O&M) activities at the landfill, pursuant to a settlement agreement between the Town and the steering committee.

1.2 Operation and Maintenance Activities

While construction of the remedy was substantially complete by late 2002, the final O&M manual was not approved by the NYSDEC until March 10, 2006. However, the Town of Cheektowaga and its consultant (URS Corporation) assumed most of the operational responsibilities since 2002. This includes a variety of general maintenance activities as outlined in Section 2 and sampling and other monitoring activities outlined in Section 3.

Beginning in 2004, the Town and URS assumed all of the O&M activities described in the O&M plan. This report is the sixteenth semi-annual report as called for by Section 3.6 of the O&M plan.

2.0 GENERAL MAINTENANCE ACTIVITIES

Since completion of construction activities in 2002, personnel from the Town of Cheektowaga Engineering Department have performed general activities to ensure the physical operation of the landfill as intended by the design. The various O&M activities performed by the Town from July 2011 through December 2011 include the following actions.

- The amount of groundwater discharged through the collection system was recorded on a daily basis. The flow rate displayed by each wet well pump at the time of daily inspection and the total cumulative volume of flow was recorded for each wet well on daily inspection sheets. Examples of the daily inspection sheet are attached in Appendix A.

- Total cumulative effluent flow rates and volumes were summarized on a monthly basis starting in February 2003. The monthly totals for the period of July 2011 through December 2011, including graphs showing daily total discharge (gallons) as a function of calendar day, are presented in Appendix B.

- The wet well pumps were shutdown during wet weather flow conditions throughout the year to reduce hydraulic loading to the sewer. Such actions were only taken upon request of the Buffalo Sewer Authority during heavy storm events in order to reduce the hydraulic load on the BSA treatment system during such events. Shutdown events are recorded and included with the monthly flow data as previously requested by NYSDEC.

- Plowed snow to access the Control Building when necessary.

- Cleaned/replaced check valves as necessary at all wet wells.

- Replaced surge suppressors and fuses as needed for pump station instrumentation equipment.

- Performed annual mowing and trimming of landfill cap in September 2011.

- Engaged contractor to apply Roundup herbicide to control vegetation growth the stone access road (applied on September 22, 2011).

- Purchased a supply of surge protection devices for inventory.

- Wildlife trapper engaged as needed to control ground burrowing animals. A total of 13 woodchucks were trapped during August and September 2011.

3.0 MONITORING ACTIVITIES

The Town of Cheektowaga retained URS Corporation to perform monitoring activities as outlined in Section 3.1 of the O&M plan. During the period of January 2004 through the present, URS performed groundwater hydraulic monitoring (Section 3.1.1.2 of the O&M plan) and effluent monitoring (Section 3.1.4 of the O&M plan) on a quarterly basis. URS also performed the sixteenth semi-annual groundwater quality monitoring event (Section 3.1.1.3 of the O&M plan). A summary of the monitoring activities is presented in the following subsections. Hydraulic and groundwater sampling locations are shown on Figure 3-1.

3.1 Groundwater Hydraulic Monitoring

Groundwater and surface water elevations were monitored on a quarterly basis at all locations listed in Table 3.1 of the O&M Plan. The hydraulic monitoring data tables showing groundwater elevations are presented in Appendix C. Table 1 of this appendix lists the measured elevations. Table 2 provides a comparison of the measured levels in the wells and corresponding manholes/wet wells.

The data presented in Appendix C indicate that groundwater levels outside the collection system were higher than the levels measured in the corresponding wet well or manhole for each measurement date with one exception. The pairing of WW-6 and GW-34S exhibited an outward gradient during the September 22, 2011 monitoring event. However, the groundwater elevation recorded at GW-34S was unusually low during this measurement, and the gradient returned to an inward gradient during the November 1, 2011 and December 20, 2011 measurements. Therefore, these data demonstrate that the collection system is operating as designed.

3.2 Groundwater Quality Monitoring

The sixteenth semi-annual round of groundwater sampling was conducted between November 1, 2011 and November 3, 2011. All wells listed in Table 3.2 of the O&M plan were

purged and sampled using dedicated/disposable equipment. Figure 3-1 shows the well locations. Low flow sampling techniques were used on most wells.

Passive diffusion bags (PDBs) were placed in three wells with low recharge rates (GW-4S, GW-7S, and GW-7D) on September 23, 2011. The PDBs were removed from the wells during the sampling event and their contents were analyzed for VOCs. Following removal of the PDBs the three wells were purged dry. These wells were sampled for the other required parameters after their water levels recovered.

Purge logs and sampling summary sheets are provided in Appendix D. Measurements of pH, specific conductivity, temperature, dissolved oxygen, oxidation reduction potential, and turbidity taken during purging are provided in Appendix D. The samples were packed with ice in coolers and transported under chain-of-custody (CoC) control to Test America Laboratories of Amherst, New York.

Groundwater samples were analyzed for the parameters listed in Table 3.2 of the O&M plan as revised in accordance with Table 3-6 in the Semi Annual Report dated September 2007 (January through June 2007) and as approved by the December 6, 2006 and November 29, 2007 correspondence from the NYSDEC authorizing a reduction in the parameters list (this table is included in this report as Table 3-2). Table 3-1 of this report presents the groundwater sample results compared with NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Class GA water quality standards.

Results

No VOCs or SVOCs were detected at concentrations above the Class GA water quality standards at any location.

Among the metals, iron, magnesium, manganese, and sodium routinely exceed Class GA standards in most site wells. Chromium was detected at concentrations exceeding Class GA standards in wells GW-04S and GW-07D. Lead was detected at a concentration exceeding Class GA standards in well GW-07D. Mercury was detected at a concentration exceeding Class GA

standards in well GW-04S. Nickel was detected at concentrations exceeding groundwater standards in wells GW-03S and GW-07D.

Comparison to Historical Results

No significant changes in metals concentrations were observed when compared to previous sampling event analytical results. The concentration of iron, magnesium, manganese, and sodium in most site wells was similar to the concentrations found during previous sampling events with the exception of location GW-04S. Concentrations of iron, magnesium, and manganese in this well were the highest they have been in the last five years.

The concentrations of chromium and nickel at GW-07D and GW-03S, and lead at GW-07D were within the historical range of concentrations observed for these compounds at these wells.

Sodium concentrations were generally higher in bedrock wells (GW-01D, GW-3D, GW-8D and GW-26D) and shallow wells adjacent to roads (GW-01S and GW-30S). The sodium concentration was also elevated in GW-08SR. The higher sodium concentrations in the bedrock wells may be attributed to the local bedrock composition and the elevated concentration in the shallow wells may be the result of seasonal road de-icing activities.

Trend Analysis

Appendix E, Figures E-1 through E-19 presents a trend analysis of groundwater parameters that routinely exceed Class GA groundwater standards. A review of the trend analysis indicated that no significant changes or trends in concentrations of any of the parameters exceeding groundwater standards have occurred over the sixteen semi-annual sampling events except as described below. Figure E-2 for GW-01S, indicates a consistent drop in sodium concentration over the sixteen sampling events. Figure E-4 for GW-03S indicates an upward trend for nickel since monitoring began (although concentrations were significantly lower during the last four events) Figure E-4 also indicates an upward trend for magnesium in GW-03S since monitoring began. Figure E-5 for GW-04D, indicates a slight increasing trend for magnesium. Figure E-9 for GW-08D shows a decreasing trend for both iron and manganese since monitoring began. Figure E-10 for GW-08SR shows an upward trend in sodium concentration since

monitoring began. Figure E-12 for GW-28S, indicates a decreasing trend for sodium since monitoring began.

Laboratory Report

The groundwater analytical data package was prepared by Test America in accordance with NYSDEC Category A deliverable requirements. It was reviewed for compliance with analytical method requirements and the following guidelines: USEPA *Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, EPA-540-R-99-008, October 1999; USEPA *CLP National Functional Guidelines for Inorganic Data Review*, EPA-540-R-01-008, July 2002; and USEPA *Region II Data Validation SOP for SW-846 Method 8290, PCDDs and PCDFs by High Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS)*, SOP No. HW-19, Revision 1, October 1994. Qualifications applied to the data include "J/UJ" (estimated concentration/estimated quantitation limit), "J+" (estimated concentration with possible high bias), "J-" (estimated concentration with possible low bias), and "U" (not detected).

A Data Applicability Report (DAR) was prepared following the guidelines provided in NYSDEC Division of Environmental Remediation (DER-10) *Technical Guidance for Site Investigation and Remediation, Appendix 2B,* dated May 2010. The DAR dated January 2012 is submitted separately from this report.

3.3 Groundwater Discharge Monitoring

URS completed two quarterly sampling events (September 2011 and December 2011) of the groundwater collection system discharge since the previous semi-annual report. The sampling was performed in accordance with the requirements of Discharge Permit No. 10-11-CH016 between the Buffalo Sewer Authority and the Town of Cheektowaga. A copy of Permit No. 10-11-CH016 is included as Appendix F.

During the sampling events in September 2011 and December 2011, each regulated parameter was below the limits set by the permit. Copies of the data summary tables that were included with the monitoring reports are included as Appendix G.

3.4 Monitoring Well Inspections

During the November 2011 groundwater sampling event, a well inspection was performed. All wells appeared to be in good condition with the exception of previously existing damage to the risers on GW-07D, GW-01S, and GW-01D. The monitoring well inspection logs may be found in Appendix H.

4.0 SUMMARY AND RECOMMENDATIONS

General Maintenance: The Town will continue to maintain mechanical equipment at the landfill on an as-needed basis and operate the groundwater collection and discharge system as designed. The Town will also continue regular inspections, mow the cap once per year, and plow access to the control building during winter months as necessary.

Groundwater Hydraulic Monitoring: Hydraulic monitoring has been performed on a quarterly basis in conjunction with the discharge monitoring. Water level measurement data demonstrates that the hydraulic gradient is from outside the landfill towards the collection trench. Continued quarterly monitoring is recommended.

Groundwater Quality Monitoring: Groundwater sample results indicate that only low levels of organic compounds and metals are present. Similar concentrations of most parameters were found during previous sampling events. The seventeenth round of groundwater sampling will be conducted in May 2012. Low flow sampling techniques will be used. Passive diffusion bags will be used again for VOC analyses at the three wells (GW-4S, GW-7S, and GW-7D) that go dry even using low flow sampling techniques.

Groundwater Discharge Monitoring: Groundwater discharges remain within permit limits. Continued quarterly monitoring is recommended.

Surface Water and Sediment Sampling: URS asked that the NYSDEC consider the discontinuation of surface water and sediment sampling at the site in the January to June 2008 Semiannual Report. No future surface water or sediment sampling is planned.

TABLES

TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
NOVEMBER 2011

Location ID			GW-01D	GW-01S	GW-03D	GW-03S	GW-04D
Sample ID			GW-1D	GW-1S	GW-3D	GW-3S	GW-04D
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			11/03/11	11/03/11	11/01/11	11/01/11	11/02/11
Parameter	**Units**	*					
Volatile Organic Compounds							
1,2-Dichloroethene (total)	UG/L	5					
Semivolatile Organic Compounds							
1,3-Dichlorobenzene	UG/L	3			1.5 J		
1,4-Dichlorobenzene	UG/L	3			1.8 J		
bis(2-Ethylhexyl)phthalate	UG/L	5					
Arsenic	MG/L	0.025					
Barium	MG/L	1	0.069	0.19	0.072	0.16	0.066
Cadmium	MG/L	0.005				0.00056 J	
Chromium	MG/L	0.05				0.039	0.0011 J
Copper	MG/L	0.2				0.0030 J	0.0019 J
Iron	MG/L	0.3	0.10	7.0	1.5	0.15	0.49
Lead	MG/L	0.025					
Magnesium	MG/L	35	33.5	15.5	15.5	79.8	66.0
Manganese	MG/L	0.3	0.017	1.2	0.52	0.052	0.020
Mercury	MG/L	7.00E-04					
Nickel	MG/L	0.1			0.0035 J	0.13	
Silver	MG/L	0.05				0.0020 J	
Sodium	MG/L	20	85.1	109	159	28.4	71.8
Zinc	MG/L	2	0.0020 J	0.0017 J		0.0090 J	0.0060 J

*- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998 (includes 4/2000 Addendum). Class GA. * - PCB Criteria based on sum of the aroclors.

Flags assigned during chemistry validation are shown.

Concentration Exceeds

J - The analyte was positively identified, the quantitation is an estimation.

Blank - not detected. - = No criteria.

Only Detected Results Reported.

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TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
NOVEMBER 2011

Location ID			GW-04S	GW-07D	GW-07D	GW-07S	GW-07S
Sample ID			GW-04S	GW-7D	GW-7D	GW-7S	GW-7S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			11/02/11	11/01/11	11/02/11	11/01/11	11/02/11
Parameter	**Units**	*					
Volatile Organic Compounds							
1,2-Dichloroethene (total)	UG/L	5			NA		NA
Semivolatile Organic Compounds							
1,3-Dichlorobenzene	UG/L	3		NA		NA	
1,4-Dichlorobenzene	UG/L	3		NA		NA	
bis(2-Ethylhexyl)phthalate	UG/L	5		NA	3.8 J	NA	2.1 J
Arsenic	MG/L	0.025	0.0070 J	NA	0.0068 J	NA	
Barium	MG/L	1	0.24	NA	0.068	NA	0.25
Cadmium	MG/L	0.005	0.00086 J	NA	0.0021	NA	0.00063 J
Chromium	MG/L	0.05	0.084	NA	0.26	NA	0.0092
Copper	MG/L	0.2	0.032	NA	0.037	NA	
Iron	MG/L	0.3	18.4	NA	21.1	NA	0.31
Lead	MG/L	0.025		NA	0.20	NA	
Magnesium	MG/L	35	35.8	NA	32.1	NA	33.3
Manganese	MG/L	0.3	0.66	NA	0.13	NA	0.052
Mercury	MG/L	7.00E-04	0.00076	NA		NA	
Nickel	MG/L	0.1	0.047	NA	0.13	NA	0.023
Silver	MG/L	0.05		NA		NA	
Sodium	MG/L	20	26.9	NA	84.2	NA	55.9
Zinc	MG/L	2	0.11	NA	0.088	NA	0.0070 J

*- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998 (includes 4/2000 Addendum). Class GA. * - PCB Criteria based on sum of the aroclors.

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TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
NOVEMBER 2011

Location ID			GW-08D	GW-08D	GW-08SR	GW-26D	GW-28S
Sample ID			DUPLICATE	GW-8D	GW-8SR	GW-26D	GW-28S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			11/01/11	11/01/11	11/01/11	11/02/11	11/02/11
Parameter	**Units**	*	Field Duplicate (1-1)				
Volatile Organic Compounds							
1,2-Dichloroethene (total)	UG/L	5				1.4 J	
Semivolatile Organic Compounds							
1,3-Dichlorobenzene	UG/L	3					
1,4-Dichlorobenzene	UG/L	3					
bis(2-Ethylhexyl)phthalate	UG/L	5					
Arsenic	MG/L	0.025			0.0065 J	0.0070 J	
Barium	MG/L	1	0.12	0.12	0.53	0.17	0.083
Cadmium	MG/L	0.005	0.00039 J	0.00045 J	0.00059 J		0.00044 J
Chromium	MG/L	0.05	0.0096	0.0087	0.0022 J		
Copper	MG/L	0.2	0.0050 J	0.0050 J	0.0023 J	0.0018 J	0.0019 J
Iron	MG/L	0.3	0.24	0.22	26.1	7.2	0.10
Lead	MG/L	0.025			0.0035 J		
Magnesium	MG/L	35	19.4	18.9	55.9	23.9	29.9
Manganese	MG/L	0.3	0.24	0.23	1.5	0.92	0.86
Mercury	MG/L	7.00E-04					
Nickel	MG/L	0.1	0.0046 J	0.0043 J	0.0056 J	0.0034 J	0.0021 J
Silver	MG/L	0.05					
Sodium	MG/L	20	198	191	390	340	19.4
Zinc	MG/L	2	0.018	0.017	0.0062 J		0.0040 J

*- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998 (includes 4/2000 Addendum). Class GA. * - PCB Criteria based on sum of the aroclors.

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TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
NOVEMBER 2011

Location ID			GW-29S	GW-30S	GW-31S	GW-32S	GW-33S
Sample ID			GW-29S	GW-30S	GW-31S	GW-32S	GW-33S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			11/02/11	11/03/11	11/03/11	11/03/11	11/03/11
Parameter	**Units**	*					
Volatile Organic Compounds							
1,2-Dichloroethene (total)	UG/L	5					
Semivolatile Organic Compounds							
1,3-Dichlorobenzene	UG/L	3					
1,4-Dichlorobenzene	UG/L	3					
bis(2-Ethylhexyl)phthalate	UG/L	5					
Arsenic	MG/L	0.025	0.021				
Barium	MG/L	1	0.30	0.30	0.069	0.060	0.030
Cadmium	MG/L	0.005	0.00043 J		0.00060 J		0.00034 J
Chromium	MG/L	0.05					
Copper	MG/L	0.2		0.0020 J	0.0030 J	0.0018 J	0.0017 J
Iron	MG/L	0.3	11.1	13.4	0.49	0.038 J	
Lead	MG/L	0.025					
Magnesium	MG/L	35	79.5	37.8	30.6	35.7	56.3
Manganese	MG/L	0.3	0.71	1.9	0.99	0.22	0.010
Mercury	MG/L	7.00E-04					
Nickel	MG/L	0.1			0.034	0.0020 J	0.0014 J
Silver	MG/L	0.05					
Sodium	MG/L	20	14.6	578	6.0	6.9	5.1
Zinc	MG/L	2	0.0019 J	0.0018 J	0.010	0.0036 J	0.0033 J

*- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998 (includes 4/2000 Addendum). Class GA. * - PCB Criteria based on sum of the aroclors.

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TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
NOVEMBER 2011

Location ID			GW-34S	GW-35S
Sample ID			GW-34S	GW-35S
Matrix			Groundwater	Groundwater
Depth Interval (ft)			-	-
Date Sampled			11/02/11	11/02/11
Parameter	**Units**	*		
Volatile Organic Compounds				
1,2-Dichloroethene (total)	UG/L	5		
Semivolatile Organic Compounds				
1,3-Dichlorobenzene	UG/L	3		
1,4-Dichlorobenzene	UG/L	3		
bis(2-Ethylhexyl)phthalate	UG/L	5		
Arsenic	MG/L	0.025		
Barium	MG/L	1	0.13	0.10
Cadmium	MG/L	0.005	0.00051 J	
Chromium	MG/L	0.05	0.026	
Copper	MG/L	0.2	0.0036 J	0.0022 J
Iron	MG/L	0.3	0.32	0.098
Lead	MG/L	0.025		
Magnesium	MG/L	35	47.9	28.4
Manganese	MG/L	0.3	0.010	0.17
Mercury	MG/L	7.00E-04		
Nickel	MG/L	0.1	0.013	0.0015 J
Silver	MG/L	0.05		
Sodium	MG/L	20	29.3	3.0
Zinc	MG/L	2	0.0040 J	0.0046 J

*- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998 (includes 4/2000 Addendum). Class GA. * - PCB Criteria based on sum of the aroclors.

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TABLE 3-2

APPROVED REVISION OF TABLE 3.2 FROM THE O&M PLAN

GROUNDWATER SAMPLING SUMMARY
OPERATION AND MAINTENANCE PLAN
PFOHL BROTHERS LANDFILL SITE, CHEEKTOWAGA, NEW YORK

LOCATIONS

GW-1D/1S
GW- 3D/3S
GW- 4D/4S
GW- 7D/7S
GW- 8D/8S(R)
GW- 26D/35S
GW- 28S
GW- 29S
GW- 30S
GW- 31S
GW- 32S
GW- 33S
GW- 34S

FREQUENCY

semi-annually for overburden and bedrock groundwater

PARAMETERS

Field	pH conductivity temperature turbidity
VOCs	Acetone Benzene 1,2-Dichloroethene (total) 1,1,2-Trichloroethane Vinyl chloride
SVOCs	Phenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene bis(2-Ethylhexyl)phthalate

TABLE 3-2 (continued)

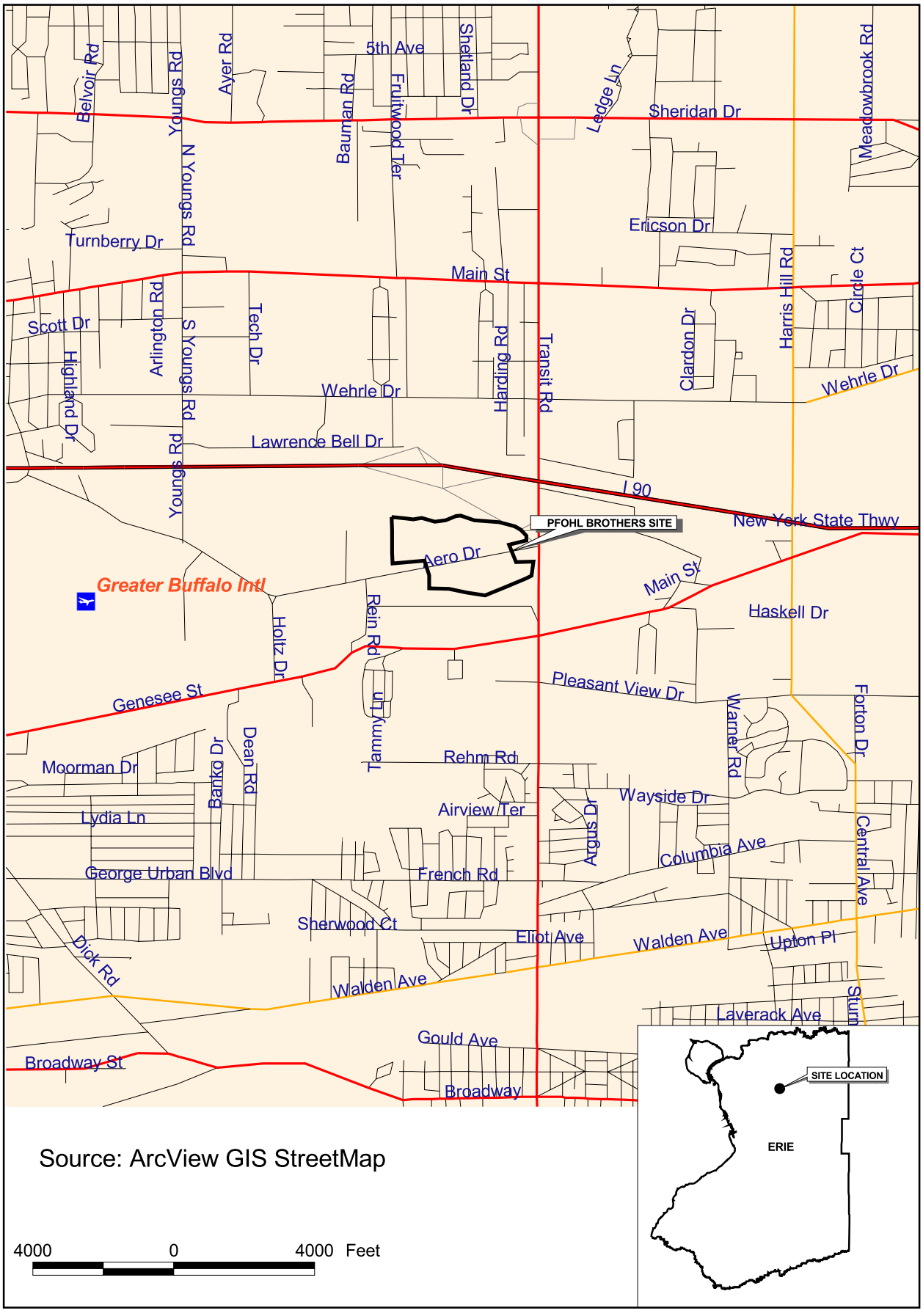
APPROVED REVISION OF TABLE 3.2 FROM THE O&M PLAN

GROUNDWATER SAMPLING SUMMARY
OPERATION AND MAINTENANCE PLAN
PFOHL BROTHERS LANDFILL SITE, CHEEKTOWAGA, NEW YORK

PARAMETERS (cont'd)

Metals	Antimony
	Arsenic
	Barium
	Cadmium
	Chromium
	Copper
	Iron
	Lead
	Magnesium
	Manganese
	Mercury
	Nickel
	Silver
	Sodium
	Zinc

FIGURES



URS	PFOHL BROTHERS LANDFILL SITE LOCATION MAP	FIGURE 1-1

n:\111172700.00000\gis\arcview\pfohl_sitelocation.apr Pfohl Bros Location Map
12/15/2005

Legend

- Monitoring Well Location
- Staff Gauge Location
- Manhole Location
- Wet Well Location

400 0 400 Feet

PFOHL BROTHERS LANDFILL
MONITORING LOCATIONS

URS

FIGURE 3-1

N:\11172700.00000\GIS\ArcView\pfhol.apr WELL LOCATIONS
12/15/2005

APPENDIX A

EXAMPLE DAILY INSPECTION SHEETS

Pfohl Brothers Landfill Site

Daily Logsheet — Town of Cheektowaga

Date 9/2/11 — Weather conditions SUNNY 88° ±

Time 3:20 — Read by: B. PUGH

	Level of Water from bottom (ft.)	Flow gallons / minute	Flow Totals gallons	Pump Run Time Hrs.
WW-3	5.9	0	109,335	1521
WW-2	99	0	-650	120
WW-1	4.4	0	389,865	1422
WW-6	7.0	0	100,611	6042
WW-4	7.0	0	13,190	4866
WW-5	7.7	0	646,989	7850

Flow Totalizer at Meter chamber: 1,331,261

Heat Trace

Outside temp T = 93°

Current A = 0

Set point SP = 40

Large Suppressor events: 414,749

Motor Control Center

Volts 480 volts

Amps 6 amps

Which WW was running? 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ NONE

Filter Checked ☐ Changed ☐

Comments and/or Current Conditions

RESET ALARMS WW 3 - FLOW INVALID (OK)

WW 2 FLOW INVALID & LEVEL INVALID

* W.W. 2 LEVEL INVALID WOULD NOT RESET

NIAGARA GRASS ON-SITE

N. SIDE 90 % COMPLETE - NEEDS TRIMMING

S. SIDE 50 % COMPLETE

Ptohl Brothers Landfill Site

Daily Logsheet

Town of Cheektowaga

Date 10/6/11

Time 2:05

Weather conditions SUNNY 68°

Read by: BILL PUGH

	Level of Water from bottom (ft.)	Flow gallons / minute	Flow Totals gallons	Pump Run Time Hrs.
WW-3	5.6	0	205,066	1565
WW-2	4.7	43.1	-623	120
WW-1	3.9	0	444,233	1453
WW-6	6.0	0	614,842	6169
WW-4	7.0	0	13,190	4866
WW-5	7.6	0	992,711	7974

Flow Totalizer at Meter chamber 2,341,423

Heat Trace

Outside temp T = 68°

Current A = 0

Set point SP = 40°

Large Suppressor events 414,763

Motor Control Center

Volts 480 volts

Amps 5 amps

Which WW was running?

1☐ 2☑ 3☐ 4☐ 5☐ 6☐

Filter Checked ☐ Changed ☐

Comments and/or Current Conditions

- RAN PUMP NO. 2 ON MANUAL IN EFFORT TO RESEAT BALL CHECK (NEGATIVE FLOW)
- CLEARED WW 2 NEGATIVE FLOW ALARM
- TOOK LOG SHEETS FROM 1/11 TO 6/11 TO ENG. OFFICE

Pfohl Brothers Landfill Site

Daily Logsheet

Town of Cheektowaga

Date 11-10-11

Time 11:30

Weather conditions LT. RAIN 45°

Read by: BILL PUGH

	Level of Water from bottom (ft.)	Flow gallons / minute	Flow Totals gallons	Pump Run Time Hrs.
WW-3	4.3	0	297,182	1601
WW-2	4.6	41.7	139	121
WW-1	4.0	0	629,991	1527
WW-6	6.9	0	1,462,385	6387
WW-4	6.9	0	97,288	4913
WW-5	7.0	0	1,597,617	8193

Flow Totalizer at Meter chamber 4,157,413

Heat Trace

Outside temp T = 45°

Current A = 0

Set point SP = 40

Large Suppressor events 414,771

Motor Control Center

Volts 480 volts

Amps 5 amps

Which WW was running?

1☐ 2☑ 3☐ 4☐ 5☐ 6☐

Filter Checked ☐ Changed ☐

Comments and/or Current Conditions

- CLEARED NEGATIVE FLOW ALARM WW2.
- RAN PUMP 2 ON MANUAL IN ATTEMPT TO RESET BALL VALVE

APPENDIX B

MONTHLY FLOW SUMMARIES
JULY 2011 – DECEMBER 2011

The
TOWN OF
CHEEKTOWAGA

Jon W. Nichy
Superintendent

Main Pump Station
171 Central Blvd.
Cheektowaga, NY 14225
Phone: 716-896-1777
Fax: 716-896-6437

August 3, 2011

Mr. William R. Pugh, P.E.
Town Engineer
Town of Cheektowaga

Re: Pfohl Bros. Flow Data

Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **July 2011** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

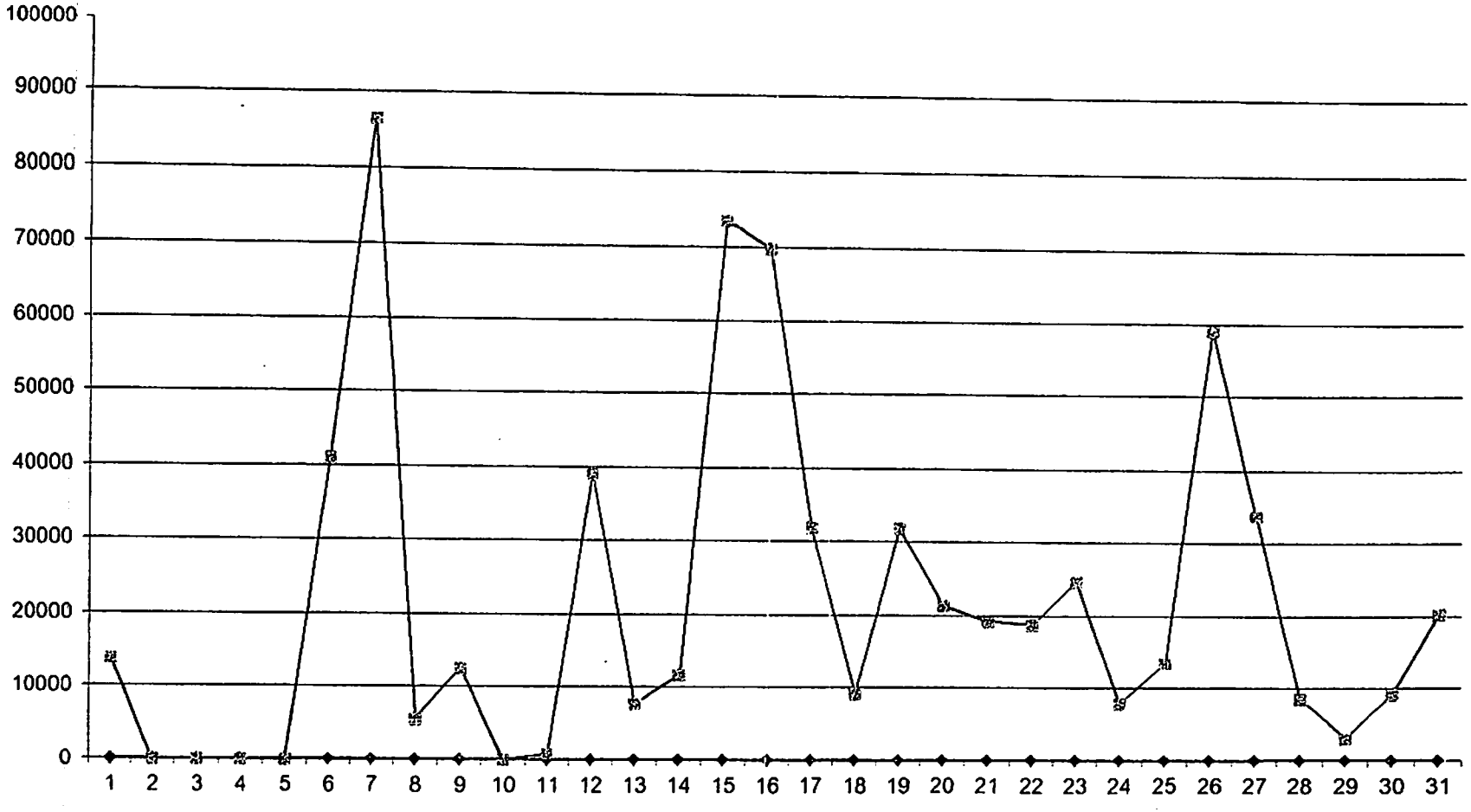
On July 1, 2011 the Flow Totalizers were reset to zero.

Should you have any other questions or comments regarding this submittal, please contact this office @ 896-1777.

Yours truly,

Jon W. Nichy
Superintendent
Main Pump Station

July
2011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The
TOWN OF
CHEEKTOWAGA

Jon W. Nichy
Superintendent

Main Pump Station
171 Central Blvd.
Cheektowaga, NY 14225
Phone: 716-896-1777
Fax: 716-896-6437

September 8, 2011

Mr. William R. Pugh, P.E.
Town Engineer
Town of Cheektowaga

Re: Pfohl Bros. Flow Data

Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **August 2011** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

Should you have any other questions or comments regarding this submittal, please contact this office @ 896-1777.

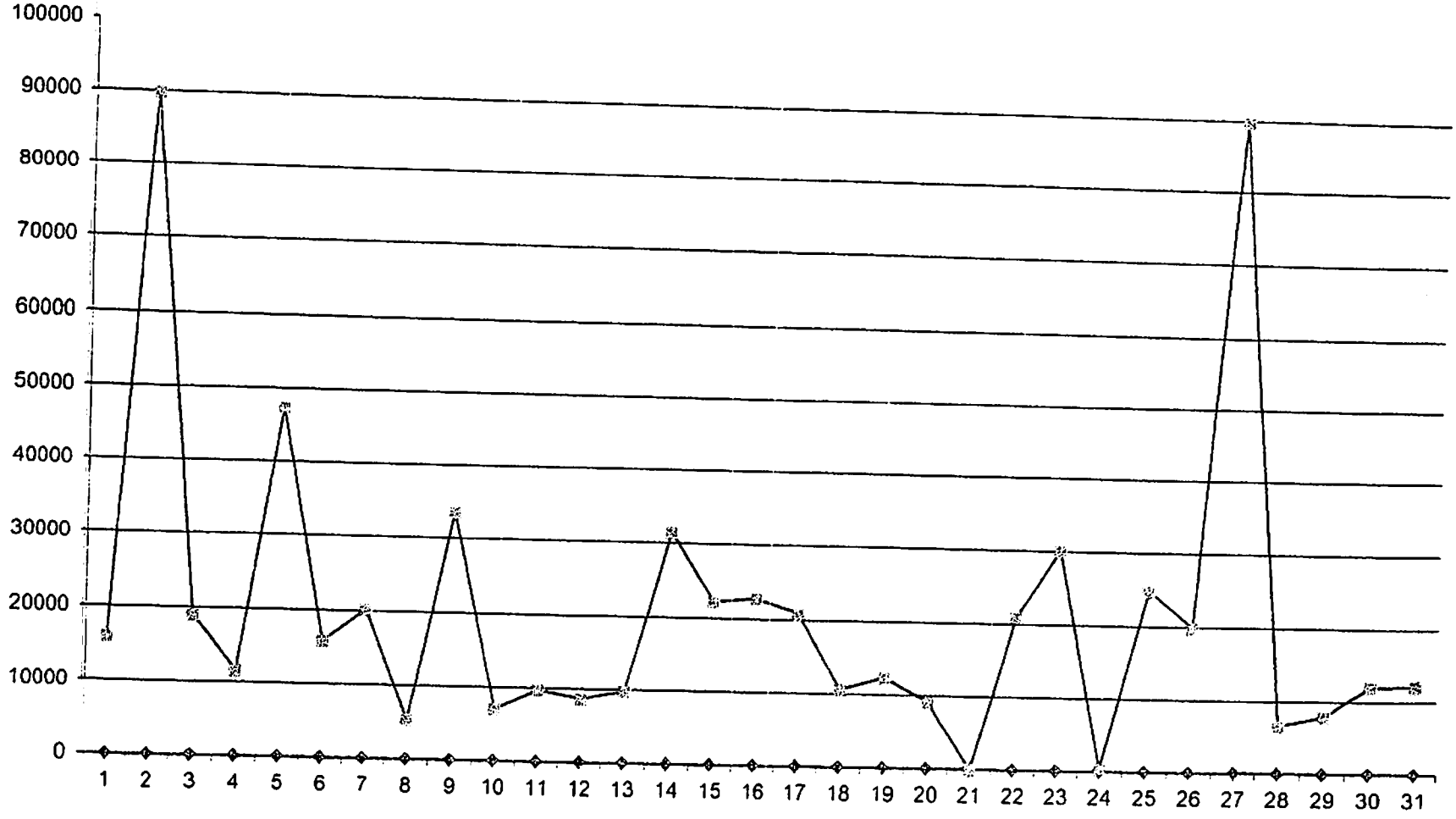
Yours truly,

Jon W. Nichy
Superintendent
Main Pump Station

Direct Discharge Flow Data

7/31/2011		659864	20,220	659,864	
August-11	Time; 11:58pm unless otherwise stated	Totalizer Reading (Gallons)	Daily Total Discharge (Gallons)	Total Direct Discharge (Gallons)	Notes
1		675737	15,874	675,738	
2		765522	89,785	765,523	
3		784496	18,974	784,497	0406 inhibit
4		796143	11,647	796,144	0100 enable
5		843482	47,339	843,483	
6		859278	15,796	859,279	
7		879470	20,192	879,471	1532 inhibit
8		884816	5,346	884,817	1233 enable
9		918366	33,550	918,367	1810 inhibit
10		925393	7,027	925,394	0108 enable
11		935078	9,684	935,078	
12		943679	8,601	943,679	
13		953365	9,686	953,365	
14		984829	31,464	984,829	
15		1007051	22,223	1,007,052	
16		1043016	22,768	1,029,820	
17		1063841	20,826	1,050,646	
18		1074455	10,614	1,061,260	
19		1086825	12,370	1,073,630	
20		1095948	9,123	1,082,753	
21		1095948	0	1,082,753	0411 inhibit
22		1116858	20,910	1,103,663	1613 enable
23		1146919	30,061	1,133,724	
24		1147305	387	1,134,111	2250 inhibit
25		1172121	24,816	1,158,927	1540 enable
26		1191953	19,832	1,178,759	
27		1281725	89,772	1,268,531	
28		1288373	6,649	1,275,180	
29		1296312	7,939	1,283,119	
30		1308334	12,022	1,295,141	
31		1320489	12,156	1,307,297	
		644,752	**647,433**	**647,433**	

August
2011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The
TOWN OF
CHEEKTOWAGA

Jon W. Nichy
Superintendent
Joseph Glab
Asst. Superintendent

Main Pump Station
171 Central Blvd.
Cheektowaga, NY 14225
Phone: 716-896-1777
Fax: 716-896-6437

October 13, 2011

Mr. William R. Pugh, P.E.
Town Engineer
Town of Cheektowaga

Re: Pfohl Bros. Flow Data

Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **September 2011** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

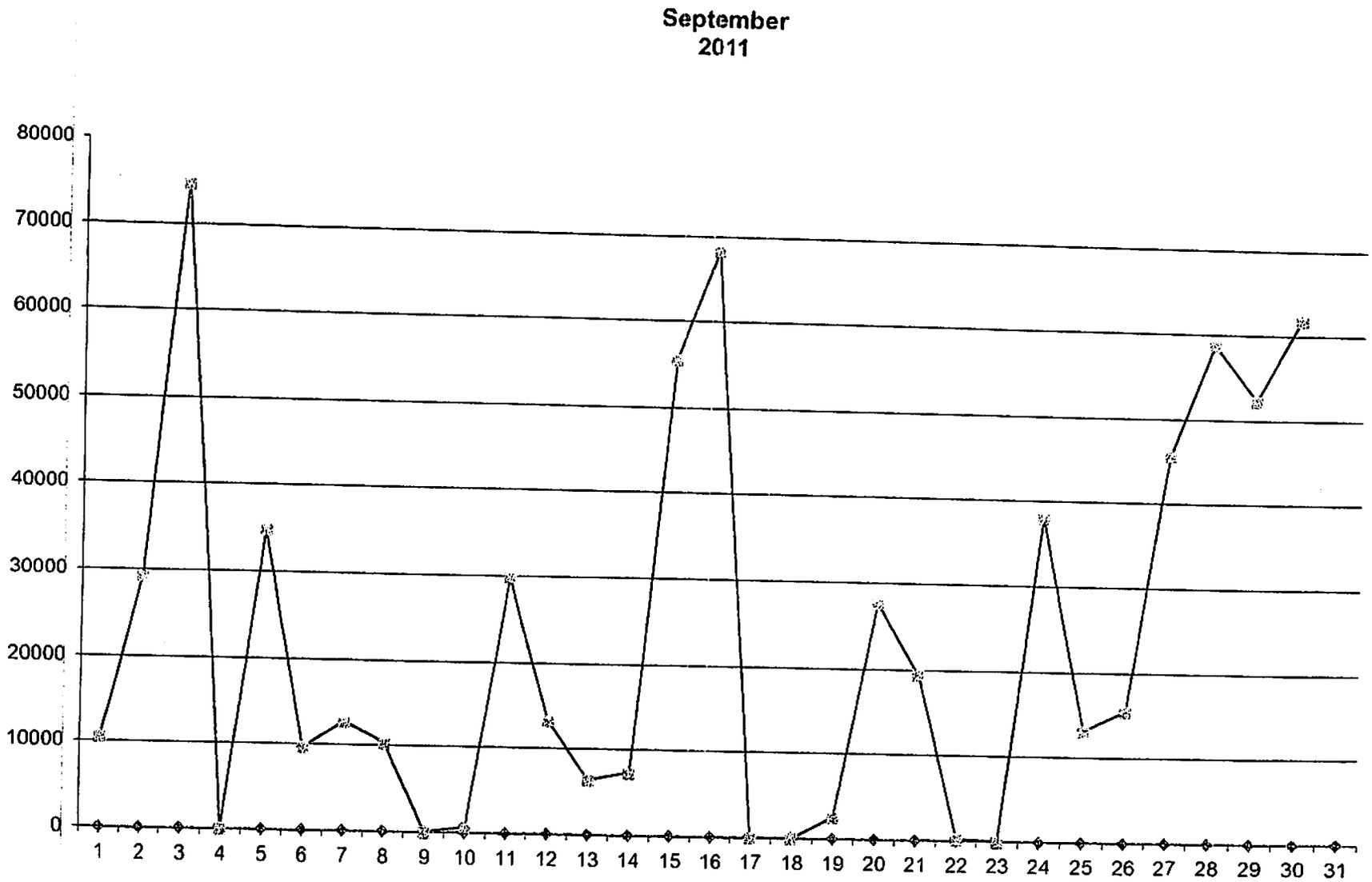
Should you have any other questions or comments regarding this submittal, please contact this office @ 896-1777.

Yours truly,

Jon W. Nichy
Superintendent
Main Pump Station

Direct Discharge Flow Data

8/31/2011		1320489	12,156	1,307,297	
September-11	**Time; 11:58pm unless otherwise stated**	**Totalizer Reading (Gallons)**	**Daily Total Discharge (Gallons)**	**Total Direct Discharge (Gallons)**	**Notes**
1		1331024	10,535	1,317,832	
2		1360180	29,156	1,346,988	
3		1434849	74,669	1,421,657	
4		1434849	0	1,421,657	0435 inhibit
5		1469617	34,769	1,456,426	1116 enable
6		1479260	9,643	1,466,069	
7		1491910	12,650	1,478,719	
8		1502236	10,327	1,489,046	
9		1502236	0	1,489,046	
10		1502825	589	1,489,635	
11		1532660	29,834	1,519,469	
12		1545804	13,145	1,532,614	
13		1552188	6,384	1,538,998	
14		1559473	7,285	1,546,283	
15		1615048	55,575	1,601,858	0248inhibit 1102enable
16		1683400	68,352	1,670,210	
17		1683400	0	1,670,210	
18		1683400	0	1,670,210	
19		1685889	2,489	1,672,699	
20		1713663	27,774	1,700,473	0150inhibit 1553enable
21		1733120	19,457	1,719,930	
22		1733342	223	1,720,153	
23		1733342	0	1,720,153	1936 inhibit
24		1771385	38,043	1,758,196	1013 enable
25		1784416	13,032	1,771,228	
26		1799898	15,482	1,786,710	
27		1845596	45,698	1,832,408	
28		1904405	58,809	1,891,217	0457inhibit 1511enable
29		1956749	52,344	1,943,561	0208inhibit 1316enable
30		2018532	61,783	2,005,344	0003inhibit 1433enable
31					
		687,508	**698,047**	**698,047**	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The
TOWN OF
CHEEKTOWAGA

Jon W. Nichy
Superintendent
Joseph Glab
Asst. Superintendent

Main Pump Station
171 Central Blvd.
Cheektowaga, NY 14225
Phone: 716-896-1777
Fax: 716-896-6437

November 4, 2011

Mr. William R. Pugh, P.E.
Town Engineer
Town of Cheektowaga

Re: Pfohl Bros. Flow Data

Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **October 2011** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

Please note that on 10/25/11 Factory Technicians from Emerson Process Management were on site to diagnose and repair the Flow Meter for Wet Well #3.

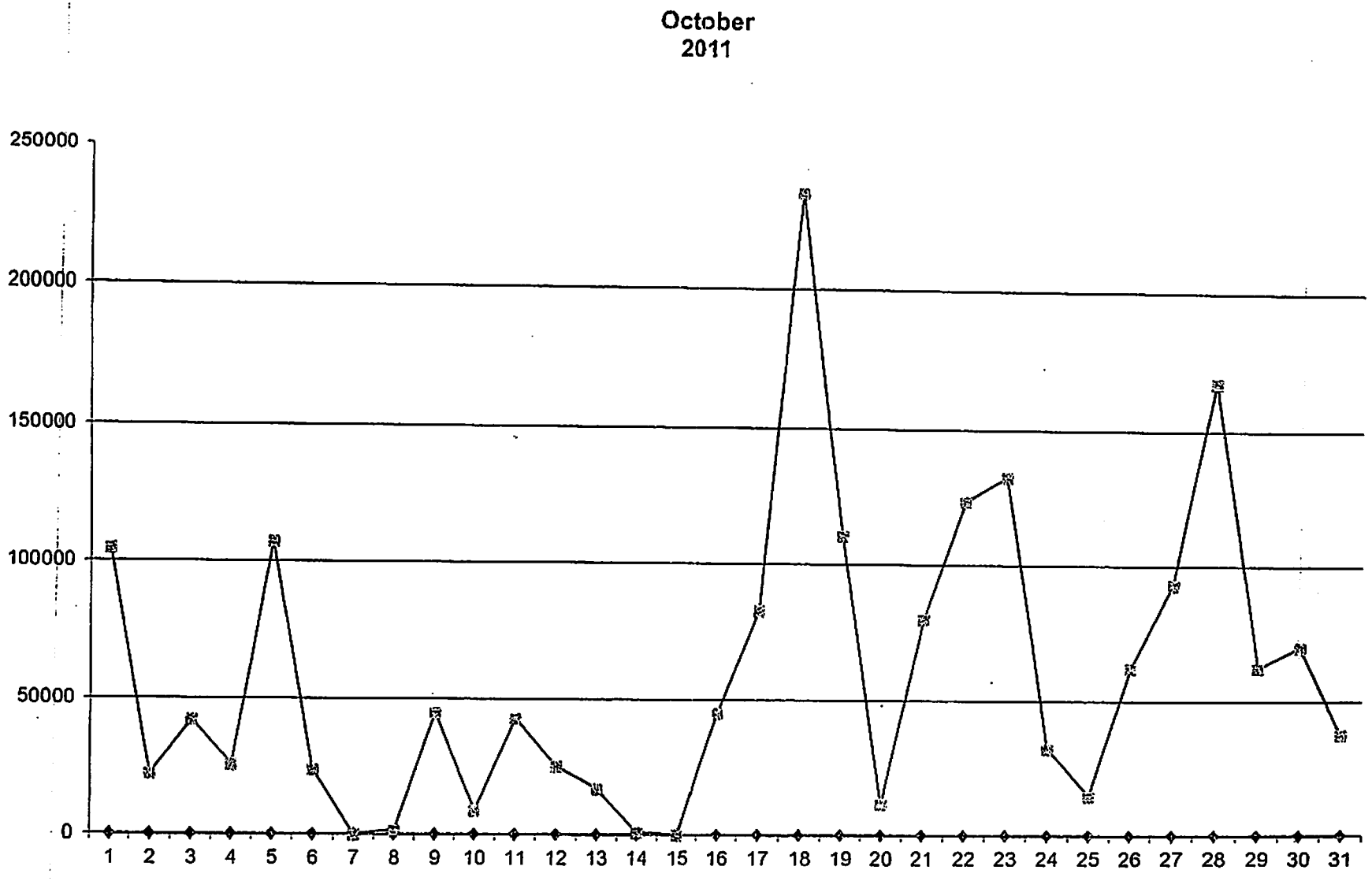
Should you have any other questions or comments regarding this submittal, please contact this office @ 896-1777.

Yours truly,

Jon W. Nichy
Superintendent
Main Pump Station

Direct Discharge Flow Data

9/30/2011		2018532	61,783	2,005,344	
October-11	**Time; 11:58pm unless otherwise stated**	**Totalizer Reading (Gallons)**	**Daily Total Discharge (Gallons)**	**Total Direct Discharge (Gallons)**	**Notes**
1		2123175	104,643	2,109,987	
2		2145106	21,931	2,131,918	1321 inhibit
3		2187084	41,978	2,173,896	1219 enable
4		2212662	25,578	2,199,474	0223 inhibit 2155 enable
5		2319756	107,094	2,306,568	
6		2343537	23,781	2,330,349	
7		2343537	0	2,330,349	
8		2344925	1,388	2,331,737	
9		2389505	44,580	2,376,317	
10		2398340	8,835	2,385,152	
11		2441026	42,686	2,427,838	
12		2465951	24,925	2,452,763	1959 inhibit
13		2482880	16,928	2,469,691	0735 enable
14		2483811	932	2,470,623	0005 inhibit
15		2483811	0	2,470,623	
16		2528748	44,937	2,515,560	
17		2611492	82,744	2,598,304	1505 enable
18		2846228	234,735	2,833,039	
19		2956421	110,194	2,943,233	
20		2968022	11,601	2,954,834	
21		3048058	80,036	3,034,870	
22		3171156	123,099	3,157,969	
23		3303340	132,183	3,290,152	
24		3335746	32,407	3,322,559	
25		3350396	14,650	3,337,209	
26		3412569	62,172	3,399,381	1452 inhibit
27		3505538	92,969	3,492,350	1314 enable
28		3673741	168,204	3,660,554	
29		3736127	62,386	3,722,940	1447 inhibit
30		3806301	70,174	3,793,114	1244 enable
31		3843928	37,627	3,830,741	
		1,825,396	**1,825,397**	**1,825,397**	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The
TOWN OF
CHEEKTOWAGA

Jon W. Nichy
Superintendent
Joseph Glab
Asst. Superintendent

Main Pump Station
171 Central Blvd.
Cheektowaga, NY 14225
Phone: 716-896-1777
Fax: 716-896-6437

December 7, 2011

Mr. William R. Pugh, P.E.
Town Engineer
Town of Cheektowaga

Re: Pfohl Bros. Flow Data

Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **November 2011** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

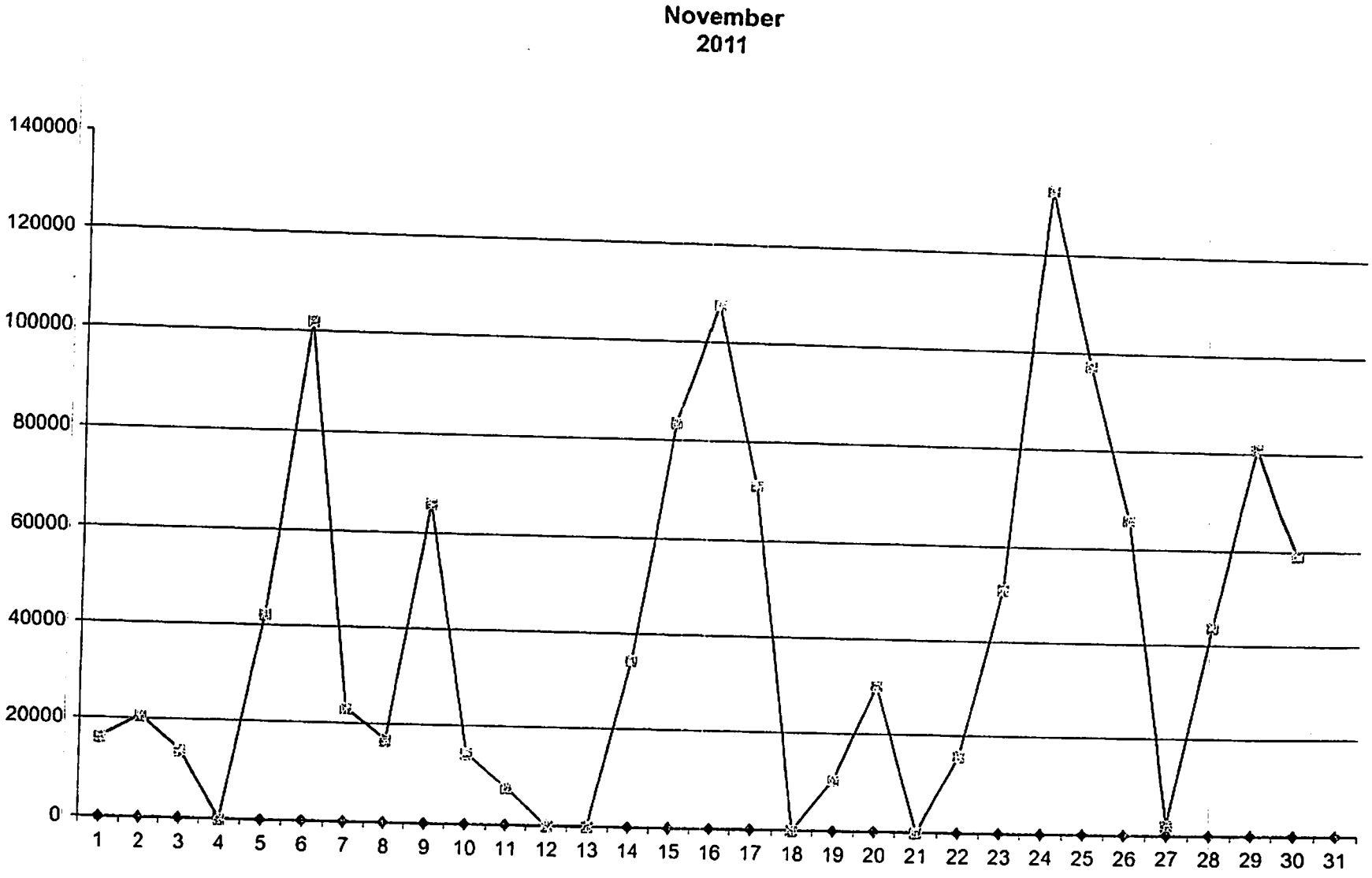
Should you have any other questions or comments regarding this submittal, please contact this office @ 896-1777.

Yours truly,

Jon W. Nichy
Superintendent
Main Pump Station

Direct Discharge Flow Data

10/31/2011		3843928	37,627	3,830,741	
November-11	Time; 11:58pm unless otherwise stated	Totalizer Reading (Gallons)	Daily Total Discharge (Gallons)	Total Direct Discharge (Gallons)	Notes
1		3860	16,195	3,846,936	
2		3880724	20,601	3,867,537	
3		3894568	13,844	3,881,381	
4		3894568	0	3,881,381	
5		3936843	42,276	3,923,657	
6		4038803	101,960	4,025,617	
7		4061901	23,098	4,048,715	
8		4078661	16,760	4,065,475	
9		4144672	66,011	4,131,486	
10		4159161	14,489	4,145,975	
11		4166725	7,564	4,153,539	
12		4166725	0	4,153,539	
13		4166725	0	4,153,539	
14		4201028	34,303	4,187,842	1753 inhibit
15		4284518	83,490	4,271,332	1029 enable
16		4392205	107,687	4,379,019	
17		4463545	71,340	4,450,359	
18		4463545	0	4,450,359	
19		4474107	10,562	4,460,921	
20		4504215	30,108	4,491,029	
21		4504215	0	4,491,029	
22		4520112	15,897	4,506,926	2212 inhibit
23		4571228	51,117	4,558,043	1609 enable
24		4704458	133,230	4,691,273	
25		4801887	97,429	4,788,702	
26		4868011	66,125	4,854,827	
27		4870228	2,217	4,857,044	2239 inhibit
28		4914067	43,839	4,900,883	1608 enable
29		4994982	80,915	4,981,798	1229 inhibit
30		5054286	59,304	5,041,102	1536 enable
31					
		1,210,358	**1,210,361**	**1,210,361**	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The
TOWN OF
CHEEKTOWAGA

Main Pump Station
171 Central Blvd.
Cheektowaga, NY 14225
Phone: 716-896-1777
Fax: 716-896-6437

Jon W. Nichy
Superintendent
Joseph Glab
Asst. Superintendent

January 10, 2012

Mr. William R. Pugh, P.E.
Town Engineer
Town of Cheektowaga

Re: Pfohl Bros. Flow Data

Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **December 2011** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

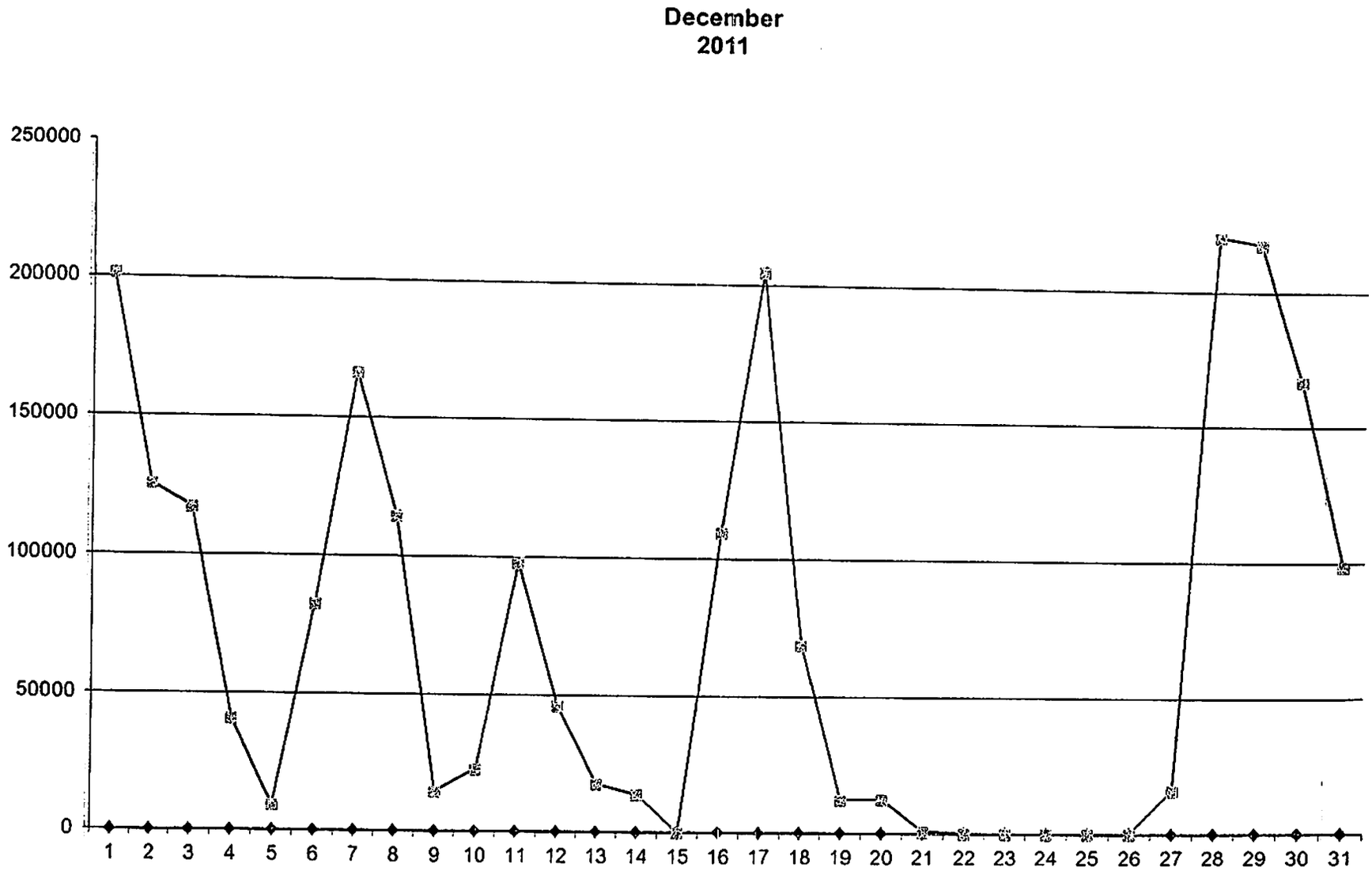
Should you have any other questions or comments regarding this submittal, please contact this office @ 896-1777.

Yours truly,

Jon W. Nichy
Superintendent
Main Pump Station

Direct Discharge Flow Data

11/30/2011		5054286	59,304	5,041,102	
December-11	**Time; 11:58pm unless otherwise stated**	**Totalizer Reading (Gallons)**	**Daily Total Discharge (Gallons)**	**Total Direct Discharge (Gallons)**	**Notes**
1		5255738	201,452	5,242,554	
2		5381021	125,284	5,367,838	
3		5498069	117,048	5,484,886	
4		5538804	40,735	5,525,621	
5		5547943	9,139	5,534,760	1044 inhibit
6		5630582	82,639	5,617,399	1244 enable
7		5797095	166,514	5,783,913	
8		5911537	114,442	5,898,355	
9		5926057	14,520	5,912,875	
10		5948826	22,770	5,935,645	
11		6046882	98,056	6,033,701	
12		6093028	46,146	6,079,847	
13		6110650	17,622	6,097,469	
14		6124375	13,725	6,111,194	2332 inhibit
15		6124375	0	6,111,194	
16		6233887	109,512	6,220,706	1007 enable
17		6438645	204,758	6,425,464	
18		6507505	68,861	6,494,325	
19		6519761	12,256	6,506,581	
20		6532270	12,509	6,519,090	2300 inhibit
21		6533057	788	6,519,878	
22		6533057	0	6,519,878	
23		6533057	0	6,519,878	
24		6533057	0	6,519,878	
25		6533057	0	6,519,878	
26		6533057	0	6,519,878	
27		6549122	16,065	6,535,943	2058 enable
28		6769204	220,082	6,756,025	
29		6986635	217,432	6,973,457	
30		7153620	166,985	7,140,442	2126 inhibit
31		7252183	98,563	7,239,005	0908 enable
		2,197,897	**2,197,903**	**2,197,903**	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APPENDIX C

HYDRAULIC MONITORING TABLES

TABLE 1
PFOHL BROTHERS LANDFILL SITE
GROUNDWATER ELEVATIONS
JULY - DECEMBER 2011

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Specific Gravity	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
GW-01D	1073088.634	1117968.213	694.41	NM	696.12	D	1						
MNW								9/22/2011 1035	3.77	692.35	0.00	692.35	
MNW								11/1/2011 0931	2.69	693.43	0.00	693.43	
MNW								12/20/2011 1647	2.42	693.70	0.00	693.70	
GW-01S	1073087.779	1117961.500	694.53	NM	696.19	S	1						
MNW								9/22/2011 1030	5.28	690.91	0.00	690.91	
MNW								11/1/2011 0930	3.70	692.49	0.00	692.49	
MNW								12/20/2011 1647	3.52	692.67	0.00	692.67	
GW-03D	1073819.106	1114602.426	692.35	NM	693.88	D	1						
MNW								9/22/2011 0940	2.42	691.46	0.00	691.46	
MNW								11/1/2011 0834	2.19	691.69	0.00	691.69	
MNW								12/20/2011 1601	2.05	691.83	0.00	691.83	
GW-03S	1073812.622	1114605.762	692.61	NM	693.80	S	1						
MNW								9/22/2011 0939	11.46	682.34	0.00	682.34	
MNW								11/1/2011 0833	6.27	687.53	0.00	687.53	
MNW								12/20/2011 1601	2.31	691.49	0.00	691.49	
GW-04D	1072289.432	1114685.625	690.89	NM	692.75	D	1						
MNW								9/22/2011 1043	14.01	678.74	0.00	678.74	
MNW								11/1/2011 0919	13.50	679.25	0.00	679.25	
MNW								12/20/2011 1655	12.88	679.87	0.00	679.87	
GW-04S	1072284.456	1114685.127	690.76	NM	692.72	S	1						
MNW								9/22/2011 1042	8.31	684.41	0.00	684.41	
MNW								11/1/2011 0919	4.81	687.91	0.00	687.91	
MNW								12/20/2011 1655	4.36	688.36	0.00	688.36	

NM - No Measurement

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

Type:

MH	Manhole Monitoring Point
MNW	Monitoring Well
SG	Staff Gauge

Filter = ((tblGWD.LOGDATE>#7/1/2011#))

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TABLE 1
PFOHL BROTHERS LANDFILL SITE
GROUNDWATER ELEVATIONS
JULY - DECEMBER 2011

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Specific Gravity	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
GW-07D	1071242.458	1117669.925	697.15	NM	699.94	D	1						
MNW								9/22/2011 1028	48.27	651.67	0.00	651.67	
MNW								11/1/2011 0939	45.26	654.68	0.00	654.68	
MNW								12/20/2011 1641	55.53	644.41	0.00	644.41	
GW-07S	1071238.157	1117666.265	697.47	NM	699.51	S	1						
MNW								9/22/2011 1029	7.16	692.35	0.00	692.35	
MNW								11/1/2011 0939	4.57	694.94	0.00	694.94	
MNW								12/20/2011 1643	4.26	695.25	0.00	695.25	
GW-08D	1073713.617	1116795.328	695.28	NM	697.79	D	1						
MNW								9/22/2011 0954	6.47	691.32	0.00	691.32	
MNW								11/1/2011 0843	6.15	691.64	0.00	691.64	
MNW								12/20/2011 1610	5.99	691.80	0.00	691.80	
GW-08SR	1073714.172	1116786.343	695.08	NM	697.50	S	1						
MNW								9/22/2011 0955	5.42	692.08	0.00	692.08	
MNW								11/1/2011 0844	5.27	692.23	0.00	692.23	
MNW								12/20/2011 1610	5.25	692.25	0.00	692.25	
GW-26D	1071698.573	1115997.470	696.01	NM	698.50	D	1						
MNW								9/22/2011 1022	7.30	691.20	0.00	691.20	
MNW								11/1/2011 0910	7.02	691.48	0.00	691.48	
MNW								12/20/2011 1632	6.85	691.65	0.00	691.65	
GW-28S	1073129.479	1117648.927	698.60	NM	700.95	S	1						
MNW								9/22/2011 0959	10.99	689.96	0.00	689.96	
MNW								11/1/2011 0850	8.64	692.31	0.00	692.31	
MNW								12/20/2011 1614	8.39	692.56	0.00	692.56	

NM - No Measurement

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Type:

MH	Manhole Monitoring Point
MNW	Monitoring Well
SG	Staff Gauge

Filter = ((tblGWD.LOGDATE>#7/1/2011#))

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TABLE 1
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GROUNDWATER ELEVATIONS
JULY - DECEMBER 2011

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Specific Gravity	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
GW-29S	1072552.638	1117761.993	697.50	NM	699.63	S	1						
MNW								9/22/2011 1008	10.40	689.23	0.00	689.23	
MNW								11/1/2011 0857	7.42	692.21	0.00	692.21	
MNW								12/20/2011 1622	7.04	692.59	0.00	692.59	
GW-30S	1072096.109	1117743.563	693.67	NM	696.58	S	1						
MNW								9/22/2011 1010	8.40	688.18	0.00	688.18	
MNW								11/1/2011 0859	8.04	688.54	0.00	688.54	
MNW								12/20/2011 1624	7.92	688.66	0.00	688.66	
GW-31S	1071786.280	1117191.441	695.84	NM	698.62	S	1						
MNW								9/22/2011 1015	7.28	691.34	0.00	691.34	
MNW								11/1/2011 0904	2.62	696.00	0.00	696.00	
MNW								12/20/2011 1627	2.46	696.16	0.00	696.16	
GW-32S	1071613.793	1116364.200	696.19	NM	698.37	S	1						
MNW								9/22/2011 1017	6.53	691.84	0.00	691.84	
MNW								11/1/2011 0908	2.64	695.73	0.00	695.73	
MNW								12/20/2011 1630	2.47	695.90	0.00	695.90	
GW-33S	1072165.625	1115561.866	695.94	NM	698.24	S	1						
MNW								9/22/2011 1024	7.81	690.43	0.00	690.43	
MNW								11/1/2011 0915	4.06	694.18	0.00	694.18	
MNW								12/20/2011 1635	3.85	694.39	0.00	694.39	
GW-34S	1072979.205	1114730.200	692.51	NM	694.77	S	1						
MNW								9/22/2011 0929	8.50	686.27	0.00	686.27	
MNW								11/1/2011 0825	2.91	691.86	0.00	691.86	
MNW								12/20/2011 1554	2.65	692.12	0.00	692.12	

NM - No Measurement

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Type:

MH	Manhole Monitoring Point
MNW	Monitoring Well
SG	Staff Gauge

Filter = ((tblGWD.LOGDATE>#7/1/2011#))

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JULY - DECEMBER 2011

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GW-35S	1071701.925	1115985.585	696.19	NM	697.39	S	1						
MNW								9/22/2011 1021	6.64	690.75	0.00	690.75	
MNW								11/1/2011 0911	3.20	694.19	0.00	694.19	
MNW								12/20/2011 1632	2.85	694.54	0.00	694.54	
MH-01	1073806.665	1114810.501	698.62	NM	698.62	NA	1						
MH								9/22/2011 0933	10.15	688.47	0.00	688.47	
MH								11/1/2011 0829	10.51	688.11	0.00	688.11	
MH								12/20/2011 1557	10.08	688.54	0.00	688.54	
MH-03	1073736.789	1115259.334	699.40	NM	699.40	NA	1						
MH								9/22/2011 0948	11.02	688.38	0.00	688.38	
MH								11/1/2011 0837	11.26	688.14	0.00	688.14	
MH								12/20/2011 1604	11.00	688.40	0.00	688.40	
MH-07	1073838.229	1116243.757	696.82	NM	696.82	NA	1						
MH								9/22/2011 0950	9.22	687.60	0.00	687.60	
MH								11/1/2011 0839	9.45	687.37	0.00	687.37	
MH								12/20/2011 1607	9.22	687.60	0.00	687.60	
MH-10	1073540.729	1117381.524	703.01	NM	703.01	NA	1						
MH								9/22/2011 0958	14.52	688.49	0.00	688.49	
MH								11/1/2011 0847	14.50	688.51	0.00	688.51	
MH								12/20/2011 1613	14.51	688.50	0.00	688.50	
MH-15	1072531.567	1117761.125	699.02	NM	699.02	NA	1						
MH								9/22/2011 1007	15.01	684.01	0.00	684.01	
MH								11/1/2011 0856	14.88	684.14	0.00	684.14	
MH								12/20/2011 1620	14.76	684.26	0.00	684.26	

NM - No Measurement

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MH-16	1072133.714	1117748.238	698.57	NM	698.57	NA	1						
MH								9/22/2011 1009	14.54	684.03	0.00	684.03	
MH								11/1/2011 0859	14.52	684.05	0.00	684.05	
MH								12/20/2011 1623	14.48	684.09	0.00	684.09	
MH-17	1071813.137	1117180.019	702.16	NM	702.16	NA	1						
MH								9/22/2011 1013	18.13	684.03	0.00	684.03	
MH								11/1/2011 0903	18.15	684.01	0.00	684.01	
MH								12/20/2011 1626	18.10	684.06	0.00	684.06	
MH-20	1071756.395	1115997.024	706.20	NM	706.20	NA	1						
MH								9/22/2011 1020	19.74	686.46	0.00	686.46	
MH								11/1/2011 0910	19.74	686.46	0.00	686.46	
MH								12/20/2011 1632	19.75	686.45	0.00	686.45	
MH-22	1072158.023	1115589.309	698.05	NM	698.05	NA	1						
MH								9/22/2011 1023	9.03	689.02	0.00	689.02	
MH								11/1/2011 0914	8.98	689.07	0.00	689.07	
MH								12/20/2011 1635	9.01	689.04	0.00	689.04	
MH-25	1072483.928	1114820.313	698.17	NM	698.17	NA	1						
MH								9/22/2011 0923	9.79	688.38	0.00	688.38	
MH								11/1/2011 0816	10.10	688.07	0.00	688.07	
MH								12/20/2011 1550	9.69	688.48	0.00	688.48	
SG-01	1073882.887	1114813.101	NM	NM	690.00	NA	1						
SG								9/22/2011 0933	NM	-	0.00	-	Dry
SG								11/1/2011 0830	-1.16	691.16	0.00	691.16	
SG								12/20/2011 1559	-1.22	691.22	0.00	691.22	

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SG	Staff Gauge

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SG-02	1073738.27	1116805.85	NM	NM	690.00	NA	1						
SG								9/22/2011 0955	-3.10	693.10	0.00	693.10	
SG								11/1/2011 0845	-3.20	693.20	0.00	693.20	
SG								12/20/2011 1610	-3.24	693.24	0.00	693.24	
WW-01	1073676.903	1115710.476	NM	NM	684.02	NA	1						
MH								9/22/2011 0845	-4.2	688.22	0.00	688.22	
MH								11/1/2011 0745	-3.9	687.92	0.00	687.92	
MH								12/20/2011 1520	-4.2	688.22	0.00	688.22	
WW-02	1073684.724	1116792.311	NM	NM	684.18	NA	1						
MH								9/22/2011 0845	-4.7	688.88	0.00	688.88	
MH								11/1/2011 0745	-4.6	688.78	0.00	688.78	
MH								12/20/2011 1520	-4.6	688.78	0.00	688.78	
WW-03	1073140.339	1117618.499	NM	NM	683.80	NA	1						
MH								9/22/2011 0845	-5.9	689.70	0.00	689.70	
MH								11/1/2011 0745	-5.6	689.40	0.00	689.40	
MH								12/20/2011 1520	-5.9	689.70	0.00	689.70	
WW-04	1072057.563	1117610.508	NM	NM	676.62	NA	1						
MH								9/22/2011 0845	-6.9	683.52	0.00	683.52	
MH								11/1/2011 0745	-7.0	683.62	0.00	683.62	
MH								12/20/2011 1520	-7.0	683.62	0.00	683.62	
WW-05	1071661.368	1116370.876	NM	NM	676.14	NA	1						
MH								9/22/2011 0845	-7.6	683.74	0.00	683.74	
MH								11/1/2011 0745	-7.0	683.14	0.00	683.14	
MH								12/20/2011 1520	-7.7	683.84	0.00	683.84	

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SG	Staff Gauge

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JULY - DECEMBER 2011

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Specific Gravity	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
WW-06	1072988.420	1114811.518	NM	NM	681.89	NA	1						
MH								9/22/2011 0845	-7.0	688.89	0.00	688.89	
MH								11/1/2011 0745	-6.7	688.59	0.00	688.59	
MH								12/20/2011 1520	-7.2	689.09	0.00	689.09	

NM - No Measurement

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Type:

MH	Manhole Monitoring Point
MNW	Monitoring Well
SG	Staff Gauge

Filter = ((tblGWD.LOGDATE>#7/1/2011#))

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TABLE 2
PFOHL BROTHERS LANDFILL SITE
OVERBURDEN HYDRAULIC GRADIENT

WELL PAIR:	WW-1	*	Level	WW-2	GW-8SR	Level	SG-02	Level
	Water Level	Water Level	Difference	Water Level	Water Level	Difference	Water Level	Difference
DATE	(ft amsl)	(ft amsl)	(ft)	(ft amsl)	(ft amsl)	(ft)	(ft amsl)	(ft)
9/22/2011	688.32	---	---	688.88	692.08	3.20	693.10	4.22
11/1/2011	681.92	---	---	688.78	692.23	3.45	693.20	4.42
12/20/2011	688.22	---	---	688.78	692.25	3.47	693.24	4.46

WELL PAIR:	WW-3	GW-28S	Level	WW-4	*	Level
	Water Level	Water Level	Difference	Water Level	Water Level	Difference
DATE	(ft amsl)	(ft amsl)	(ft)	(ft amsl)	(ft amsl)	(ft)
9/22/2011	689.70	689.96	0.26	683.52	---	---
11/1/2011	689.40	692.31	2.91	683.62	---	---
12/20/2011	689.70	692.56	2.86	683.62	---	---

WELL PAIR:	WW-5	GW-32S	Level	WW-6	GW-34S	Level
	Water Level	Water Level	Difference	Water Level	Water Level	Difference
DATE	(ft amsl)	(ft amsl)	(ft)	(ft amsl)	(ft amsl)	(ft)
9/22/2011	683.74	691.84	8.10	688.89	686.27	-2.62
11/1/2011	683.14	695.73	12.59	688.59	691.86	3.27
12/20/2011	683.84	695.90	12.06	689.09	692.12	3.03

WELL PAIR:	MH-1	SG-1	Level	MH-15	GW-29S	Level
	Water Level	Water Level	Difference	Water Level	Water Level	Difference
DATE	(ft amsl)	(ft amsl)	(ft)	(ft amsl)	(ft amsl)	(ft)
9/22/2011	688.47	DRY	NA	684.01	689.23	5.22
11/1/2011	688.11	691.16	3.05	684.14	692.21	8.07
12/20/2011	688.54	691.22	2.68	684.26	692.59	8.33

WELL PAIR:	MH-16	GW-30S	Level	MH-17	GW-31S	Level
	Water Level	Water Level	Difference	Water Level	Water Level	Difference
DATE	(ft amsl)	(ft amsl)	(ft)	(ft amsl)	(ft amsl)	(ft)
9/22/2011	684.03	688.18	4.15	684.03	691.34	7.31
11/1/2011	684.05	688.54	4.49	684.01	696.00	11.99
12/20/2011	684.09	688.66	4.57	684.06	696.16	12.10

WELL PAIR:	MH-20	GW-35S	Level	MH-22	GW-33S	Level
	Water Level	Water Level	Difference	Water Level	Water Level	Difference
DATE	(ft amsl)	(ft amsl)	(ft)	(ft amsl)	(ft amsl)	(ft)
9/22/2011	686.46	690.75	4.29	689.02	690.43	1.41
11/1/2011	686.46	694.19	7.73	689.07	694.18	5.11
12/20/2011	686.45	694.54	8.09	689.04	694.39	5.35

Notes:

* = No corresponding monitoring well.

NA = Not applicable

APPENDIX D

GROUNDWATER PURGE AND SAMPLE COLLECTION LOGS

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-1S

Date: 11/3/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 3.88' Depth to Well Bottom: 14.94' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 6.8 Estimated Purge Volume (liters): 11.0

Sample ID: GW-1S Sample Time: 13:33 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information: Riser pipe is bulged inwards, could not remove stainless steel bailer from within well, sampled around it.
Orange floc. in water initially.

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
12:38	6.80	13.75	0.888	1.88	476	-48	190	3.88
12:43	6.93	13.69	0.810	4.35	260	-46	200	4.70
12:48	6.91	13.80	0.842	3.15	181	-51	200	4.77
12:53	6.82	13.90	0.883	1.79	120	-55	200	4.77
12:58	6.78	13.89	0.904	1.04	75.3	-58	200	4.80
13:03	6.77	14.00	0.916	0.68	53.1	-59	200	4.80
13:08	6.76	13.40	0.923	0.46	38.9	-61	200	4.80
13:13	6.75	13.92	0.930	0.28	31.6	-62	200	4.80
13:18	6.75	13.88	0.936	0.15	22.6	-63	200	4.80
13:23	6.74	13.76	0.941	0.03	18.8	-64	200	4.80
13:28	6.74	13.75	0.943	0.00	19.1	-65	200	4.80
13:33	6.74	13.76	0.941	0.00	19.0	-66	200	4.80
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-1D

Date: 11/3/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 2.81' Depth to Well Bottom: 39.65' Well Diameter: 4" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 91.0 Estimated Purge Volume (liters): 58.4

Sample ID: GW-1D Sample Time: 15:10 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information: Sulfur odor
Dark Tint

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
13:45	7.21	12.72	0.960	0.76	17.7	-135	630	2.81
13:50	7.35	12.09	0.962	0.00	2.8	-133	690	2.85
13:55	7.36	12.06	0.961	0.00	2.0	-128	690	2.85
14:00	7.37	12.04	0.961	0.00	0.3	-123	690	2.85
14:05	7.36	12.18	0.960	0.00	0.2	-121	690	2.85
14:10	7.37	12.18	0.960	0.00	0.3	-120	690	2.85
14:15	7.36	12.18	0.959	0.00	0.2	-120	690	2.85
14:20	7.32	12.10	0.956	0.00	0.0	-126	690	2.85
14:25	7.28	12.12	0.953	0.00	0.0	-138	690	2.85
14:30	7.22	12.12	0.950	0.00	0.5	-150	690	2.85
14:35	7.19	12.11	0.950	0.00	0.3	-161	690	2.85
14:40	7.17	12.15	0.951	0.00	0.1	-171	690	2.85
14:45	7.15	12.19	0.952	0.00	0.1	-180	690	2.85
14:50	7.14	12.19	0.953	0.00	0.0	-185	690	2.85
14:55	7.13	12.12	0.957	0.00	0.0	-191	690	2.85
15:00	7.12	12.01	0.960	0.00	0.0	-197	690	2.85
15:05	7.12	11.98	0.963	0.00	0.0	-203	690	2.85
15:10	7.11	12.00	0.965	0.00	0.0	-207	690	2.85
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-3S

Date: 11/1/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 6.27' Depth to Well Bottom: 13.22' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 4.3 Estimated Purge Volume (liters): 6.3

Sample ID: GW-3S Sample Time: 12:40 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
12:00	7.32	13.19	0.986	2.39	97.5	2	210	6.27
12:05	6.90	13.38	0.970	2.34	58.6	17	140	7.75
12:10	6.85	13.45	0.965	2.45	45.0	28	150	8.02
12:15	6.80	13.52	0.959	2.57	37.0	38	150	8.26
12:20	6.79	13.55	0.959	2.49	31.8	47	150	8.60
12:25	6.79	13.55	0.960	2.38	27.0	56	150	8.72
12:30	6.78	13.57	0.959	2.34	16.0	63	150	8.71
12:35	6.79	13.60	0.955	2.30	8.9	67	150	8.72
12:40	6.80	13.60	0.952	2.25	3.3	68	150	8.70
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-3D

Date: 11/1/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 2.20' Depth to Well Bottom: 35.70' Well Diameter: 4" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 82.7 Estimated Purge Volume (liters): 34.8

Sample ID: GW-3D Sample Time: 14:05 QA/QC: MS/MSD

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
13:04	6.66	15.29	1.22	1.32	21.0	-51	580	2.20
13:09	6.91	13.82	1.03	0.16	0.0	-64	580	2.20
13:14	6.91	13.69	1.02	0.00	0.0	-67	580	2.20
13:19	6.90	13.70	1.02	0.00	0.0	-68	580	2.20
13:24	6.90	13.74	1.02	0.00	0.0	-69	580	2.20
13:29	6.90	13.74	1.02	0.00	0.0	-70	580	2.20
13:34	6.89	13.74	1.02	0.00	0.0	-70	580	2.20
13:39	6.89	13.78	1.02	0.00	0.0	-71	580	2.20
13:44	6.89	13.76	1.02	0.00	0.0	-71	580	2.20
13:49	6.90	13.76	1.02	0.00	0.0	-72	580	2.20
13:54	6.90	13.74	1.02	0.00	0.0	-73	580	2.20
13:59	6.90	13.77	1.02	0.00	0.0	-73	580	2.20
14:04	6.90	13.76	1.02	0.00	0.0	-73	580	2.20
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-4S

Date: 11/2/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 4.83' Depth to Well Bottom: 16.23' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 7.0 Estimated Purge Volume (liters):

Sample ID: GW-4S Sample Time: 9:05 VOCs/ 10:50 SVOCs & Metals QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information: Placed passive diffusion bag (PDB) in well 9/23/11, sampled VOCs from PDB at 9:05 on 11/2/11. Well historically goes dry at very low purge rates (<75ml/min). Bailed dry and sampled for SVOCs and Metals after recovery at 10:50.

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
9:08	7.46	10.96	0.433	5.12	18.5	119	Intial	4.83
9:10	7.59	11.84	0.425	4.83	62.6	76	2 Gal. Purged	-
9:13	7.58	12.14	0.422	5.42	338	-46	3 Gal. Purged	-
9:17	7.58	12.08	0.425	6.14	>1000	-91	5 Gal. Purged	Dry
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{yl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-4D

Date: 11/2/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 13.47' Depth to Well Bottom: 45.57' Well Diameter: 4" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 79.3 Estimated Purge Volume (liters): 12.7

Sample ID: GW-4D Sample Time: 10:41 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
9:35	7.27	10.81	1.13	6.56	39.3	-69	230	13.47
9:40	7.19	10.76	1.13	6.75	28.3	-91	190	13.95
9:45	7.17	10.90	1.14	0.00	40.5	-106	190	14.23
9:50	7.16	11.05	1.14	0.00	38.3	-117	190	14.47
9:55	7.15	11.15	1.14	0.00	34.3	-129	190	14.62
10:00	7.15	11.22	1.15	0.00	32.4	-137	190	14.75
10:05	7.14	11.29	1.15	0.00	24.6	-154	190	14.82
10:10	7.13	11.43	1.16	0.00	23.2	-175	190	14.95
10:15	7.12	11.52	1.15	0.00	21.5	-193	190	15.00
10:20	7.11	11.61	1.17	0.00	19.2	-216	190	15.04
10:25	7.10	11.72	1.17	0.00	16.1	-236	190	15.12
10:30	7.10	11.81	1.18	0.00	16.2	-248	190	15.18
10:35	7.09	11.90	1.20	0.00	13.3	-258	190	15.20
10:38	7.09	11.93	1.20	0.00	12.8	-262	190	15.21
10:41	7.09	12.03	1.21	0.00	11.9	-266	190	15.26
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

WELL PURGING LOG

URS Corporation

SITE NAME: Pfohl Brothers Landfill WELL NO.: GW-7S

PROJECT NO.: 11175616.00000

STAFF: Rob Murphy, Tom Urban

DATE(S): 11/1/2011, 11/2/11

			WELL ID.	VOL. (GAL/FT)
1. TOTAL CASING AND SCREEN LENGTH (FT.)	=	35.04	1"	0.040
2. WATER LEVEL BELOW TOP OF CASING (FT.)	=	4.57	2"	0.17
3. NUMBER OF FEET STANDING WATER (#1 - #2)	=	30.47	3"	0.38
4. VOLUME OF WATER/FOOT OF CASING (GAL.)	=	0.17	4"	0.66
5. VOLUME OF WATER IN CASING (GAL.)(#3 x #4)	=	5.2	5"	1.04
6. VOLUME OF WATER TO REMOVE (GAL.)(#5 x 3)	=		6"	1.50
7. VOLUME OF WATER ACTUALLY REMOVED (GAL.)	=	8.0	8"	2.60

$V=0.0408 \times (\text{CASING DIAMETER [INCHES]})^2$

	ACCUMULATED VOLUME PURGED (GALLONS)										
PARAMETERS	Initial	2.0	4.0	6.0	8.0						
pH	7.87	7.76	7.71	7.74	7.73						
SPEC. COND. (mS/cm)	0.542	0.536	0.536	0.533	0.518						
DO (mg/l)	9.69	1.87	6.04	7.05	4.48						
TEMPERATURE (^{0}C)	11.63	11.59	12.03	11.64	11.31						
TURBIDITY (NTU)	46.5	75.1	26.2	203	687						
ORP (millivolts)	-110	-61	-89.0	-52	-48						
TIME	10:58	11:02	11:05	11:12	11:19						

COMMENTS: 9:55 - Fill VOCs from passive diffusion bag (PDB), PDB was installed on 9/23/11
10:58 - Begin handbailing well.
11:19 - Well dry after removing 8.0 gallons.
11/2/2011 15:42 - return to well, depth to water = 4.78 feet.
15:45 - Collect sample for SVOCs and Metals.

WELL PURGING LOG

URS Corporation

SITE NAME: Pfohl Brothers Landfill WELL NO.: GW-7D

PROJECT NO.: 11175616.00000

STAFF: Rob Murphy, Tom Urban

DATE(S): 11/1/11, 11/2/11

			WELL ID.	VOL. (GAL/FT)
1. TOTAL CASING AND SCREEN LENGTH (FT.)	=	60.45	1"	0.040
2. WATER LEVEL BELOW TOP OF CASING (FT.)	=	45.26	2"	0.17
3. NUMBER OF FEET STANDING WATER (#1 - #2)	=	15.19	3"	0.38
4. VOLUME OF WATER/FOOT OF CASING (GAL.)	=	0.66	4"	0.66
5. VOLUME OF WATER IN CASING (GAL.)(#3 x #4)	=	10.0	5"	1.04
6. VOLUME OF WATER TO REMOVE (GAL.)(#5 x 3)	=		6"	1.50
7. VOLUME OF WATER ACTUALLY REMOVED (GAL.)	=	10.1	8"	2.60

$V=0.0408 \times (\text{CASING DIAMETER [INCHES]})^2$

	ACCUMULATED VOLUME PURGED (GALLONS)										
PARAMETERS	Init	3	6	9	10.1						
pH	8.02	7.48	7.36	7.43	7.74						
SPEC. COND. (mS/cm)	0.678	0.642	0.705	0.746	0.745						
DO (mg/)	12.53	10.60	4.40	9.30	3.73						
TEMPERATURE (^{0}C)	11.76	11.44	11.41	11.38	11.40						
TURBIDITY (NTU)	9.4	30.5	31.4	45.7	105						
ORP (millivolts)	-69	-69	-72	-106	-60						
TIME	10:15	10:25	10:35	10:43	10:52						

COMMENTS: 9:50 - Fill VOCs from passive diffusion bag (PDB), PDB was installed on 9/23/11
10:15 - Begin handbailing well.
10:52 - Well dry after removing 10.1 gallons
5/17/2011 15:14 - return to well, depth to water = 59.75 feet.
15:15 - Collect sample for SVOCs and Metals, only enough volume to fill 1 metals container and 1-1 liter Amber container.

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-8SR

Date: 11/1/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 5.27' Depth to Well Bottom: 13.02' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 4.8 Estimated Purge Volume (liters): 9.5

Sample ID: GW-8SR Sample Time: 16:17 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
15:42	6.50	14.36	3.14	0.43	240	-49	340	5.27
15:47	6.45	14.28	3.04	0.10	221	-58	260	7.43
15:52	6.44	14.19	3.05	0.00	145	-61	260	7.57
15:57	6.42	14.16	3.11	0.00	79.4	-61	260	7.71
16:02	6.39	14.20	3.14	0.00	62.5	-62	260	7.69
16:07	6.38	14.56	3.13	0.00	49.1	-62	260	7.73
16:12	6.37	14.17	3.17	0.00	42.2	-63	260	7.82
16:17	6.37	14.07	3.18	0.00	35.0	-64	260	7.91
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-8D

Date: 11/1/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 6.16' Depth to Well Bottom: 36.54' Well Diameter: 4" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 75.0 Estimated Purge Volume (liters): 44.2

Sample ID: GW-8D Sample Time: 15:30 QA/QC: Duplicate (ID=Duplicate)

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
14:45	7.02	13.30	1.23	1.81	37.6	6	830	6.16
14:50	6.87	12.93	1.24	0.41	11.9	2	1000	6.16
14:55	6.82	12.74	1.24	0.28	2.6	14	1000	6.16
15:00	6.81	12.77	1.24	0.17	1.1	21	1000	6.16
15:05	6.81	12.72	1.24	0.01	0.8	28	1000	6.16
15:10	6.80	12.66	1.25	0.00	0.0	34	1000	6.16
15:15	6.80	12.70	1.25	0.00	0.6	40	1000	6.16
15:20	6.80	12.70	1.25	0.00	0.6	45	1000	6.16
15:25	6.79	12.66	1.25	0.00	0.6	50	1000	6.16
15:30	6.79	12.65	1.25	0.00	0.6	53	1000	6.16
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-26D

Date: 11/2/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 7.05' Depth to Well Bottom: 40.70' Well Diameter: 4" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 83.1 Estimated Purge Volume (liters): 31.5

Sample ID: GW-26D Sample Time: 13:03 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information: Occasional pulses of iron stained particulates in purge water.

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
12:28	6.72	13.02	2.50	5.40	31.1	-84	900	7.05
12:33	6.80	12.27	2.54	2.19	0.0	-96	900	7.05
12:38	6.80	12.18	2.54	1.15	0.0	-101	900	7.05
12:43	6.79	12.19	2.54	0.54	0.0	-104	900	7.05
12:48	6.79	12.15	2.54	0.19	0.0	-105	900	7.05
12:53	6.79	12.12	2.54	0.00	0.0	-106	900	7.05
12:58	6.79	12.12	2.54	0.00	0.0	-107	900	7.05
13:03	6.79	12.09	2.54	0.00	0.0	-108	900	7.05
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-28S

Date: 11/2/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 8.73' Depth to Well Bottom: 15.52' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 4.2 Estimated Purge Volume (liters): 8.1

Sample ID: GW-28S Sample Time: 11:59 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
11:19	7.48	14.14	0.597	1.25	67.5	-134	225	8.73
11:24	7.10	14.26	0.589	0.45	30.2	-129	200	9.75
11:29	7.02	14.27	0.579	0.30	16.7	-116	200	9.95
11:34	7.01	14.30	0.575	0.60	10.0	-102	200	10.05
11:39	7.01	14.34	0.573	0.71	6.2	-94	200	10.15
11:44	7.00	14.40	0.583	0.58	4.7	-87	200	10.15
11:49	7.00	14.51	0.587	0.47	3.2	-79	200	10.20
11:54	6.99	14.55	0.589	0.41	3.1	-75	200	10.20
11:59	6.99	14.60	0.592	0.35	2.5	-70	200	10.22
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-29S

Date: 11/2/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 7.67' Depth to Well Bottom: 20.04' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 7.6 Estimated Purge Volume (liters): 7.1

Sample ID: GW-29S Sample Time: 14:50 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
14:15	6.81	15.68	1.020	1.78	180	-85.0	290	7.67
14:20	6.79	15.93	1.010	0.55	90	-95.0	200	9.23
14:25	6.76	15.88	0.987	0.28	46	-97.0	200	9.72
14:30	6.76	16.22	0.981	0.16	30	-97.0	200	10.06
14:35	6.77	16.42	0.988	0.13	22	-98.0	175	10.20
14:40	6.78	16.64	0.991	0.06	19	-98.0	175	10.26
14:45	6.78	16.64	0.980	0.05	19	-99.0	175	10.32
14:50	6.79	16.83	0.994	0.03	14	-100.0	175	10.36
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-30S

Date: 11/3/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 8.07' Depth to Well Bottom: 17.97' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 6.1 Estimated Purge Volume (liters): 29.1

Sample ID: GW-30S Sample Time: 8:50 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
8:10	6.53	15.46	4.21	5.71	80.0	-63	700	8.07
8:15	6.74	14.19	3.85	1.50	10.9	-105	730	8.18
8:20	6.74	14.16	3.85	0.96	2.0	-110	730	8.18
8:25	6.73	14.18	3.87	0.61	1.5	-112	730	8.18
8:30	6.73	14.17	3.87	0.42	2.5	-114	730	8.18
8:35	6.73	14.17	3.87	0.22	2.5	-115	730	8.18
8:40	6.73	14.16	3.87	0.09	1.7	-116	730	8.18
8:45	6.72	14.17	3.86	0.02	1.7	-117	730	8.18
8:50	6.72	14.18	3.86	0.00	1.6	-117	730	8.18
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-31S

Date: 11/3/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 2.70' Depth to Well Bottom: 9.57' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 4.2 Estimated Purge Volume (liters): 6.7

Sample ID: GW-31S Sample Time: 9:47 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
9:07	7.38	12.76	0.704	0.99	39.2	-34	190	2.70
9:12	7.12	12.53	0.690	0.50	32.0	-13	165	4.07
9:17	7.06	12.47	0.686	0.34	31.3	3	165	4.65
9:22	7.04	12.55	0.686	0.34	32.7	12	165	4.81
9:27	7.02	12.60	0.686	0.33	30.1	15	165	5.04
9:32	7.01	12.67	0.686	0.25	26.6	17	165	5.18
9:37	6.99	12.78	0.689	0.17	22.4	17	165	5.43
9:42	6.99	12.87	0.687	0.18	22.9	15	165	5.65
9:47	6.98	12.93	0.687	0.16	23.2	13	165	5.76
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-32S

Date: 11/3/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 2.80' Depth to Well Bottom: 9.93' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 4.4 Estimated Purge Volume (liters): 7.9

Sample ID: GW-32S Sample Time: 11:00 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
10:15	7.41	12.74	0.560	2.29	31.9	56	175	2.80
10:20	7.26	12.61	0.558	1.40	18.8	62	175	3.25
10:25	7.24	12.70	0.553	1.00	12.3	61	175	3.25
10:30	7.23	12.75	0.547	0.68	7.0	58	175	3.29
10:35	7.23	12.76	0.544	0.65	7.0	56	175	3.31
10:40	7.22	12.80	0.543	0.47	7.1	55	175	3.31
10:45	7.22	12.85	0.538	0.40	7.3	54	175	3.31
10:50	7.22	12.96	0.538	0.30	5.1	52	175	3.31
10:55	7.21	13.00	0.541	0.27	4.6	52	175	3.31
11:00	7.22	13.00	0.536	0.25	4.2	51	175	3.31
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-33S

Date: 11/3/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 4.22' Depth to Well Bottom: 8.21' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 2.5 Estimated Purge Volume (liters): 5.2

Sample ID: GW-33S Sample Time: 12:00 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
11:25	7.07	14.01	0.930	3.77	8.2	98	130	4.22
11:30	6.99	13.80	0.934	2.90	7.8	104	180	5.44
11:35	6.98	13.80	0.933	2.60	8.2	106	150	5.75
11:40	6.96	13.82	0.938	2.32	3.8	108	150	5.95
11:45	6.94	13.77	0.943	3.89	4.1	109	140	6.00
11:50	6.94	13.99	0.947	3.51	1.6	110	140	6.06
11:55	6.92	14.04	0.954	3.51	0.8	110	140	6.11
12:00	6.91	14.20	0.951	3.53	0.5	110	140	6.12
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-34S

Date: 11/1/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 2.82' Depth to Well Bottom: 10.01' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 4.4 Estimated Purge Volume (liters): 5.2

Sample ID: GW-34S Sample Time: 8:20 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
7:58	7.63	14.11	0.871	5.59	60.3	108	300	2.82
8:03	7.00	14.33	0.837	4.40	33.0	108	140	3.45
8:08	6.93	13.79	0.821	4.24	19.3	116	150	4.00
8:13	6.91	13.01	0.827	4.23	17.5	126	150	4.15
8:18	6.89	12.48	0.834	4.21	15.1	129	150	4.17
8:23	6.87	11.93	0.847	4.17	14.1	131	150	4.27
8:28	6.85	11.54	0.859	4.08	10.1	134	150	4.40
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: 11175616.00000 Site: Pfohl Brothers Well I.D.: GW-35S

Date: 11/2/2011 Sampling Personnel: Rob Murphy, Tom Urban Company: URS Corporation

Purging/Sampling Device: Geopump 2 Tubing Type: LDPE/Silicone Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 3.20' Depth to Well Bottom: 7.46' Well Diameter: 2" Screen Length:

Casing Type: Stainless Steel Volume in 1 Well Casing (liters): 2.6 Estimated Purge Volume (liters): 7.2

Sample ID: GW-35S Sample Time: 13:48 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
13:13	7.56	13.21	0.555	2.04	156	-55	230	3.20
13:18	7.04	13.08	0.533	1.23	30.1	-21	200	3.80
13:23	6.97	13.21	0.524	0.85	8.0	-7	200	3.80
13:28	6.95	13.31	0.524	0.50	4.5	-2	200	3.80
13:33	6.94	13.45	0.523	0.34	3.5	0	200	3.80
13:38	6.94	13.36	0.517	0.26	2.6	2	200	3.80
13:43	6.94	13.32	0.513	0.25	2.7	3	200	3.80
13:48	6.94	13.21	0.512	0.24	2.4	4	200	3.80
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

APPENDIX E

HISTORICAL ANALYTICAL RESULTS

FIGURE E-1
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-1D

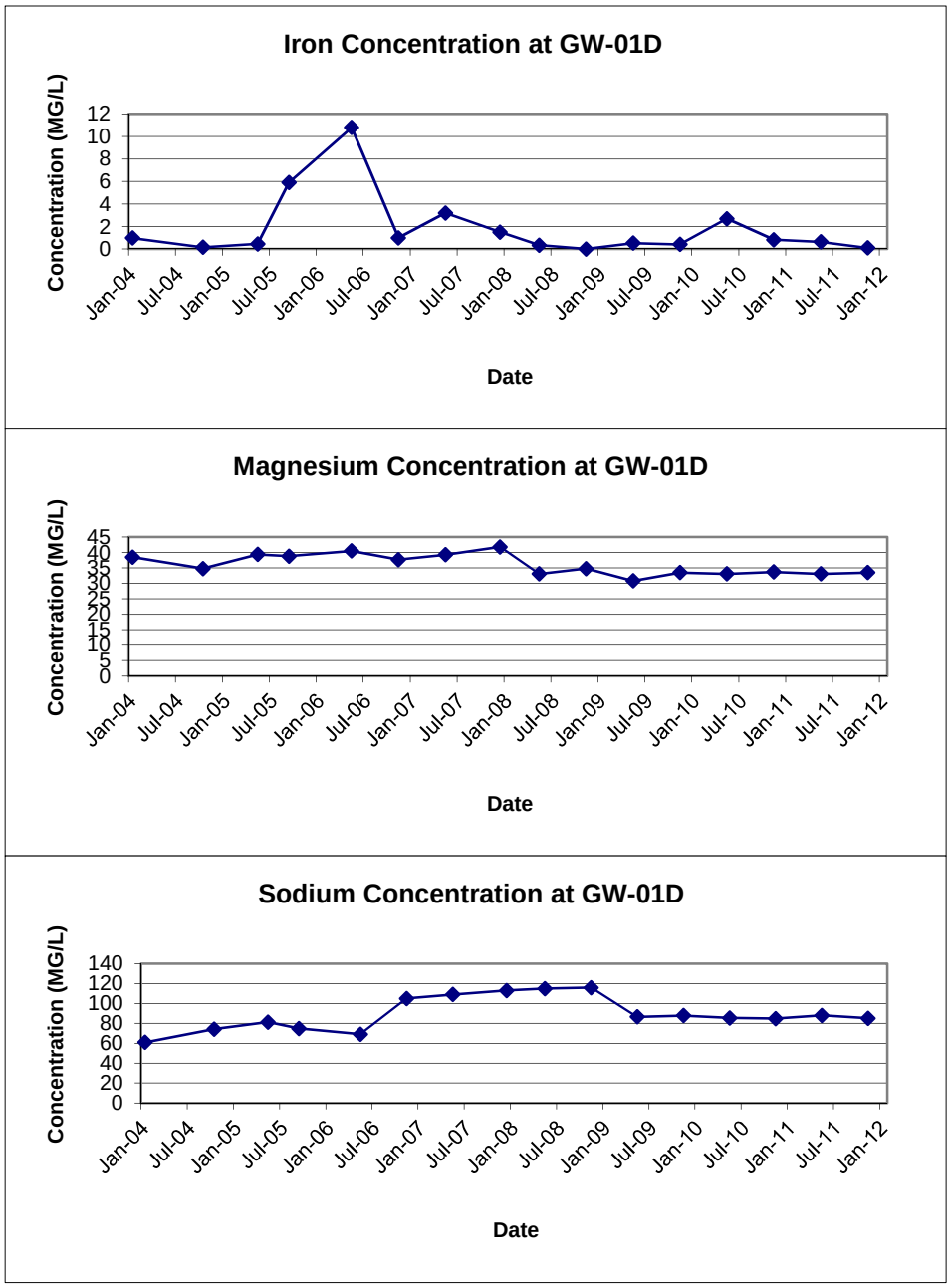


FIGURE E-2
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-1S

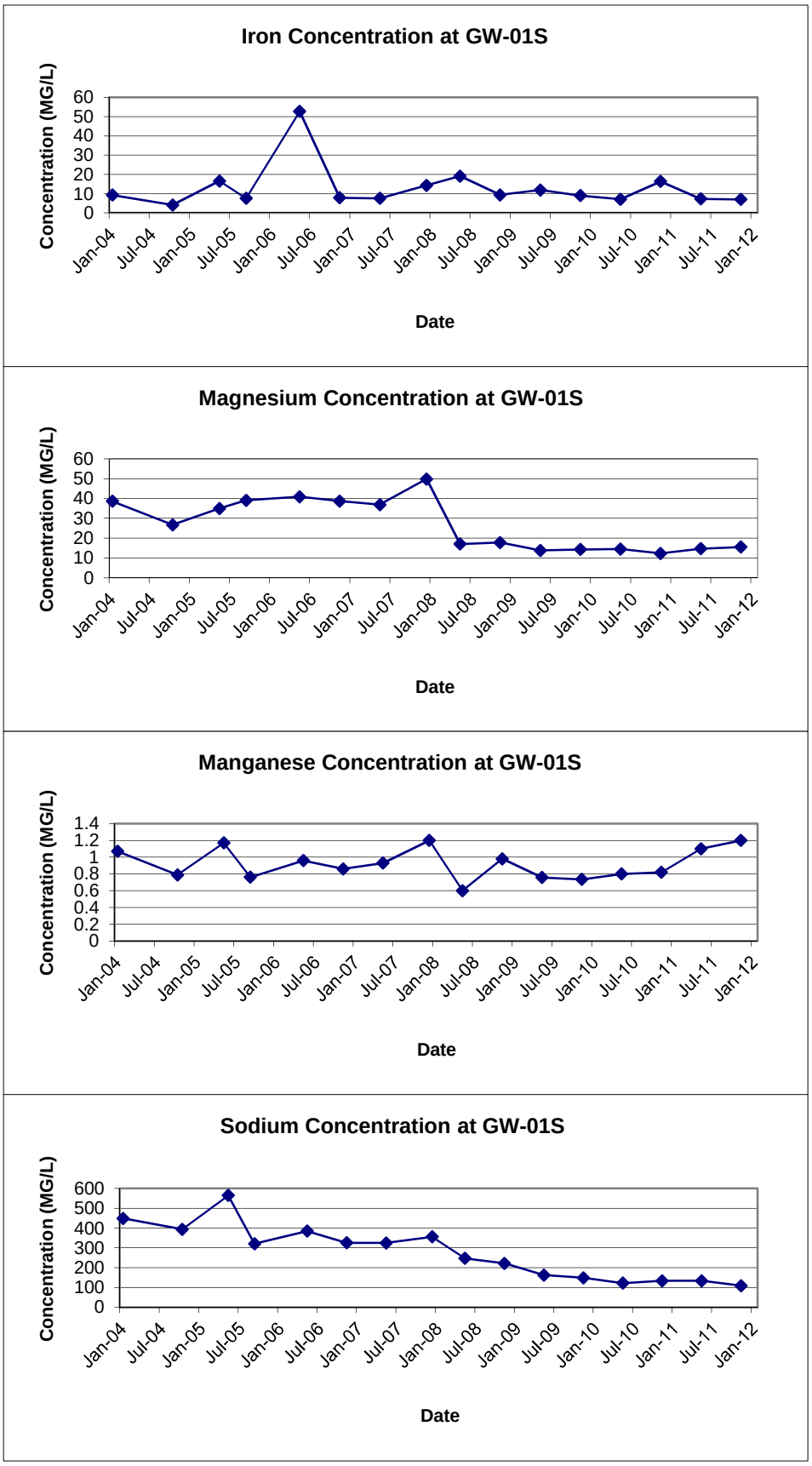


FIGURE E-3
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-3D

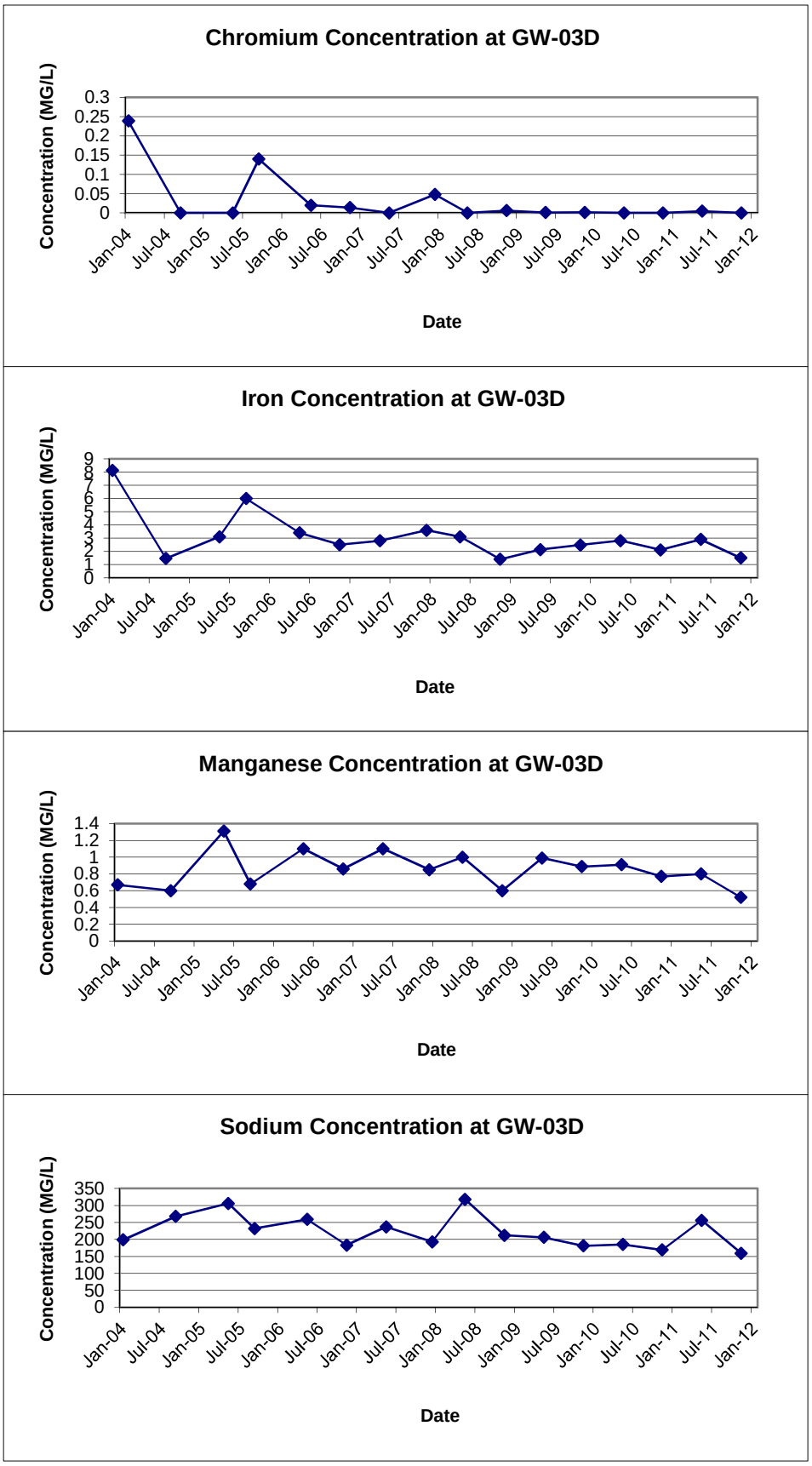


FIGURE E-4
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-3S

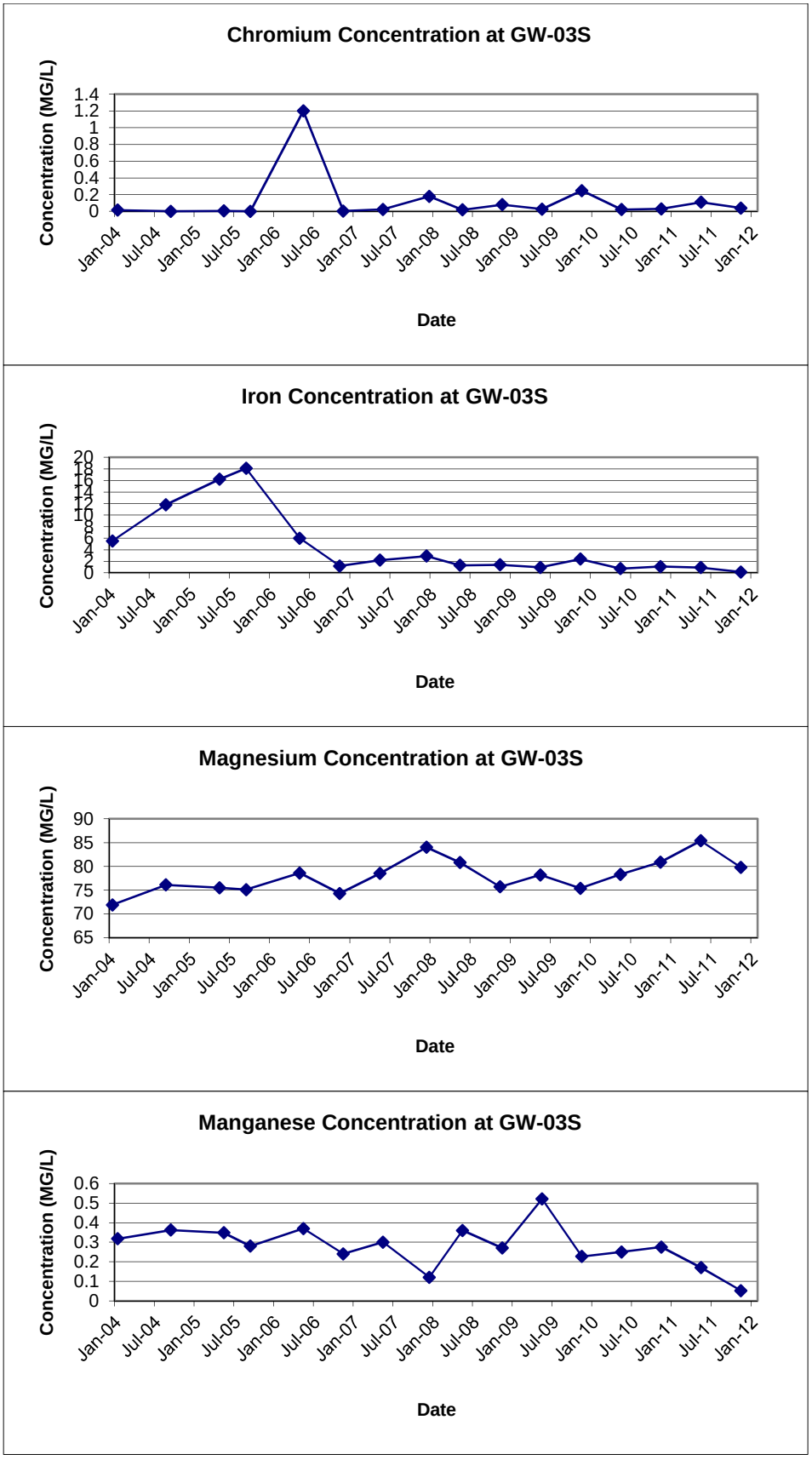


FIGURE E-4
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-3S

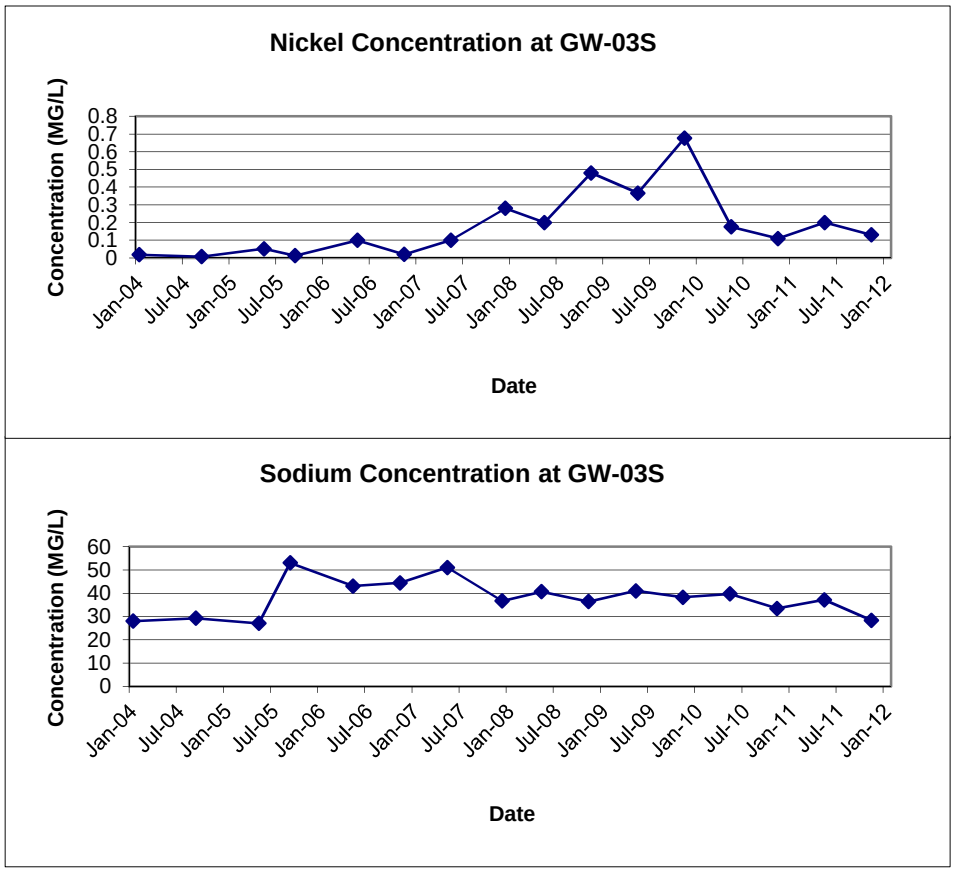


FIGURE E-5
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-4D

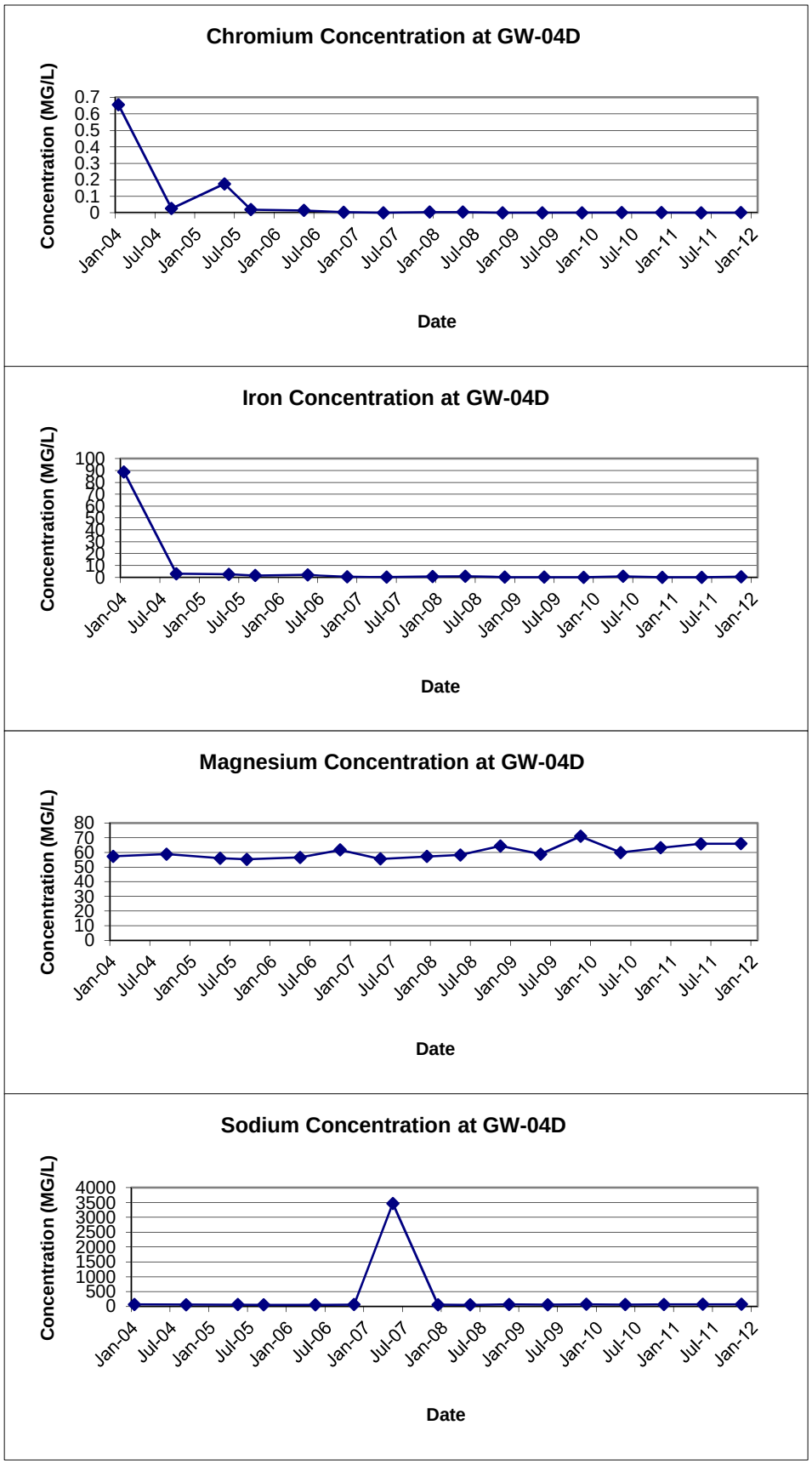


FIGURE E-6
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-4S

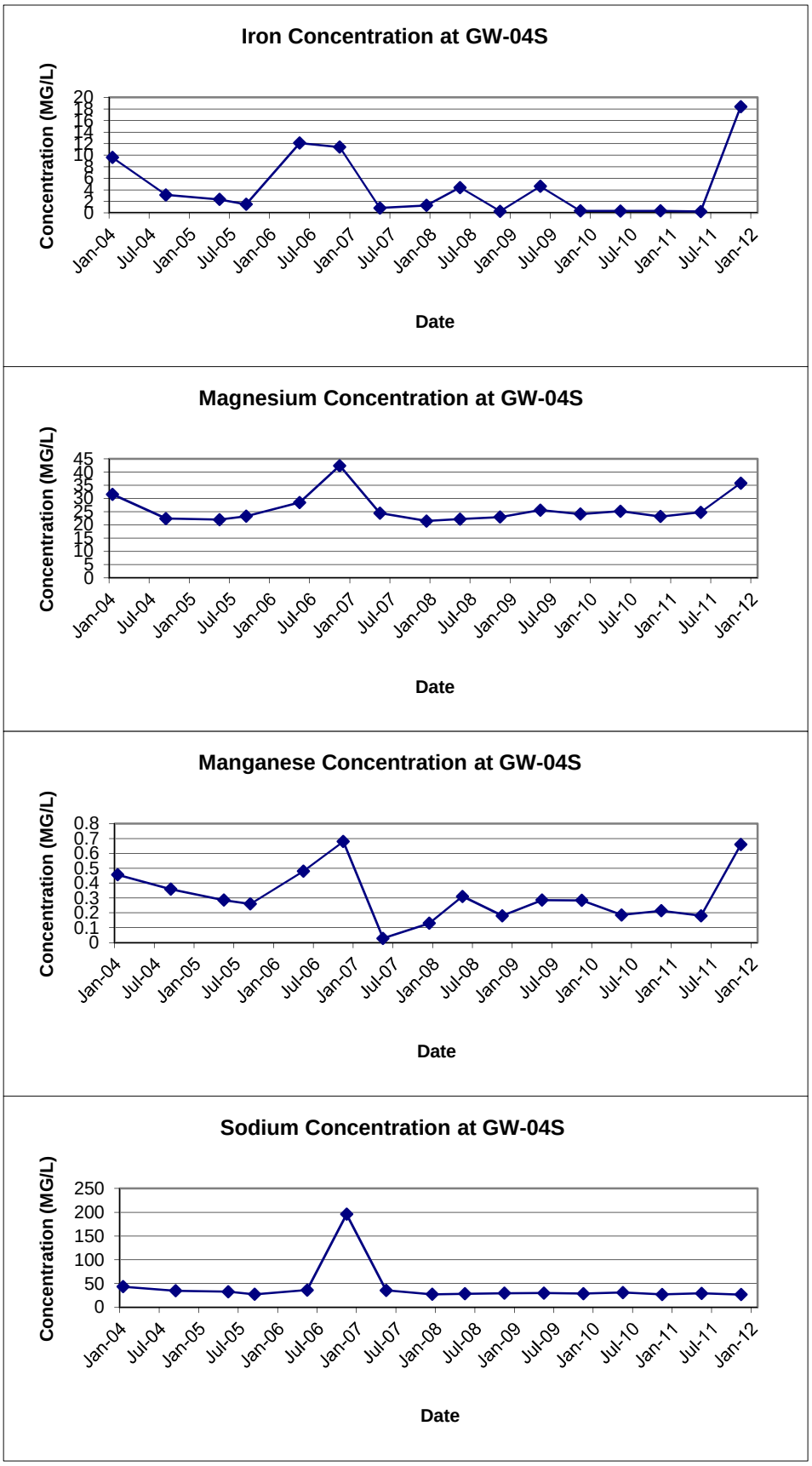


FIGURE E-7
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-7D

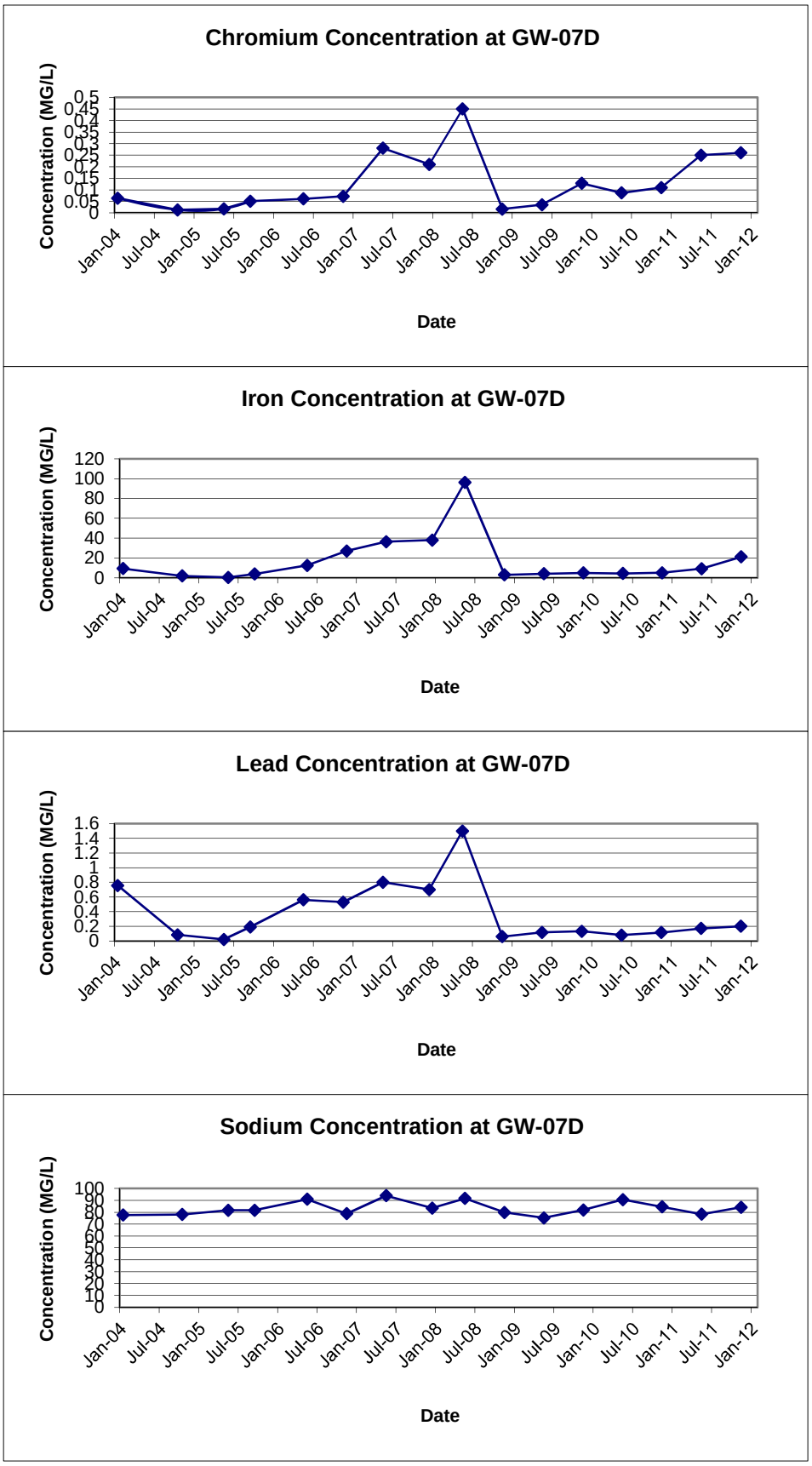


FIGURE E-8
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-7S

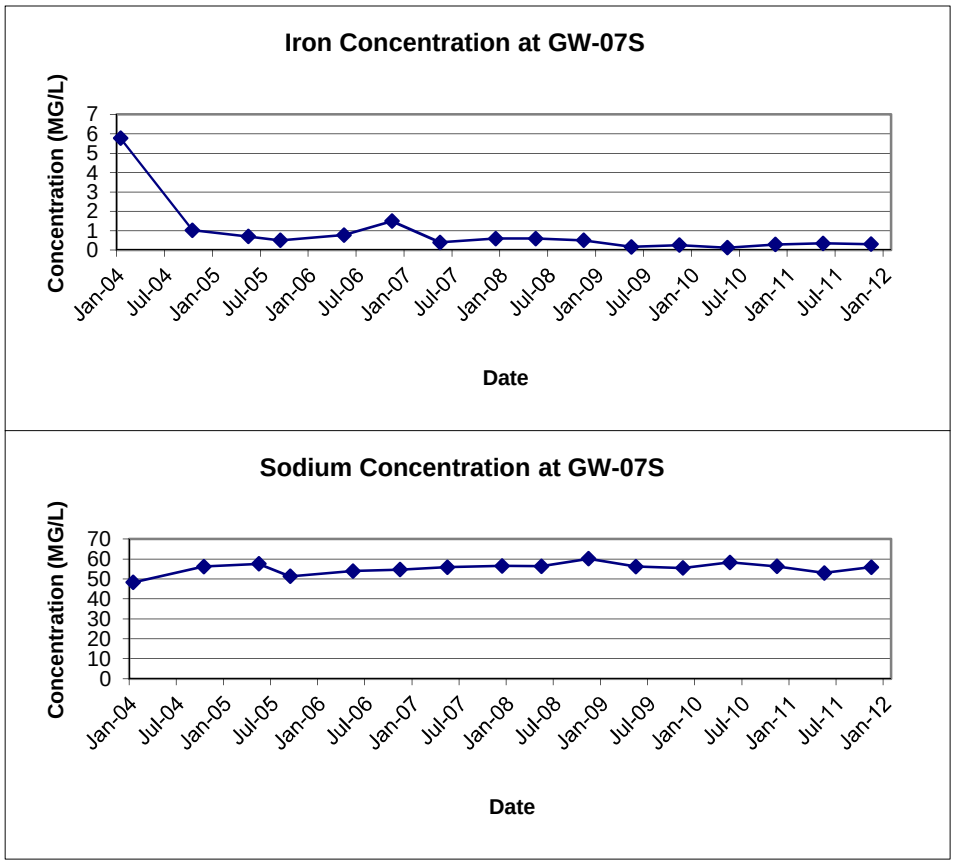


FIGURE E-9
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-8D

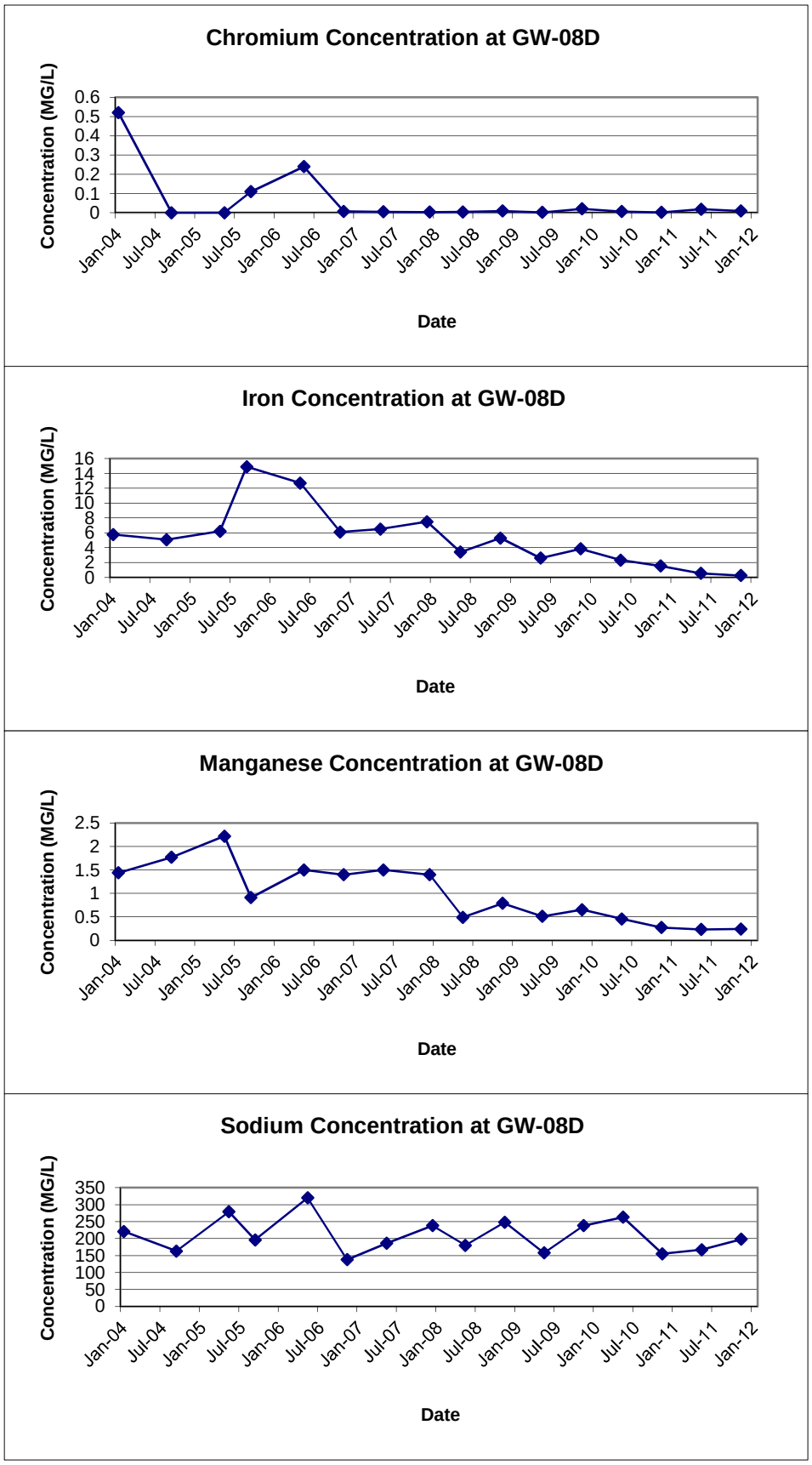


FIGURE E-10
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-8SR

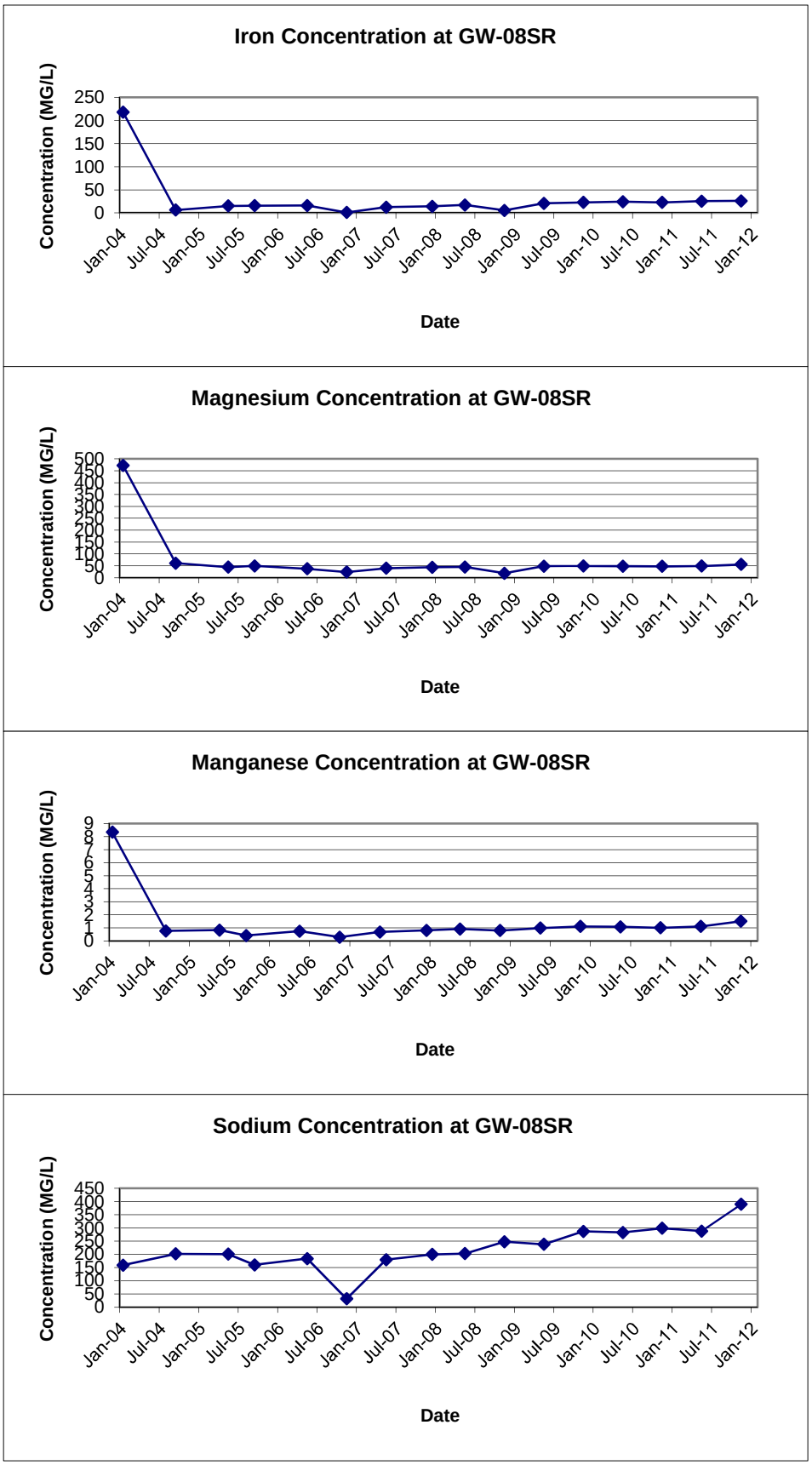


FIGURE E-11
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-26D

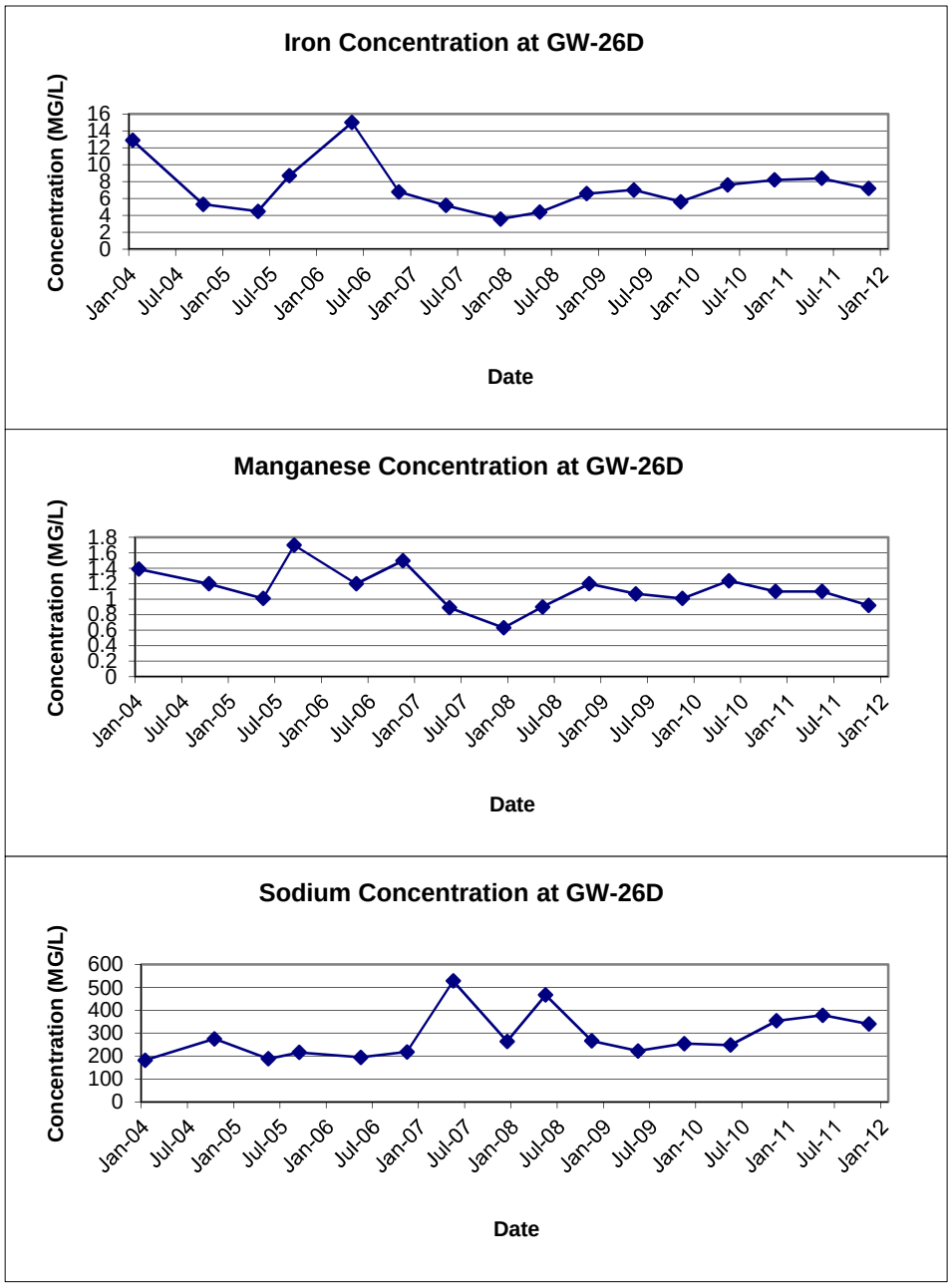


FIGURE E-12
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-28S

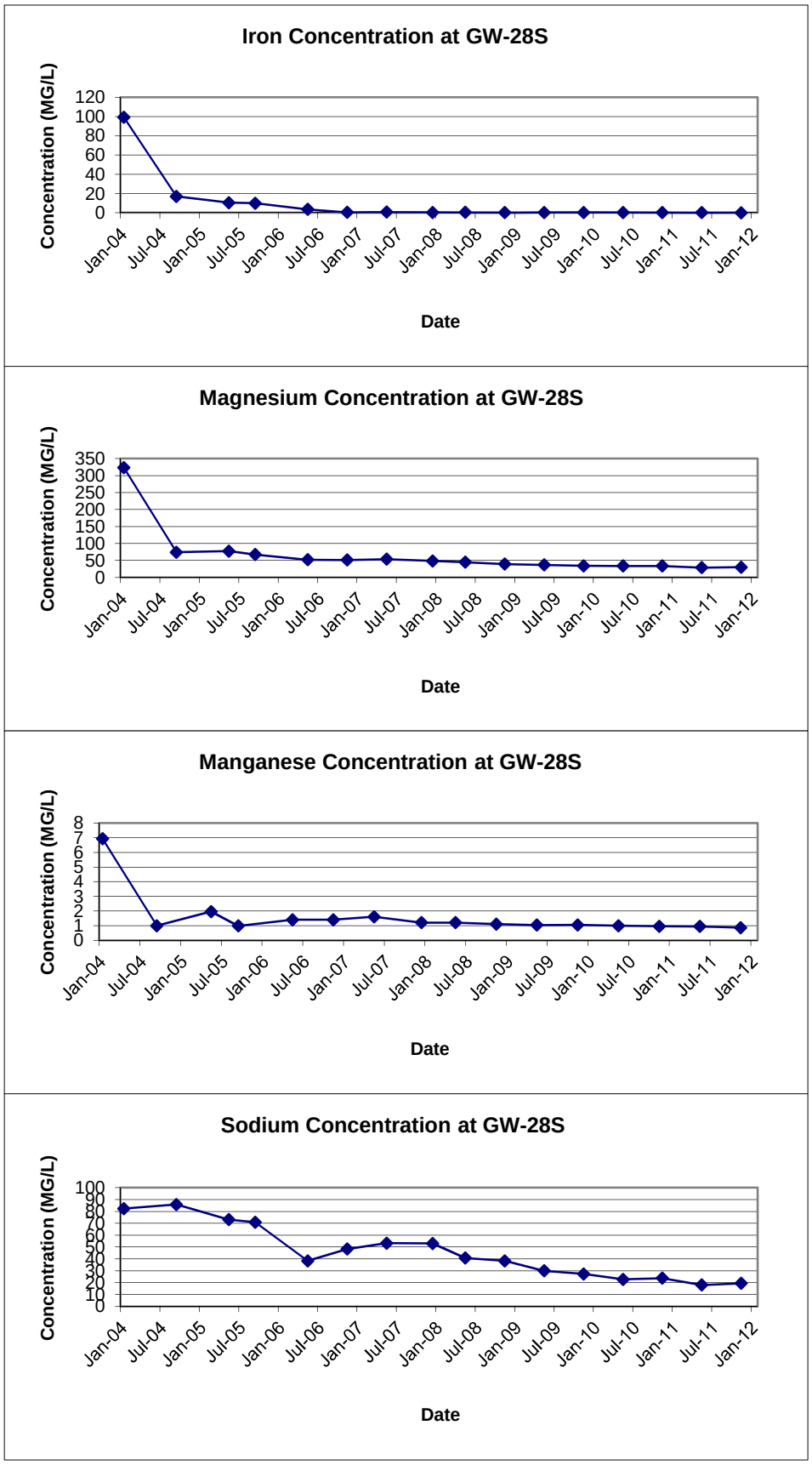


FIGURE E-13
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-29S

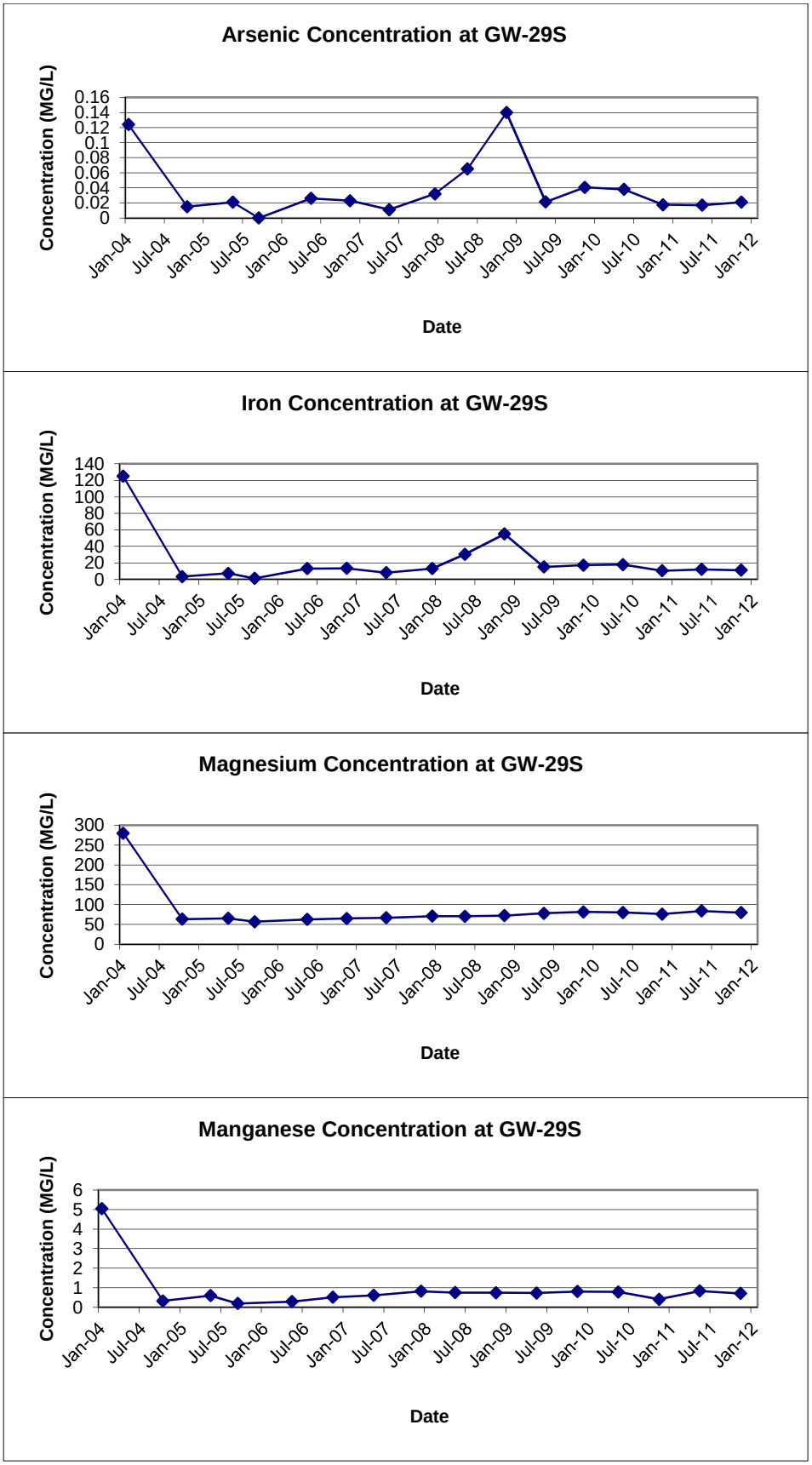


FIGURE E-13
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-29S

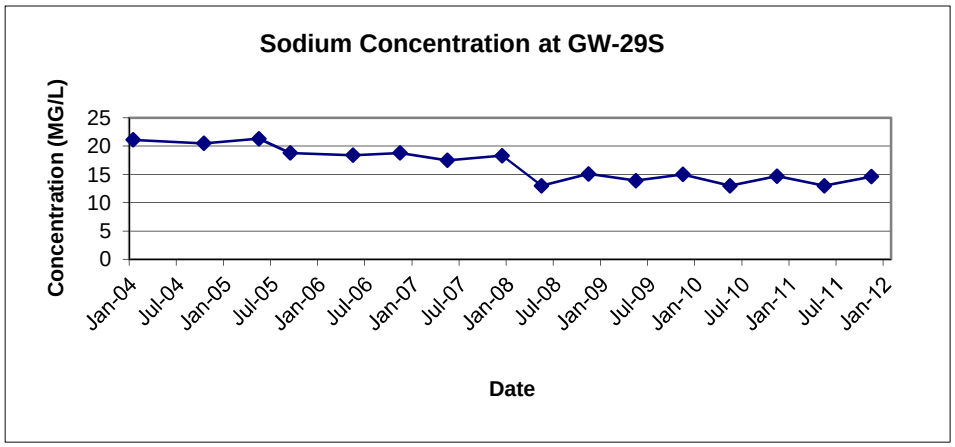


FIGURE E-14
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-30S

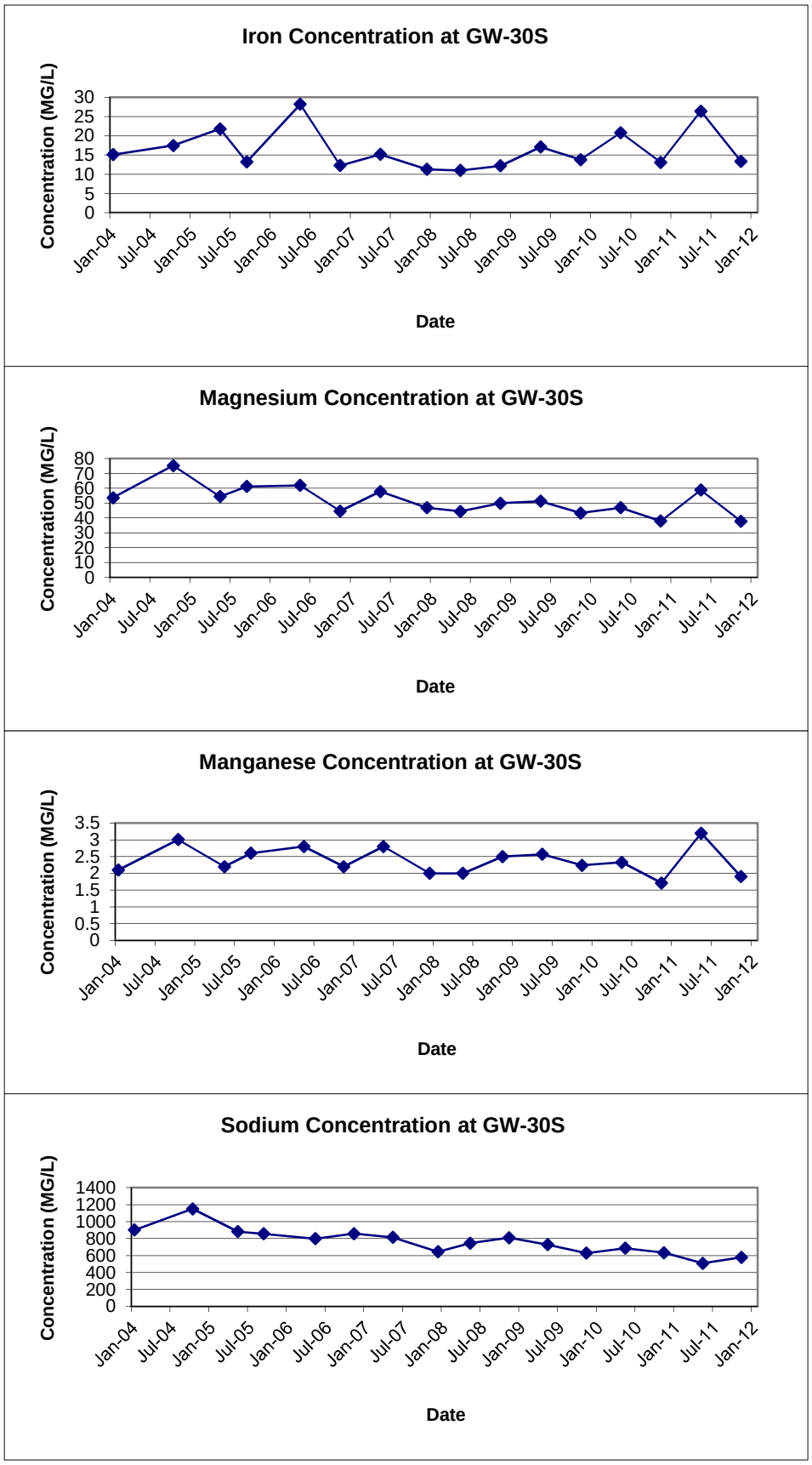


FIGURE E-15
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-31S

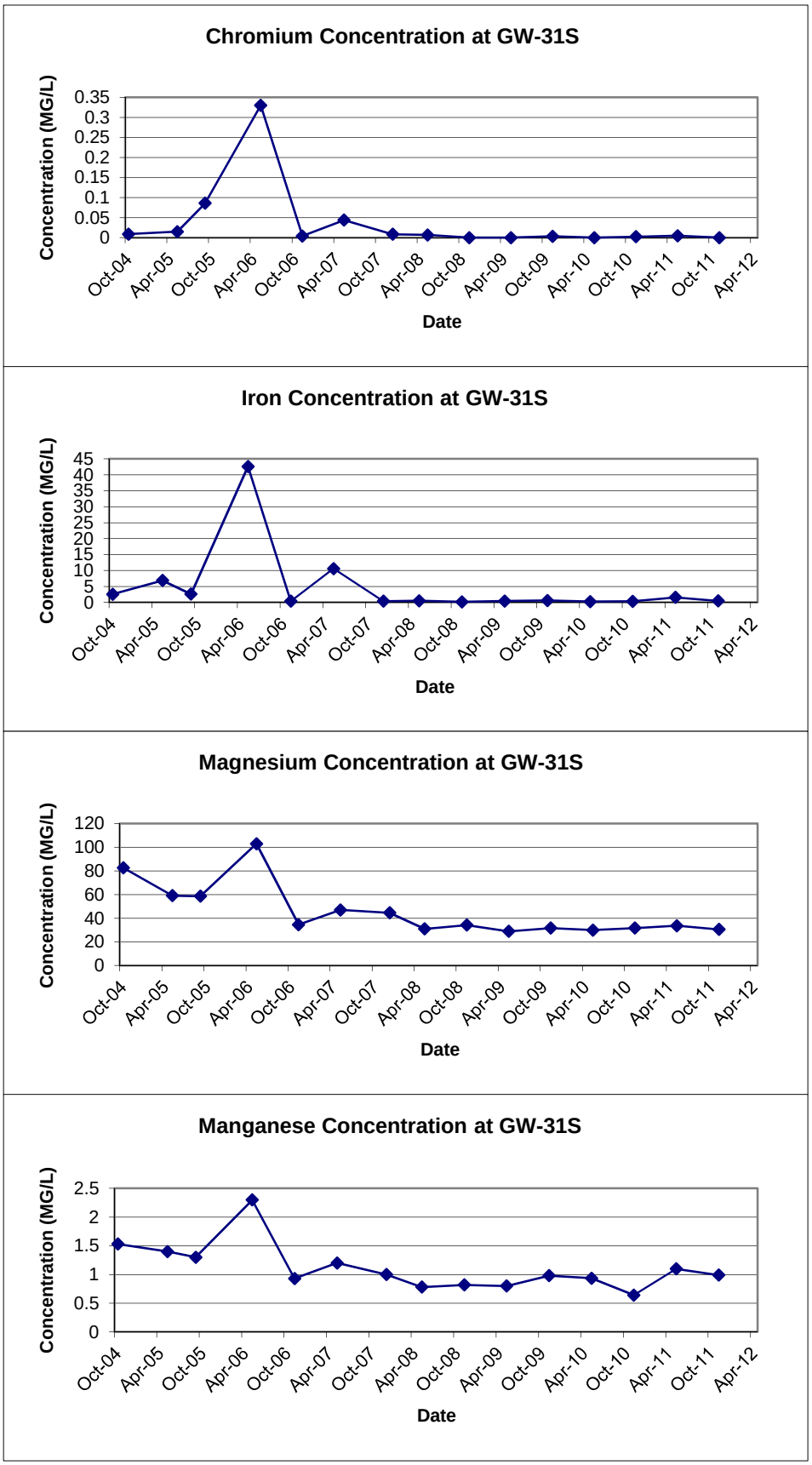


FIGURE E-16
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-32S

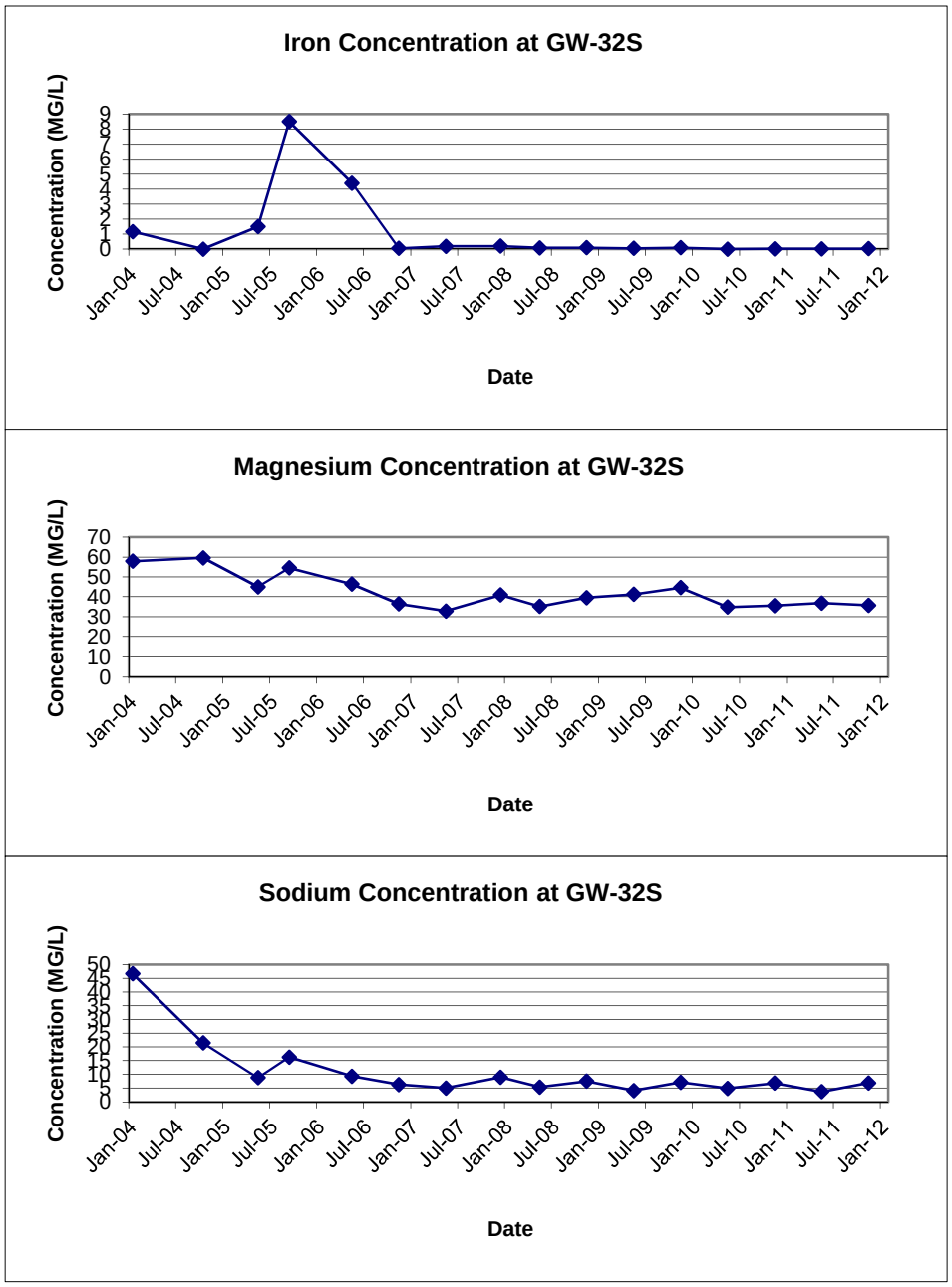


FIGURE E-17
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-33S

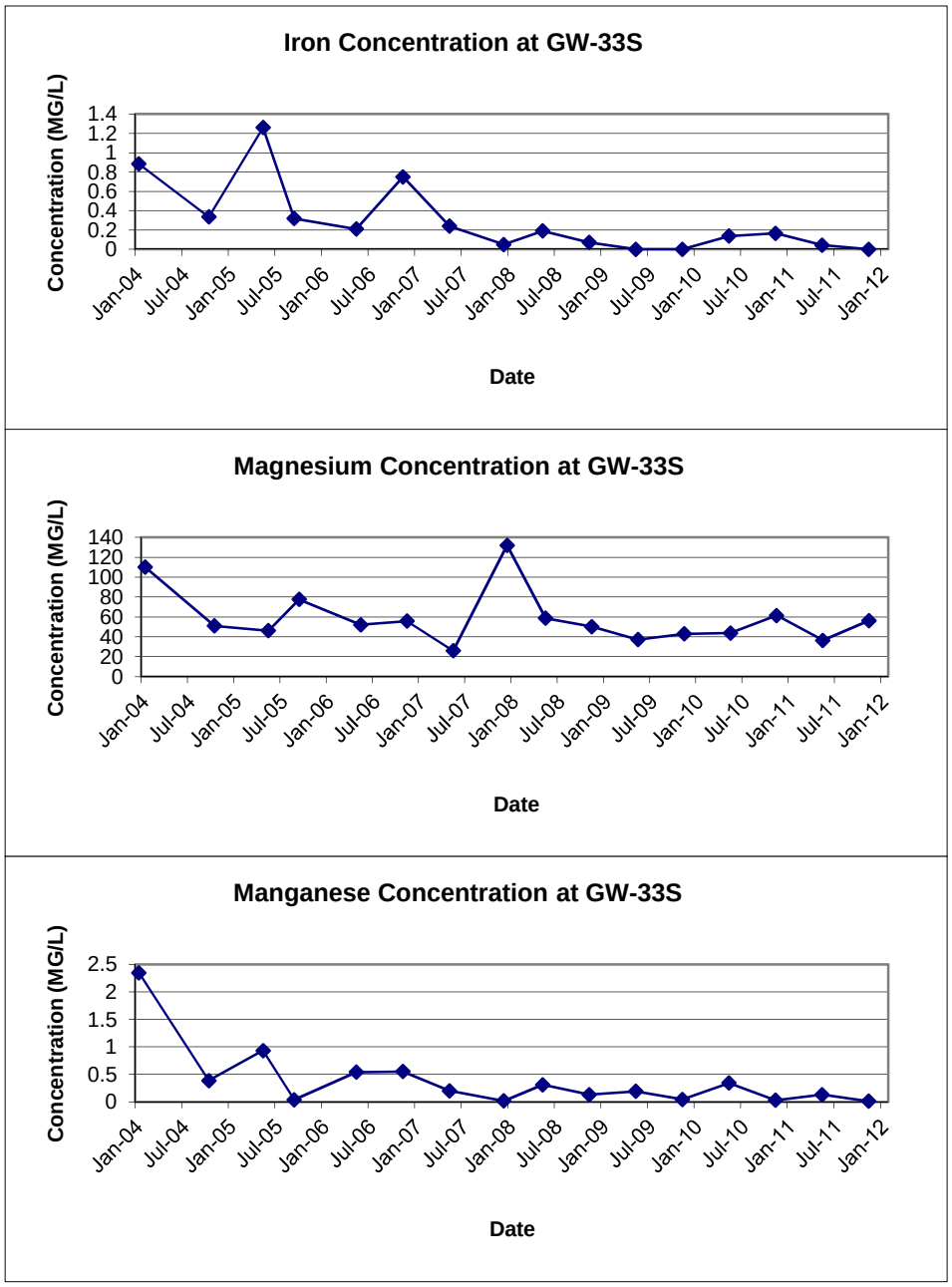


FIGURE E-18
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-34S

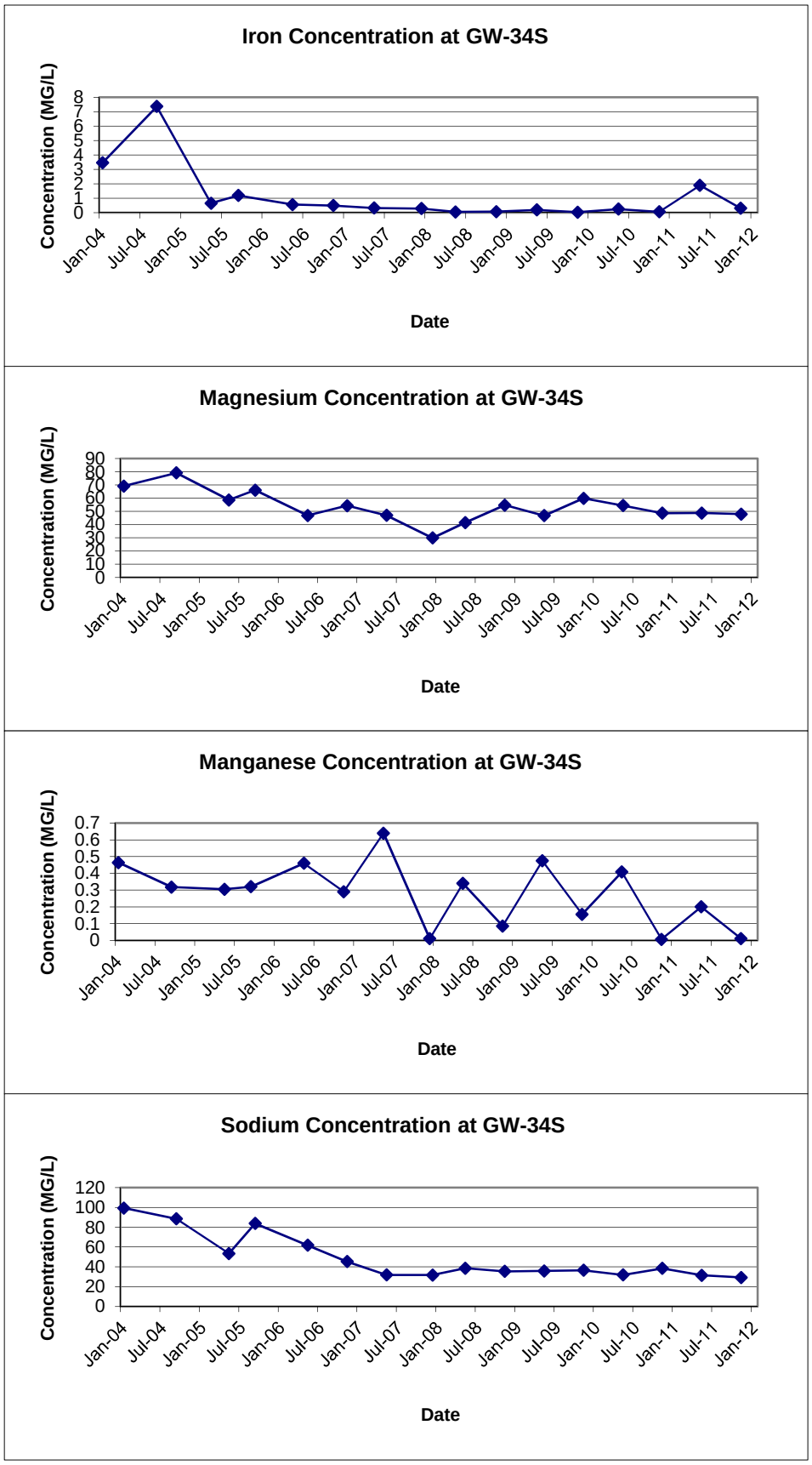
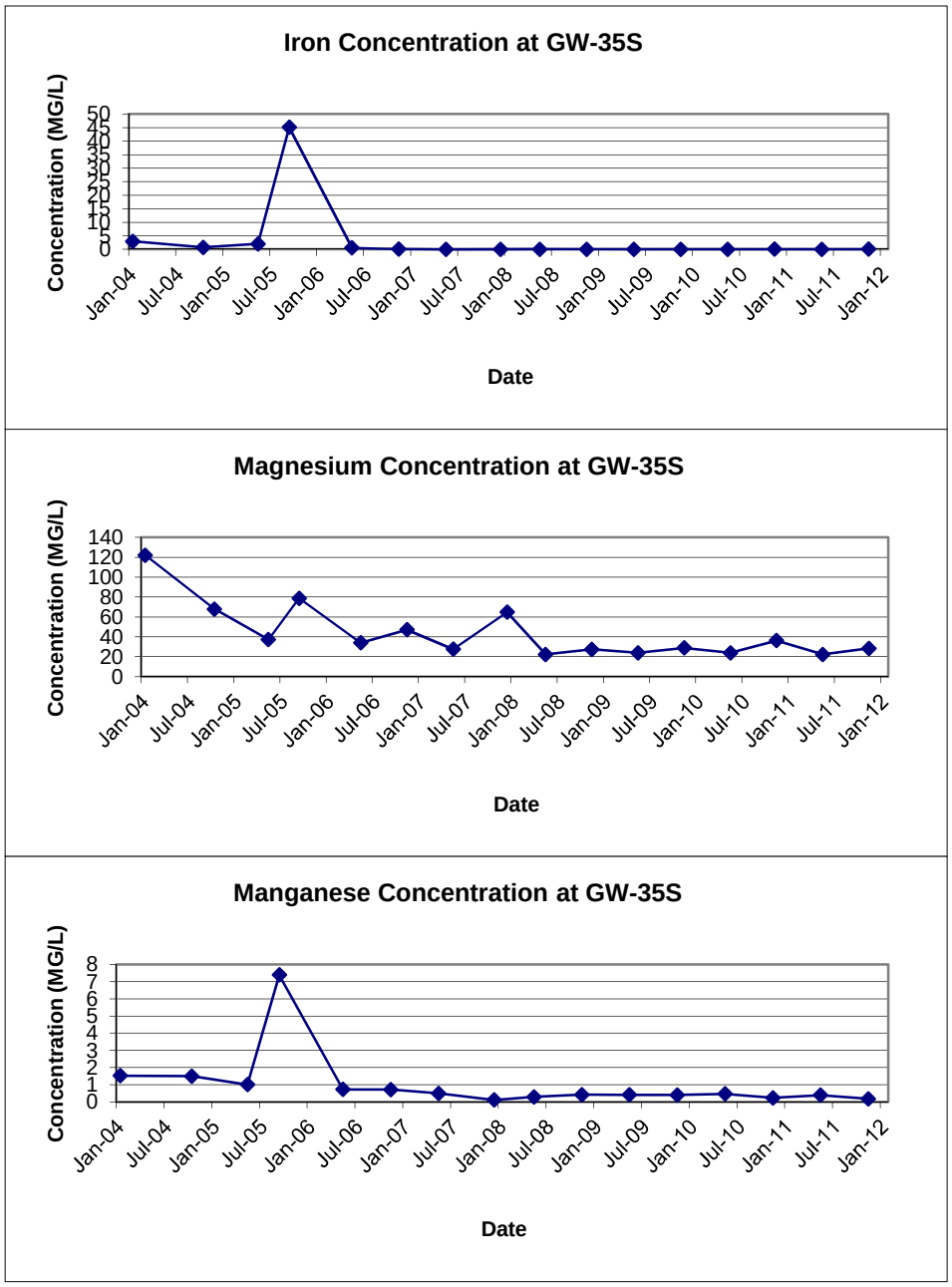


FIGURE E-19
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-35S



APPENDIX F

BSA PERMIT NO. 10-11-CH016

AUTHORIZATION TO DISCHARGE UNDER THE BUFFALO POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT NO. 10-11-CH016
USEPA Category 40 CFR Part 403

In accordance with the provisions of the Federal Water Pollution Control Act, as amended, and the Sewer Regulations of the Buffalo Sewer Authority, authorization is hereby granted to:

THE TOWN OF CHEEKTOWAGA

to discharge wastewater from a facility located at:

PFOHL BROTHERS LANDFILL REMEDIATION SITE
1000 AERO DRIVE
CHEEKTOWAGA, NEW YORK 14225

The wastewater permitted herein shall be discharged to the Town of Cheektowaga sewer system, which is connected to the Buffalo Municipal Sewer System and Treatment facilities, and which wastewater will be treated at the Buffalo Sewer Authority's Treatment Plant.

Issuance of this permit is based upon a permit application filed on **November 3, 2005** analytical data. This permit is granted in accordance with discharge limitations, monitoring requirements and other conditions set forth in Parts I and II hereof.

Effective this 1st day of November, 2010

To Expire the 31st day of March, 2013

General Manager

Signed this 30th **day of** September **, 2010**

PART I: SPECIFIC CONDITIONS

A. DISCHARGE LIMITATIONS & MONITORING REQUIREMENTS

During the period beginning the effective date of this Permit and lasting until the expiration date, discharge from the permitted facility outfall (see attached map) shall be limited and monitored **quarterly** by the permittee as specified below.

Sample Point	Parameter	Discharge Limitations[1] Daily Max	Sampling Requirements Period	Type
001	pH	5.0 – 12.0 S.U.	1 day	Composite[2]
	Total Cadmium	1.17 lbs.	1 day	Composite[2]
	Total Chromium	1.17 lbs.	1 day	Composite[2]
	Total Copper	3.74 lbs.	1 day	Composite[2]
	Total Lead	1.17 lbs.	1 day	Composite[2]
	Total Nickel	3.27 lbs.	1 day	Composite[2]
	Total Zinc	5.84 lbs.	1 day	Composite[2]
	Total Barium	2.34 lbs.	1 day	Composite[2]
	Total Suspended Solids[5]	250 mg/l	1 day	Composite[2]
	Total Flow	140,100 gallons[6]	1 day	Discharge meter reading

Footnotes are explained on page 5.

PART I: SPECIFIC CONDITIONS

A. DISCHARGE LIMITATIONS & MONITORING REQUIREMENTS

During the period beginning the effective date of this Permit and lasting until the expiration date, discharge from the permitted facility outfall (see attached map) shall be limited and monitored **once** by the permittee as specified below.

Sample Point	Parameter	Discharge Limitations[1] Daily Max	Sampling Requirements Period	Type
001	Total Mercury	0.001 lbs.	1 day	Composite[2]
	USEPA Test Method 608[4]	To be monitored	1 day	Grab[3]
	USEPA Test Method 624[4]	To be monitored	1 day	Grab[3]
	USEPA Test Method 625[4]	To be monitored	1 day	Grab[3]

Footnotes are explained on page 5.

PART I: SPECIFIC CONDITIONS

B. DISCHARGE MONITORING REPORTING REQUIREMENTS

During the period beginning the effective date of this permit and lasting until the expiration date, discharge monitoring results shall be summarized and reported **quarterly** by the permittee on the days specified below:

Sample Point	Parameter	Reporting Requirements	
		Initial Report	**Subsequent Reports**
001	All except USEPA Test Methods 608, 624, 625 & T Mercury	March 31, 2011	Every March 31st, June 30th, September 30th and December 31st
	USEPA Test Methods 608, 624 and 625 & T Mercury	March 31, 2011	

PART I: SPECIFIC CONDITIONS

C. SPECIAL REQUIREMENTS

1. Mass limits based on an average discharge of 140,100 gpd.

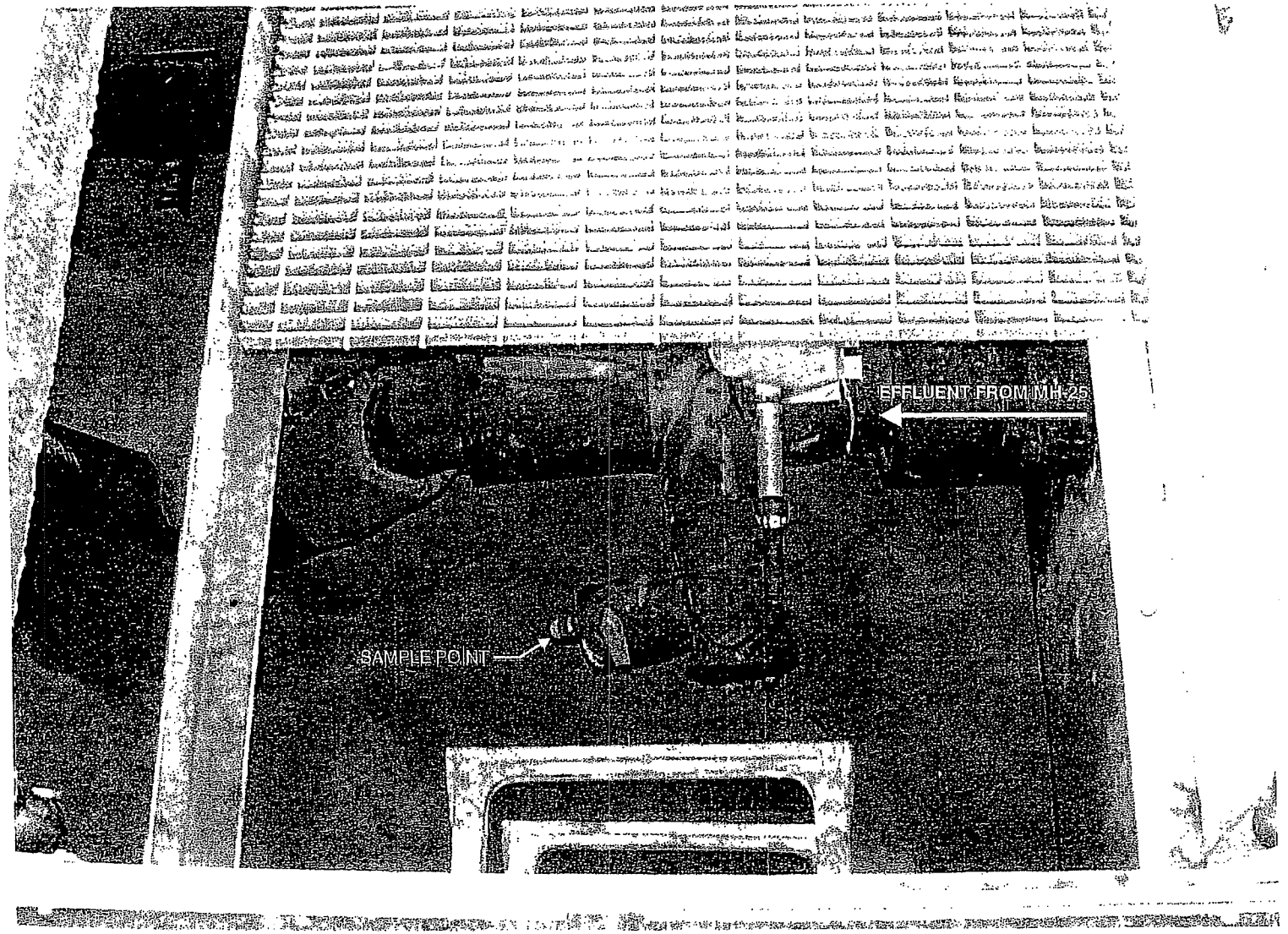
2. Composite samples may be time proportioned.

3. Four grab samples must be collected at equally spaced intervals throughout the sample day. The four (4) grab samples must be composited by a NYSDOH certified laboratory prior to analysis.

4. The permittee must report any compound whose concentration is equal to or greater than 0.01 mg/L. The permittee is not authorized to discharge any of the parameters evaluated by these test procedures which may cause or contribute to a violation of water quality standards or harm the sewerage system. Any parameter detected may, at the discretion of the BSA, be specifically limited and incorporated in this permit.

5. Surchargeable over 250 mg/L.

6. Flow is an action level only. If the permittee consistently exceeds this level, the BSA must be notified so that this permit can be modified.



URS

PFOHL BROTHERS LANDFILL
EFFLUENT SAMPLE POINT

FIGURE 1

PART II GENERAL CONDITIONS

A. MONITORING AND REPORTING

1. Local Limits

Except as otherwise specified in this permit, the permit holder shall comply with all specific prohibitions, limits on pollutants or pollutant parameters set forth in the Buffalo Sewer Authority Sewer Use Regulations, as amended from time to time, and such prohibitions, limits and parameters shall be deemed pretreatment standards for purposes of the Clean Water Act

2. Definitions

Definitions of terms contained in this permit are as defined in the Town of Cheektowaga Local Law No. 2 and the Buffalo Sewer Authority Sewer Use Regulations.

3. Discharge Sampling Analysis

All Wastewater discharge samples and analyses and flow measurements shall be representative of the volume and character of the monitored discharge. Methods employed for flow measurements and sample collections and analyses shall conform to the Buffalo Sewer Authority "Sampling Measurement and Analytical Guidelines Sheet."

4. Recording of Results

For each measurement or sample taken pursuant to the requirements of the permit, the Permittee shall record the information as required in the "Sampling Measurement and Analytical Guidelines Sheet."

5. Additional Monitoring by Permittee

If the Permittee monitors any pollutants at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified in 40 CFR Part 136 the results of such monitoring shall be included in the calculation and reporting of values required under Part I, B. Such increased frequency shall also be indicated.

6. Reporting

All reports prepared in accordance with this Permit shall be submitted to:

Mr. William Pugh, P.E.
Town Engineer
275 Alexander Ave.
Cheektowaga, New York, 14211

All self-monitoring reports shall be prepared in accordance with the BSA "Sampling Measurement and Analytical Guidelines Sheet." These reporting requirements shall not relieve the Permittee of any other reports, which may be required by the

N.Y.S.D.E.C. or the U.S.E.P.A.

B. PERMITTEE REQUIREMENTS

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit and with the information contained in the TC/BPDES Permit Application on which basis this permit is granted. In the event of any facility expansions, production increases, process modifications or the installation, modification or repair of any pretreatment equipment which may result in new, different or increased discharges of pollutants, a new TC/BPDES Permit Application must be submitted prior to any change. Following receipt of an amended application, the BSA may modify this permit to specify and limit any pollutants not previously limited. In the event that the proposed change will be covered under an applicable Categorical Standard, a Baseline Monitoring Report must be submitted at least ninety (90) days prior to any discharge.

2. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation shall be retained at this facility for a minimum of three (3) years, or longer if requested by the General Manager and/or Town Engineer.

3. Notification of Slug, Accidental Discharge or Spill

In the event that a slug, accidental discharge or any spill occurs at the facility for which this permit is issued, it is the responsibility of the Permittee to immediately notify the B.S.A. Treatment Plant at 883-1820 of the quantity and character of such discharge. If requested by the B.S.A., within five (5) days following all such discharges, the Permittee shall submit a report describing the character and duration of the discharge, the cause of the discharge, and measures taken or that will be taken to prevent a recurrence of such discharge.

4. Noncompliance Notification

If, for any reason, the Permittee does not comply with or will be unable to comply with any discharge limitation specified in this permit, the Permittee or their assigns must verbally notify the Industrial Waste Section at 883-1820 within twenty-four (24) hours of becoming aware of the violation. The Permittee shall provide the Industrial Waste Section with the following information, in writing, within five (5) days of becoming aware of such condition:

a. a description of the discharge and cause of noncompliance and;

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

5. Adverse Impact

The Permittee shall take all reasonable steps to minimize any adverse impact to the Buffalo and Town Sewerage System resulting from noncompliance with any discharge limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

6. Waste Residuals

Solids, sludges, filter backwash or other pollutants removed in the course of treatment or control of wastewaters and/or the treatment of intake waters, shall be disposed of in a manner such as to prevent any pollutant from such materials from entering the Buffalo or Town Sewer System.

7. Power Failures

In order to maintain compliance with the discharge limitations and prohibitions of this permit, the Permittee shall provide an alternative power source sufficient to operate the wastewater control facilities; or, if such alternative power source is not provided the Permittee shall halt, reduce or otherwise control production and/or controlled discharges upon the loss of power to the wastewater control facilities.

8. Treatment Upsets

a. Any industrial user which experiences an upset in operations that places it in a temporary state of noncompliance, which is not the result of operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation, shall inform the Industrial Waste Section immediately upon becoming aware of the upset. Where such information is given verbally, a written report shall be filed by the user within five (5) days. The report shall contain:

   (i) A description of the upset, its cause(s) and impact on the discharger's compliance status.

   (ii) The duration of noncompliance, including exact dates and times of noncompliance, and if the noncompliance is continuing, the time by which compliance is reasonably expected to be restored

   (iii) All steps taken or planned to reduce, eliminate, and prevent recurrence of such an upset.

b. An industrial user which complies with the notification provisions of this Section in a timely manner shall have an affirmative defense to any enforcement action brought by the Industrial Waste Section/Town Engineer for any noncompliance of the limits in this permit, which arises out of violations attributable to and alleged to have occurred during the period of the documented and verified upset.

9. Treatment Bypasses

a. A bypass of the treatment system is prohibited unless the following conditions are met:

(i) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; or

(ii) There was no feasible alternative to the bypass, including the use of auxiliary treatment or retention of the wastewater; and

(iii) The industrial user properly notified the Industrial Waste Section as described in paragraph b. below.

b. Industrial users must provide immediate notice to the Industrial Waste Section upon delivery of an unanticipated bypass. If necessary, the Industrial Waste Section may require the industrial user to submit a written report explaining the cause(s), nature, and duration of the bypass, and the steps being taken to prevent its recurrence.

c. An industrial user may allow a bypass to occur which does not cause pretreatment standards or requirements to be violated, but only if it is for essential maintenance to ensure efficient operation of the treatment system. Industrial users anticipating a bypass must submit notice to the Industrial Waste Section at least ten (10) days in advance. The Industrial Waste Section may only approve the anticipated bypass if the circumstances satisfy those set forth in paragraph a. above.

C. PERMITTEE RESPONSIBILITIES

1. Permit Availability

The originally signed permit must be available upon request at all times for review at the address stated on the first page of this permit.

2. Inspections

The Permittee shall allow the representatives of the Buffalo Sewer Authority or Town of Cheektowaga upon the presentation of credentials and during normal working hours or at any other reasonable times, to have access to and copy any records required in this permit; and to sample any discharge of pollutants.

3. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities for which this permit has been issued the permit shall become null and void. The succeeding owner shall submit a completed Town of Cheektowaga/ Buffalo Sewer Authority permit application prior to discharge to the sewer system.

D. PERMITTEE LIABILITIES

1. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to the following:

a. Violation of any terms or conditions of this permit,

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts,

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

2. Imminent Danger

In the event there exists an imminent danger to health or property, the permitter reserves the right to take immediate action to halt the permitted discharge to the sewerage works.

3. Civil and Criminal Liability

Nothing in this permit shall relieve the Permittee from any requirements, liabilities, or penalties under provisions of the Town of Cheektowaga Local Law No. 2, the "Sewer Regulations of the Buffalo Sewer Authority" or any Federal, State and/or local laws or regulations.

4. Penalties for Violations of Permit Conditions

The "Sewer Regulations of the Buffalo Sewer Authority" and Town of Cheektowaga Local Law No. 2, provide that any person who violates a B.P.D.E.S. permit condition is liable to the Authority and/or the Town for a civil penalty of up to $10,000 per day for each violation. Any person who willfully or negligently violates permit conditions will be referred to the New York State Attorney General.

E. NATIONAL PRETREATMENT STANDARDS

If a pretreatment standard or prohibition (including any Schedule of Compliance specified in such pretreatment standard or prohibition) is established under Section 307 (b) of the Act for a pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with such pretreatment standard or prohibition.

F. PLANT CLOSURE

In the event of plant closure, the Permittee is required to notify the Industrial Waste Section/Town Engineer in writing as soon as an anticipated closure date is determined, but in no case later than five (5) days of the actual closure.

G. CONFIDENTIALITY

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Buffalo Sewer Authority or Town Engineer of the Town of Cheektowaga. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

H. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

APPENDIX G

DISCHARGE REPORT SUMMARY TABLES

TABLE 1

PFOHL BROTHERS LANDFILL - EFFLUENT MONITORING ANALYTICAL RESULTS, TOTAL FLOW, AND MASS LOADINGS SEPTEMBER 2011

Sample ID	**EFF-092711**			
Matrix	**Effluent Water**			
Date Sampled	**9/27/2011**			
Parameter	**Result**	**Mass Loading**	**Discharge Limitation**	**Violations**
	(mg/L)	**(lbs/day)**	**(lbs/day)**	**(Y/N)**
Total Barium	0.52	0.06	2.34	No
Total Cadmuim	0.00038	0.00004	1.17	No
Total Chromium	0.0019	0.0002	1.17	No
Total Copper	0.0099	0.001	3.74	No
Total Lead	0.0048	0.001	1.17	No
Total Nickel	0.0042	0.0005	3.27	No
Total Zinc	0.078	0.01	5.84	No
Total Suspended Solids	68.8	NA(1)	250 (2)	No
pH (3)	7.2	NA	5.0 - 12.0	No
Total Flow (4)		13,455	140,000	No

Notes:

(1) NA = Not Applicable
(2) Discharge Limitation in units of mg/L
(3) pH measurement and Discharge Limitation in Standard Units
(4) Total Flow reported in gallons, sample was collected over a 24 hour period

Calculation: $$\left(\frac{x\ mg}{L}\right)\left(\frac{y\ gal}{day}\right)\left(\frac{1\ lb}{453{,}600\ mg}\right)\left(\frac{3.785\,L}{gal}\right) = \frac{x \times y}{119{,}841}\ \frac{lb}{day}$$

SAMPLING FIELD SHEET

Client Name: Pfohl Brothers Landfill

Address: Aero Drive, Cheektowaga, NY

Contact: Bill Pugh, P.E. Phone: 716-897-7288

Installation:

Sample Point: SP-001

Sample Location: Meter Chamber - ball valve on 6" HDPE forcemain

Date: 9/26/11 Crew: R. Murphy, M. Kandefer, K. McGovern

Weather: *76* ° F, Partly Cloudy

Sampling Device: NA

Time of Installation: 9:45 Type of Sample: Composite

Sample Interval: NA Sample Volume: NA

Comments and Observations: No wells were running at the time of sample setup.
PLC display volumes: WW-01 (444,233 gals), WW-02 (-603 gals), WW-03 (158,760 gals),
WW-04 (13,190 gals), WW-05 (897,351 gals), WW-06 (207,887 gals) & MH-25 (1,792,604 gals).

Date: 9/27/11 Crew: R. Murphy, T. Urban, M. Kandefer

Weather: 74° F, Light Rain

Time of Collection: 9:45

Field Measurements:

9:45/RJM
(time/initial)

pH Calibration: Buffer 7- 7 Buffer 4- 4 Buffer 10- 10

pH Measurement: 7.2

Temperature: 20.3°C

Identification: EFF-092711

Physical Observations:

Laboratory: TestAmerica, Buffalo, NY

Comments: Well WW-3 was running at the time of sample collection.
PLC display volumes: WW-01 (444,233 gals), WW-02 (-603 gals), WW-03 (158,919 gals),
WW-04 (13,190 gals), WW-05 (910,520 gals), WW-06 (207,986 gals) & MH-25 (1,806,059 gals).

Reviewed By: Date:
(Supervisor)

TABLE 1

PFOHL BROTHERS LANDFILL - EFFLUENT MONITORING ANALYTICAL RESULTS, TOTAL FLOW, AND MASS LOADINGS DECEMBER 2011

Sample ID	**EFF-122111**			
Matrix	**Effluent Water**			
Date Sampled	**12/21/2011**			
Parameter	**Result**	**Mass Loading**	**Discharge Limitation**	**Violations**
	(mg/L)	**(lbs/day)**	**(lbs/day)**	**(Y/N)**
Total Barium	0.24	0.01	2.34	No
Total Cadmuim	0.00033	0.00001	1.17	No
Total Chromium	0.0014	0.0001	1.17	No
Total Copper	0.014	0.001	3.74	No
Total Lead	0.0038	0.000	1.17	No
Total Nickel	0.0048	0.0002	3.27	No
Total Zinc	0.034	0.001	5.84	No
Total Suspended Solids	46.8	NA(1)	250 (2)	No
pH (3)	7.9	NA	5.0 - 12.0	No
Total Flow (4)		5,158	140,000	No

Notes:

(1) NA = Not Applicable
(2) Discharge Limitation in units of mg/L
(3) pH measurement and Discharge Limitation in Standard Units
(4) Total Flow reported in gallons, sample was collected over a 24 hour period

Calculation: $$\left(\frac{x\ mg}{L}\right)\left(\frac{y\ gal}{day}\right)\left(\frac{1\ lb}{453{,}600\ mg}\right)\left(\frac{3.785\,L}{gal}\right) = \frac{x \times y}{119{,}841}\ \frac{lb}{day}$$

SAMPLING FIELD SHEET

Client Name: Pfohl Brothers Landfill

Address: Aero Drive, Cheektowaga, NY

Contact: Bill Pugh, P.E. Phone: 716-897-7288

Installation:

Sample Point: SP-001

Sample Location: Meter Chamber - ball valve on 6" HDPE forcemain

Date: 12/20/11 Crew: R. Murphy, T. Ifkovich, T. Urban

Weather: *40* ^{o} F, Cloudy

Sampling Device: NA

Time of Installation: 15:30 Type of Sample: Composite

Sample Interval: NA Sample Volume: NA

Comments and Observations: No wells were running at the time of sample setup.
PLC display volumes: WW-01 (893,916 gals), WW-02 (-1,412 gals), WW-03 (353,631 gals),
WW-04 (157,274 gals), WW-05 (2,282,586 gals), WW-06 (2,768,665 gals) & MH-25 (6,527,899 gals).

Date: 10/21/11 Crew: R. Murphy, S. Moeller, T. Urban

Weather: 50^{o} F, Light Rain

Time of Collection: 15:45

Field Measurements:

15:45/RJM
(time/initial)

pH Calibration: Buffer 7- 7 Buffer 4- 4 Buffer 10- 10

pH Measurement: 7.9

Temperature: 13.3^{o}C

Identification: EFF-122111

Physical Observations:

Laboratory: TestAmerica, Buffalo, NY

Comments: No wells were running at the time of sample collection.
PLC display volumes: WW-01 (893,916 gals), WW-02 (-1,412 gals), WW-03 (353,631 gals),
WW-04 (157,274 gals), WW-05 (2,287,754 gals), WW-06 (2,768,665 gals) & MH-25 (6,533,057 gals).

Reviewed By: Date:
(Supervisor)

APPENDIX H

MONITORING WELL INSPECTION LOGS

WELL INSPECTION SUMMARY

Project Name: *Pfohl Brothers Landfill* Project Number: *11175616.00000*

Inspection Crew Members: *R. Murphy, T. Urban* Supervisor: *J. Sundquist*

Date(s) of Inspection: *November 1, 2011*

Well I.D. Number	*Lock*	*Surface Seal*	*Protective Casing*	*Riser*	*Water Level (ft. BTOC)*	*Well Depth (ft. BTOC)*	*Other Comments*
GW-1S	OK	OK	OK	Bulged	3.70	14.94	
GW-1D	OK	OK	OK	Bulged	2.69	39.65	
GW-3S	OK	OK	OK	OK	6.27	13.22	
GW-3D	OK	OK	OK	OK	2.19	35.70	
GW-4S	OK	OK	OK	OK	4.81	16.23	
GW-4D	OK	OK	OK	OK	13.50	45.57	
GW-7S	OK	OK	OK	OK	4.57	35.04	
GW-7D	OK	OK	OK	Damaged	45.26	60.45	

Additional Comments:

WELL INSPECTION SUMMARY

Project Name: *Pfohl Brothers Landfill* Project Number: *11175616.00000*

Inspection Crew Members: *R. Murphy, T. Urban* Supervisor: *J. Sundquist*

Date(s) of Inspection: *November 1, 2011*

Well I.D. Number	*Lock*	*Surface Seal*	*Protective Casing*	*Riser*	*Water Level (ft. BTOC)*	*Well Depth (ft. BTOC)*	*Other Comments*
GW-8SR	OK	OK	OK	OK	5.27	13.02	
GW-8D	OK	OK	OK	OK	6.15	36.54	
GW-26D	OK	OK	OK	OK	7.02	40.70	
GW-28S	OK	OK	OK	OK	8.64	15.52	
GW-29S	OK	OK	OK	OK	7.42	20.04	
GW-30S	OK	OK	OK	OK	8.04	17.97	
GW-31S	OK	OK	OK	OK	2.62	9.57	
GW-32S	OK	OK	OK	OK	2.64	9.93	

Additional Comments: _____

_____

_____

WELL INSPECTION SUMMARY

Project Name: *Pfohl Brothers Landfill* Project Number: *11175616.00000*

Inspection Crew Members: *R. Murphy, T. Urban* Supervisor: *J. Sundquist*

Date(s) of Inspection: *November 1, 2011*

Well I.D. Number	*Lock*	*Surface Seal*	*Protective Casing*	*Riser*	*Water Level (ft. BTOC)*	*Well Depth (ft. BTOC)*	*Other Comments*
GW-33S	OK	OK	OK	OK	4.06	8.21	
GW-34S	OK	OK	OK	OK	2.91	10.01	
GW-35S	OK	OK	OK	OK	3.20	7.46	

Additional Comments: _____

_____

_____

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: *Pfohl Brothers* Project Number: *11175616.00000*

Sampling Crew Members: *R. Murphy, T. Urban* Supervisor: *J. Sundquist*

Date of Sampling: *November 1, 2011*

Sample I.D. Number	***Well Number***	***Well Volume (liters)***	***Volume Purged (liters)***	***Sample Time***	***Sample Description***	***Analysis Required***	***Chain-of-Custody Number***
GW-7D	GW-7D		PDB	10:25	Groundwater	VOCs	Not Applicable
GW-7S	GW-7S		PDB	11:40	Groundwater		Not Applicable
GW-3S	GW-3S			12:40	Groundwater	VOCs/SVOCs/ Metals	Not Applicable
GW-3D	GW-3D			14:05	Groundwater		Not Applicable
GW-3D-MS	GW-3D			14:05	Matrix Spike		Not Applicable
GW-3D-MSD	GW-3D			14:05	Matrix Spike Duplicate		Not Applicable
GW-8D	GW-8D			15:30	Groundwater		Not Applicable

Additional Comments: GW-7D and GW-7S were sampled for VOCs using passive diffusion bags (PDBs).
GW-7D and GW-7S were purged dry following collection of the VOC samples.
All other wells were purged using low flow methods until parameter stabilization.

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: *Pfohl Brothers* Project Number: *11175616.00000*

Sampling Crew Members: *R. Murphy, T. Urban* Supervisor: *J. Sundquist*

Date of Sampling: *November 1, 2010*

Sample I.D. Number	***Well Number***	***Well Volume (liters)***	***Volume Purged (liters)***	***Sample Time***	***Sample Description***	***Analysis Required***	***Chain-of-Custody Number***
DUPLICATE	GW-8D			15:30	Blind Duplicate	VOCs/SVOCs/ Metals	Not Applicable
GW-8SR	GW-8SR			16:17	Groundwater		Not Applicable
TB-110111	---	---	---	---	Trip Blank	VOCs	Not Applicable

Additional Comments: All wells were purged using low flow methods until parameter stabilization.

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: *Pfohl Brothers* Project Number: *11175616.00000*

Sampling Crew Members: *R. Murphy, T. Urban* Supervisor: *J. Sundquist*

Date of Sampling: *November 2, 2011*

Sample I.D. Number	***Well Number***	***Well Volume (liters)***	***Volume Purged (liters)***	***Sample Time***	***Sample Description***	***Analysis Required***	***Chain-of-Custody Number***
GW-34S	GW-34S			8:28	Groundwater	VOCs/SVOCs/ Metals	Not Applicable
GW-4S	GW-4S			9:05 & 10:50	Groundwater		Not Applicable
GW-4D	GW-4D			10:41	Groundwater		Not Applicable
GW-28S	GW-28S			11:59	Groundwater		Not Applicable
GW-26D	GW-26D			13:03	Groundwater		Not Applicable
GW-35S	GW-35S			13:48	Groundwater		Not Applicable
GW-29S	GW-29S			14:50	Groundwater		Not Applicable

Additional Comments: GW-4S was sampled for VOCs using a passive diffusion bag and then purged dry/allowed to recharge for collection of other parameters
All other wells were purged using low flow methods until parameter stabilization.

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: *Pfohl Brothers* Project Number: *11175616.00000*

Sampling Crew Members: *R. Murphy, T. Urban* Supervisor: *J. Sundquist*

Date of Sampling: *May 17, 2011*

Sample I.D. Number	***Well Number***	***Well Volume (liters)***	***Volume Purged (liters)***	***Sample Time***	***Sample Description***	***Analysis Required***	***Chain-of-Custody Number***
GW-7D	GW-7D			15:15	Groundwater	SVOCs/ Metals	Not Applicable
GW-7S	GW-7S			15:45	Groundwater		Not Applicable
TB-110211	---	---	---	---	Trip Blank	VOCs	Not Applicable

Additional Comments: GW-7D and GW-7S were sampled for SVOCs and Metals after recharging overnight.

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: *Pfohl Brothers* Project Number: *11175616.00000*

Sampling Crew Members: *R. Murphy, T. Urban* Supervisor: *J. Sundquist*

Date of Sampling: *May 18, 2011*

Sample I.D. Number	***Well Number***	***Well Volume (liters)***	***Volume Purged (liters)***	***Sample Time***	***Sample Description***	***Analysis Required***	***Chain-of-Custody Number***
GW-30S	GW-30S			8:50	Groundwater	VOCs/SVOCs/ Metals	Not Applicable
GW-31S	GW-31S			9:47	Groundwater		Not Applicable
GW-32S	GW-32S			11:00	Groundwater		Not Applicable
GW-33S	GW-33S			12:00	Groundwater		Not Applicable
GW-1S	GW-1S			13:33	Groundwater		Not Applicable
GW-1D	GW-1D			15:10	Groundwater		Not Applicable
TB-110311	---	---	---	---	Trip Blank	VOCs	Not Applicable

Additional Comments: All wells were purged using low flow methods until parameter stabilization.