



August 31, 2010

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 are two copies of the twelfth 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 are Data Usability Summary Reports for laboratory analyses associated with the sampling events. 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

A handwritten signature in black ink, appearing to read "Jon Sundquist", is positioned above the printed name.

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)

**SEMI ANNUAL REPORT
OPERATION AND MAINTENANCE
JANUARY 2010 TO JUNE 2010
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**

**AUGUST
2010**

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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 thirteenth 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 January 2010 through June 2010 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 January 2010 through June 2010, 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.
- Reprogrammed alarm codes for Control Building security system (February 2010).
- Replaced defective $\frac{3}{4}$ H.P. pump and discharge piping for WW-1 (March 2010).
- Replaced surge suppressor equipment in the PLC panel for various wet wells as needed.

- Wildlife trapper engaged as needed to control ground burrowing animals.

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 thirteenth 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. These data verify that collection system is operating as designed.

3.2 Groundwater Quality Monitoring

The thirteenth semi-annual round of groundwater sampling was conducted between May 25, 2010 and May 28, 2010. 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. Three wells, GW-4S, GW-7S, and GW-7D, were purged dry before a sample could be collected. These wells were sampled 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.

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. The concentration of iron, magnesium, manganese, and sodium in most site wells was similar to the concentrations found during previous sampling events. Arsenic was detected at a concentration exceeding its groundwater standard in well GW-29S. Antimony, chromium and lead were each detected at concentrations exceeding their respective groundwater standard in upgradient well GW-07D. Nickel was detected at concentrations exceeding its groundwater standard in wells GW-03S and GW-07S.

Sodium concentrations were generally higher in bedrock wells (GW-1D, GW-3D, GW-8D and GW-26D) and shallow wells adjacent to roads (GW-1S and GW-30S). The sodium concentration was also elevated in GW-08SR. No significant changes in metals concentrations were observed when compared to previous sampling event analytical results. 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.

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 thirteen semi-annual sampling events except as described below. Figure E-2 for GW-01S, indicates a consistent drop in sodium concentration over the thirteen sampling events. Figure E-4 for GW-03S indicates an upward trend for nickel since monitoring began (although concentrations were significantly lower during this event). 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 over recent events. Figure E-12 for GW-28S, indicates decreasing trend for sodium since monitoring began. Figure E-13 for GW-29S, indicates a slight increasing trend in iron concentration since monitoring began and arsenic has been detected at concentrations exceeding its groundwater standard for 5 of the last 6 sampling events.

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 Usability Summary Report (DUSR) was prepared following the guidelines provided in NYSDEC Division of Environmental Remediation *Guidance for the Development of Data Usability Summary Reports*, dated June 1999. The DUSR dated June 2010 is submitted separately from this report.

3.3 Groundwater Discharge Monitoring

URS completed two quarterly sampling events (March 2010 and June 2010) 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. 05-12-CH016 between the Buffalo Sewer Authority and the Town of Cheektowaga. A copy of Permit No. 05-12-CH016 is included as Appendix F.

During the sampling events in March 2010 and June 2010, 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 May 2010 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 fourteenth round of groundwater sampling will be conducted in November 2010. Low flow sampling techniques will continue to be used on wells that historically have been purged to dryness. A review of the purge logs (Appendix D) has indicated that four wells (GW-4S, GW-7S, GW-7D, and GW-31S) can still be purged to dryness 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.

Wetland Inspection Summary: An inspection of the wetlands during the May 2010 event indicated that most of the replanted wetland stock has flourished and the wetland areas are returning to their natural state.

TABLES

TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
MAY 2010

Location ID			GW-01D	GW-01S	GW-03D	GW-03S	GW-04D
Sample ID			GW-1D	GW-1S	GW-3D	GW-3S	GW-4D
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/28/10	05/28/10	05/25/10	05/25/10	05/28/10
Parameter	Units	*					
Volatile Organic Compounds							
1,2-Dichloroethene (total)	UG/L	5			0.93 J		
Acetone	UG/L	50					
Vinyl chloride	UG/L	2					
Semivolatile Organic Compounds							
1,3-Dichlorobenzene	UG/L	3			1.1 J		
1,4-Dichlorobenzene	UG/L	3			1.7 J		
bis(2-Ethylhexyl)phthalate	UG/L	5					
Antimony	MG/L	0.003					
Arsenic	MG/L	0.025					
Barium	MG/L	1	0.0648	0.160	0.0909	0.153	0.0562
Cadmium	MG/L	0.005					
Chromium	MG/L	0.05	0.0187			0.0214	0.0021 J
Copper	MG/L	0.2	0.0016 J				
Iron	MG/L	0.3	2.69	7.13	2.81	0.748	0.833
Lead	MG/L	0.025					
Magnesium	MG/L	35	33.1	14.5	19.0	78.3	59.9
Manganese	MG/L	0.3	0.0228	0.799	0.911	0.250	0.0212
Nickel	MG/L	0.1	0.0034 J		0.0044 J	0.175	0.0021 J
Sodium	MG/L	20	85.4	122	185	39.7	61.2
Zinc	MG/L	2	0.0263		0.0032 J	0.0121	0.101

*- 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.

Only Detected Results Reported.

TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
MAY 2010

Location ID			GW-04S	GW-07D	GW-07S	GW-08D	GW-08D
Sample ID			GW-4S	GW-7D	GW-7S	Duplicate	GW-8D
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/28/10	05/26/10	05/26/10	05/26/10	05/26/10
Parameter	Units	*				Field Duplicate (1-1)	
Volatile Organic Compounds							
1,2-Dichloroethene (total)	UG/L	5					
Acetone	UG/L	50		6.1			
Vinyl chloride	UG/L	2					
Semivolatile Organic Compounds							
1,3-Dichlorobenzene	UG/L	3					
1,4-Dichlorobenzene	UG/L	3					
bis(2-Ethylhexyl)phthalate	UG/L	5		3.0 J			
Antimony	MG/L	0.003		0.0088 J			
Arsenic	MG/L	0.025				0.0057 J	
Barium	MG/L	1	0.0852	0.0521	0.227	0.116	0.114
Cadmium	MG/L	0.005		0.0005 J			
Chromium	MG/L	0.05	0.0009 J	0.0868	0.0024 J	0.0052	0.0064
Copper	MG/L	0.2		0.0096 J			
Iron	MG/L	0.3	0.336	4.34	0.124	2.28	2.33
Lead	MG/L	0.025		0.0793			
Magnesium	MG/L	35	25.2	30.3	32.5	22.4	22.2
Manganese	MG/L	0.3	0.186	0.0588	0.0962	0.454	0.450
Nickel	MG/L	0.1	0.0046 J	0.0409	0.131	0.0042 J	0.0045 J
Sodium	MG/L	20	31.0	90.6	58.3	263	259
Zinc	MG/L	2	0.0036 J			0.0293	0.0267

*- 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.

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Only Detected Results Reported.

TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
MAY 2010

Location ID			GW-08SR	GW-26D	GW-28S	GW-29S	GW-30S
Sample ID			GW-8S(R)	GW-26D	GW-28S	GW-29S	GW-30S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/26/10	05/28/10	05/27/10	05/27/10	05/27/10
Parameter	Units	*					
Volatile Organic Compounds							
1,2-Dichloroethene (total)	UG/L	5		1.9 J			
Acetone	UG/L	50					
Vinyl chloride	UG/L	2		1.3			
Semivolatile Organic Compounds							
1,3-Dichlorobenzene	UG/L	3					
1,4-Dichlorobenzene	UG/L	3					
bis(2-Ethylhexyl)phthalate	UG/L	5					
Antimony	MG/L	0.003					
Arsenic	MG/L	0.025	0.0094 J	0.0080 J		0.0379	
Barium	MG/L	1	0.503	0.136	0.0694	0.291	0.411
Cadmium	MG/L	0.005					
Chromium	MG/L	0.05	0.0016 J				
Copper	MG/L	0.2					
Iron	MG/L	0.3	24.3	7.62	0.327	17.9	20.8
Lead	MG/L	0.025					
Magnesium	MG/L	35	48.7	21.8	33.4	80.0	46.9
Manganese	MG/L	0.3	1.07	1.24	0.992	0.784	2.33
Nickel	MG/L	0.1	0.0043 J	0.0030 J	0.0026 J		
Sodium	MG/L	20	283	248	22.8	13.0	686
Zinc	MG/L	2					

*- 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.

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Only Detected Results Reported.

TABLE 3-1
GROUNDWATER SAMPLE ANALYTICAL RESULTS
PFOHL BROTHERS LANDFILL SITE
MAY 2010

Location ID			GW-31S	GW-32S	GW-33S	GW-34S	GW-35S
Sample ID			GW-31S	GW-32S	GW-33S	GW-34S	GW-35S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/27/10	05/27/10	05/27/10	05/25/10	05/28/10
Parameter	Units	*					
Volatile Organic Compounds							
1,2-Dichloroethene (total)	UG/L	5					
Acetone	UG/L	50					
Vinyl chloride	UG/L	2					
Semivolatile Organic Compounds							
1,3-Dichlorobenzene	UG/L	3					
1,4-Dichlorobenzene	UG/L	3					
bis(2-Ethylhexyl)phthalate	UG/L	5					
Antimony	MG/L	0.003					
Arsenic	MG/L	0.025					
Barium	MG/L	1	0.0548	0.0546	0.0181	0.164	0.0583
Cadmium	MG/L	0.005					
Chromium	MG/L	0.05			0.0012 J		
Copper	MG/L	0.2					
Iron	MG/L	0.3	0.272		0.138	0.260	0.027 J
Lead	MG/L	0.025					
Magnesium	MG/L	35	30.0	34.8	43.7	54.4	23.8
Manganese	MG/L	0.3	0.935	0.760	0.341	0.408	0.459
Nickel	MG/L	0.1	0.0026 J	0.0031 J	0.0042 J	0.0052 J	0.0019 J
Sodium	MG/L	20	6.0	4.9	6.5	31.9	2.7
Zinc	MG/L	2				0.0034 J	0.0076 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

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Only Detected Results Reported.

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

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

TABLE 3-2 (continued)

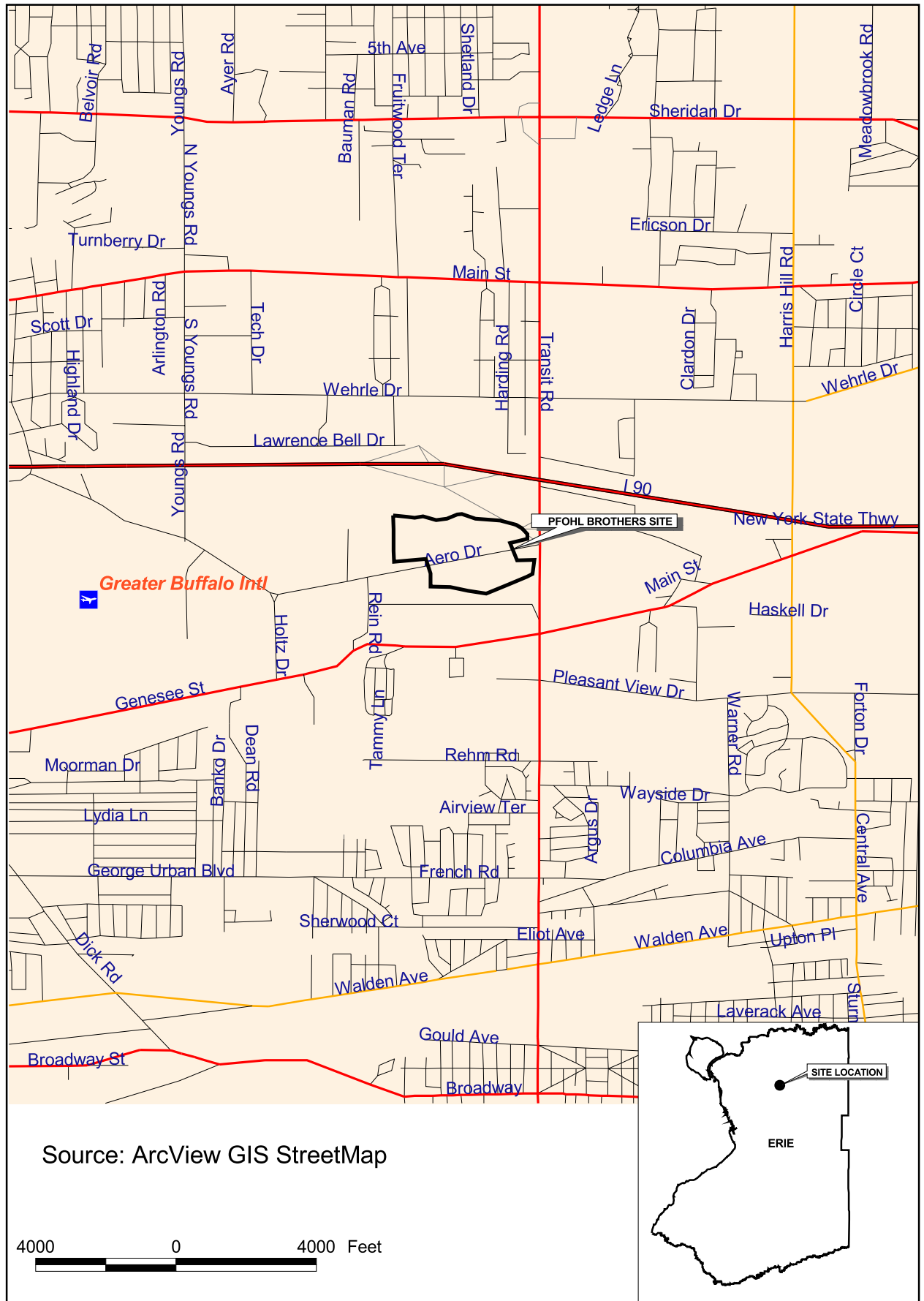
APPROVED REVISION OF TABLE 3.2 FROM THE O&M PLAN

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

PARAMETERS (cont'd)

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

FIGURES



N:\1172700\000000\GIS\ArcView\pfohl.apr WELL LOCATIONS
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

Pfohl Brothers Landfill Site

Daily Logsheet

Town of Cheektowaga

Date 1/12/10
Time 1:50

Weather conditions COLD CLOUDY
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	34	1343
WW-2	4.6	0	13,792	57
WW-1	3.9	0	799,096	2021
WW-6	6.4	56.4	3,241,991	3598
WW-4	7.0	0	388,894	3744
WW-5	7.3	0	3,151,849	3539

Flow Totalizer at Meter chamber

7,623,733

Heat Trace

Outside temp T = 27°
Current A = 2.2

Set point SP = 40

Large Suppressor events

414,322

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

RESET LEVEL INVALID ALARM WW6

OK

Pfohl Brothers Landfill Site

Daily Logsheet

Town of Cheektowaga

Date

4/7/10

Time

1:00 PM

Weather conditions

LT. RAIN 60°

Read by:

B. PUGH

	Level of Water from bottom (ft.)	Flow gallons / minute	Flow Totals gallons	Pump Run Time Hrs.
WW-3	5.6	0	65	1343
WW-2	4.6	0	13788	57
WW-1	4.5	0	1,360,325	202
WW-6	7.3	54.1	4,460,834	3963
WW-4	6.9	24.2	444130	3783
WW-5	7.0	0	4,819,626	4299

Flow Totalizer at Meter chamber

11,119,461

Heat Trace

Outside temp T = 60

Set point SP = 40

Current A = 0

Large Suppressor events

414,361

Motor Control Center

Volts

480

volts

Which WW was running?

Amps

9

amps

1 ☐ 2 ☐ 3 ☐ 4 ☒ 5 ☐ 6 ☒

Filter

Checked ☐

Changed ☐

Comments and/or Current Conditions

RESET ALARMS

W.W. 2 FLOW INVALID

W.W. 6 - LEVEL INVALID

W.W. 4 - FLOW FAILURE

O.K.

APPENDIX A

EXAMPLE DAILY INSPECTION SHEETS

APPENDIX B

MONTHLY FLOW SUMMARIES
JANUARY 2010 – JUNE 2010

THE TOWN OF
CHEEKTOWAGA



JON W. NICHY
Superintendent

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

February 9, 2010

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

Re: Pfohl Bros. Flow Data

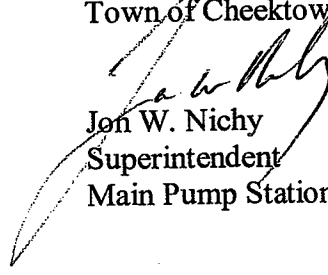
Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **January 2010 Direct Discharge Flow Data Report**, prepared by Jon W. Nichy.

A monthly log sheet indicating inhibiting and enabling of pumping operation at the site is included with this package.

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

Yours truly,
Town of Cheektowaga


Jon W. Nichy
Superintendent
Main Pump Station

RECEIVED

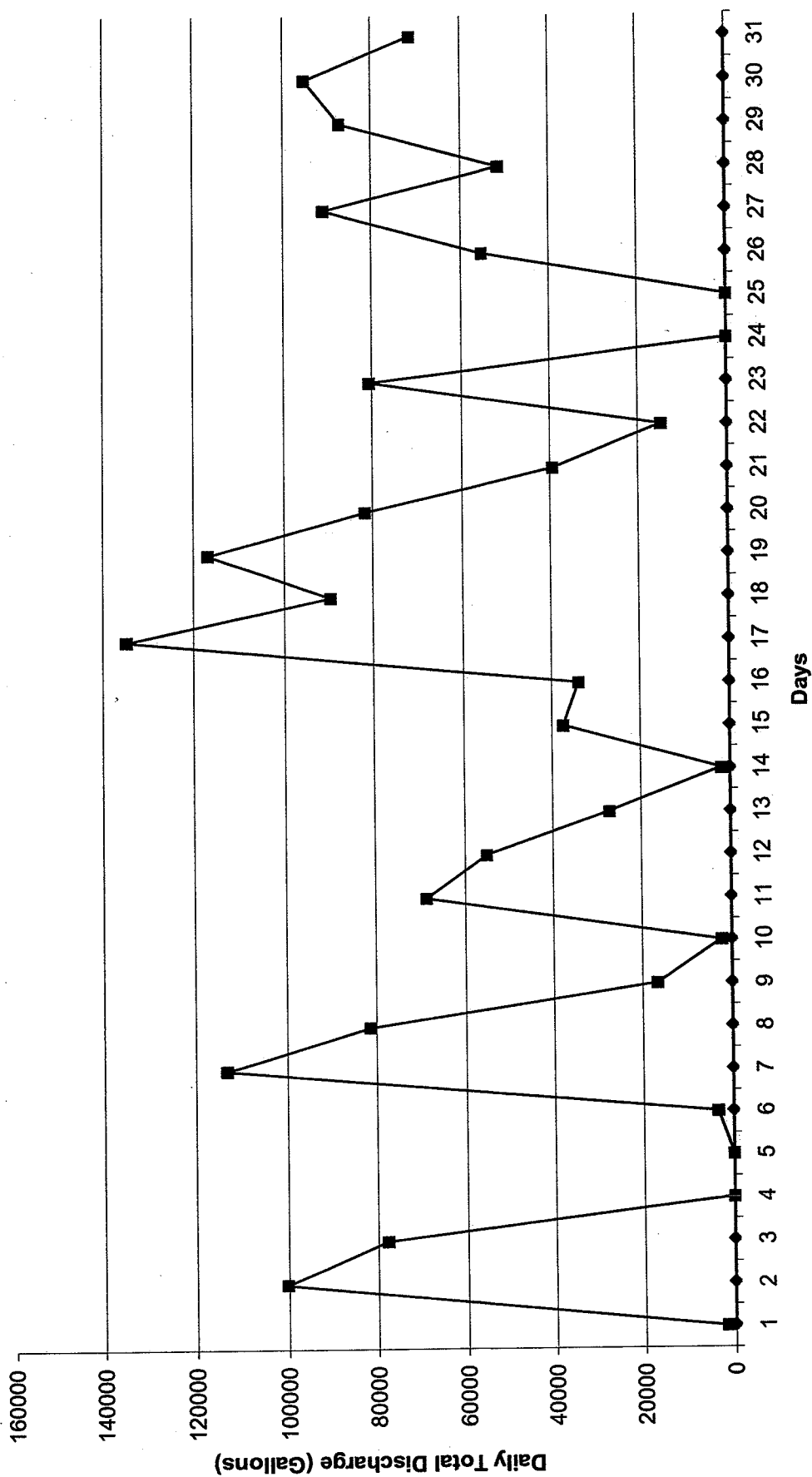
FEB -9 2010

ENGINEERING
DEPT

Direct Discharge Flow Data

12/31/2009		7108085	22,023	7,553,129	
January-10	Time; 11:58pm unless otherwise stated	Totalizer Reading (Gallons)	Daily Total Discharge (Gallons)		Notes
1		7109839	1,754	7,554,883	
2		7209962	100,123	7,655,006	
3		7287743	77,782	7,732,788	
4		7287743	0	7,732,788	
5		7287743	0	7,732,788	
6		7291156	3,413	7,736,201	
7		7404278	113,122	7,849,323	
8		7485574	81,296	7,930,619	
9		7502208	16,634	7,947,253	
10		7504405	2,197	7,949,450	
11		7573068	68,664	8,018,114	
12		7628007	54,939	8,073,053	
13		7655045	27,038	8,100,091	
14		7656997	1,952	8,102,043	
15		7694429	37,432	8,139,475	
16		7728292	33,864	8,173,339	
17		7862998	134,706	8,308,045	
18		7952628	89,630	8,397,675	
19		8069403	116,775	8,514,450	
20		8151053	81,651	8,596,101	
21		8190446	39,393	8,635,494	
22		8205140	14,694	8,650,188	
23		8285728	80,589	8,730,777	
24		8285728	0	8,730,777	
25		8285728	0	8,730,777	
26		8340900	55,172	8,785,949	
27		8431776	90,877	8,876,826	
28		8483126	51,350	8,928,176	
29		8570240	87,114	9,015,290	
30		8665280	95,040	9,110,330	
31		8736477	71,197	9,181,527	
		1,628,392	1,628,398	1,628,398	

Pfohl Bros.
January
2010



Auto Dialer System Log

[illegible]

THE TOWN OF
CHEEKTOWAGA



JON W. NICHY
Superintendent

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

March 4, 2010

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

Re: Pfohl Bros. Flow Data

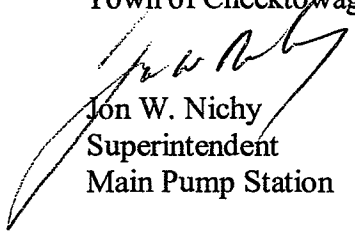
Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **February 2010 Direct Discharge Flow Data Report**, prepared by Jon W. Nichy.

A monthly log sheet indicating inhibiting and enabling of pumping operation at the site is included with this package.

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

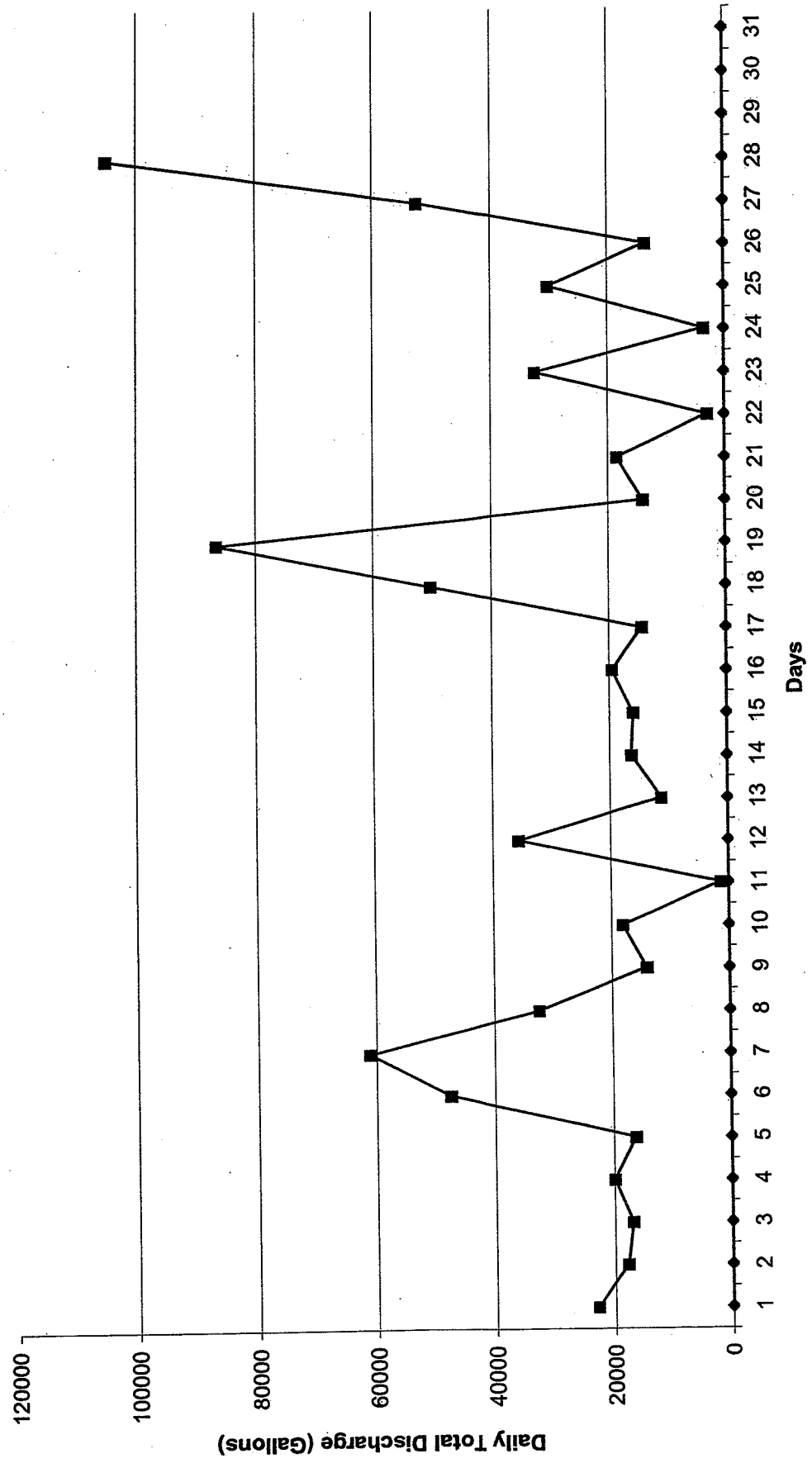
Yours truly,
Town of Cheektowaga


Jon W. Nichy
Superintendent
Main Pump Station

Direct Discharge Flow Data

1/31/2010		8736477	71,197	9,181,527	
February-10	Time; 11:58pm unless otherwise stated	Totalizer Reading (Gallons)	Daily Total Discharge (Gallons)		Notes
1		8759488	23,011	9,204,538	
2		8777278	17,790	9,222,328	
3		8794150	16,872	9,239,200	
4		8814075	19,925	9,259,125	
5		8830347	16,272	9,275,397	
6		8877997	47,650	9,323,047	
7		8939031	61,034	9,384,081	
8		8971553	32,522	9,416,603	
9		8985730	14,177	9,430,780	
10		9003766	18,036	9,448,816	
11		9005196	1,430	9,450,246	
12		9040928	35,732	9,485,978	
13		9052342	11,414	9,497,392	
14		9068605	16,263	9,513,655	
15		9084512	15,907	9,529,562	
16		9104041	19,529	9,549,091	
17		9118428	14,387	9,563,478	
18		9168747	50,319	9,613,797	
19		9255274	86,527	9,700,324	
20		9269377	14,103	9,714,427	
21		9287841	18,464	9,732,891	
22		9290752	2,911	9,735,802	
23		9323233	32,481	9,768,283	
24		9326725	3,492	9,771,775	
25		9356875	30,150	9,801,925	
26		9370444	13,569	9,815,494	
27		9422996	52,552	9,868,046	
28		9527840	104,844	9,972,890	
29				9,972,890	
30				9,972,890	
31				9,972,890	
		791,363	791,363	791,363	

Pfohl Bros.
February
2010



Auto Dialer System Log

[illegible]

THE TOWN OF
CHEEKTOWAGA



JON W. NICHY
Superintendent

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

April 3, 2010

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

Re: Pfohl Bros. Flow Data

Dear Mr. Pugh,

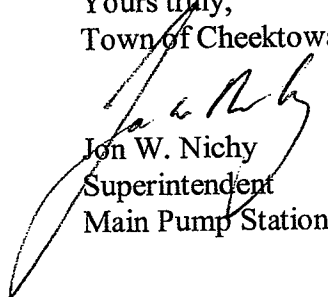
Enclosed for your review, please find a copy of the **March 2010** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

A monthly log sheet indicating inhibiting and enabling of pumping operation at the site is included with this package.

On April 3, 2010 I removed numerous trash objects in the vicinity of Transit and Aero Drive.

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

Yours truly,
Town of Cheektowaga


Jon W. Nichy
Superintendent
Main Pump Station

RECEIVED

APR 7 2010

ENGINEERING
DEPT

Direct Discharge Flow Data

2/28/2010

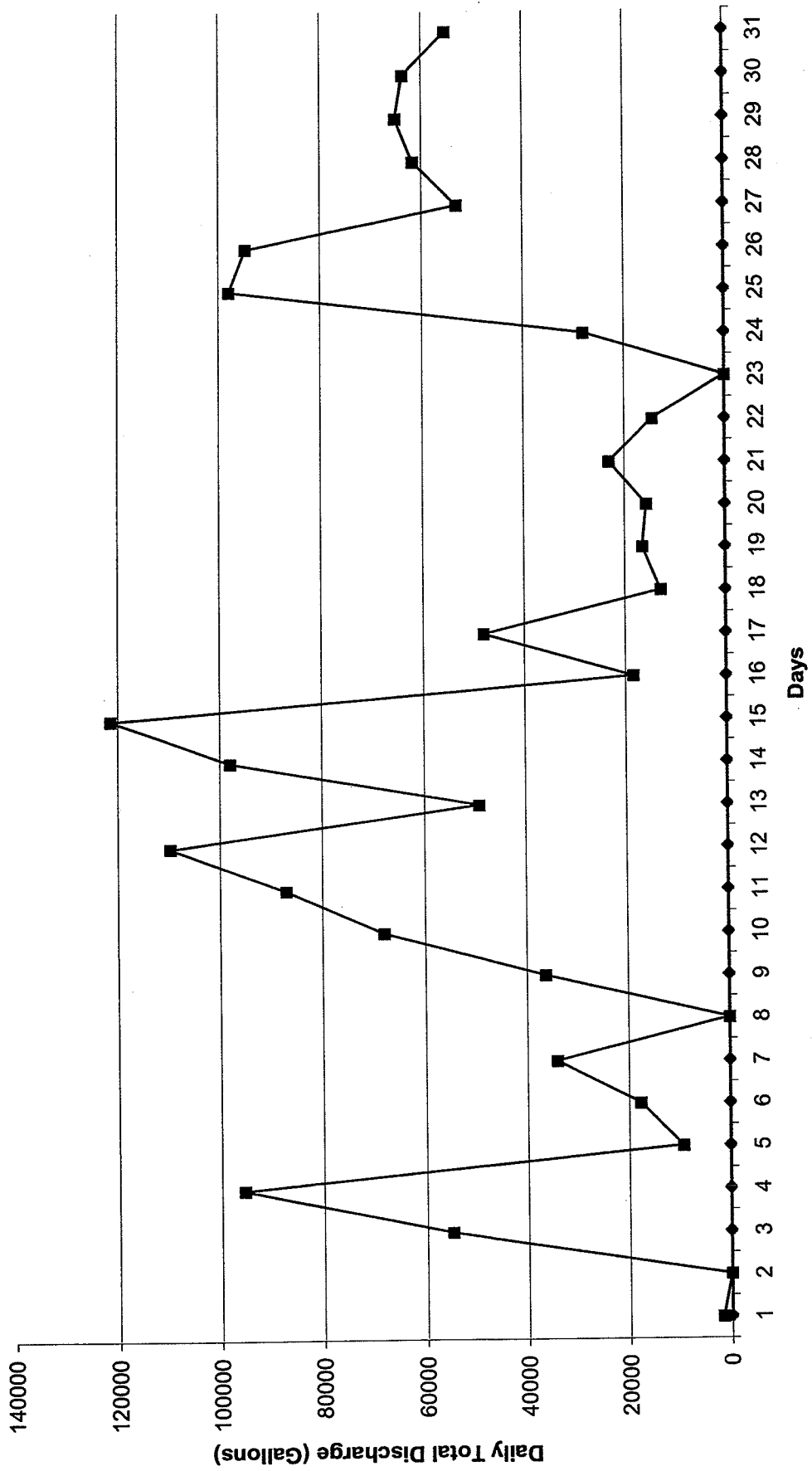
9527840

104,844

9,181,527

March-10	Time; 11:58pm unless otherwise stated	Totalizer Reading (Gallons)	Daily Total Discharge (Gallons)		Notes
1		9529472	1,632	9,183,159	
2		9529472	0	9,183,159	
3		9584369	54,897	9,238,056	
4		9679791	95,422	9,333,478	
5		9689189	9,398	9,342,876	
6		9706919	17,730	9,360,606	
7		9741110	34,191	9,394,797	
8		9741110	0	9,394,797	
9		9777413	36,303	9,431,100	
10		9845479	68,066	9,499,166	
11		9932428	86,949	9,586,115	
12		10042297	109,869	9,695,984	
13		10091547	49,250	9,745,234	
14		10189459	97,912	9,843,146	
15		10310732	121,273	9,964,419	
16		10329209	18,477	9,982,896	
17		10377265	48,056	10,030,952	
18		10390169	12,904	10,043,856	
19		10406653	16,484	10,060,340	
20		10422331	15,678	10,076,018	
21		10445422	23,091	10,099,109	
22		10459813	14,391	10,113,500	
23		10459813	0	10,113,500	
24		10487812	27,999	10,141,499	
25		10585797	97,985	10,239,484	
26		10680404	94,607	10,334,091	
27		10733627	53,223	10,387,314	
28		10795338	61,711	10,449,025	
29		10860431	65,093	10,514,118	
30		10924122	63,691	10,577,809	
31		10979527	55,405	10,633,214	
		1,451,687	1,451,687	1,451,687	

Pfohl Bros.
March
2010



Auto Dialer System Log

[illegible]

THE TOWN OF
CHEEKTOWAGA



JON W. NICHY
Superintendent

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

May 4, 2010

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

Re: Pfohl Bros. Flow Data

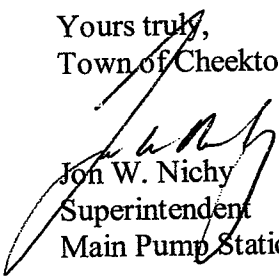
Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **April 2010** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

A monthly log sheet indicating inhibiting and enabling of pumping operation at the site is included with this package.

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

Yours truly,
Town of Cheektowaga


Jon W. Nichy
Superintendent
Main Pump Station

RECEIVED

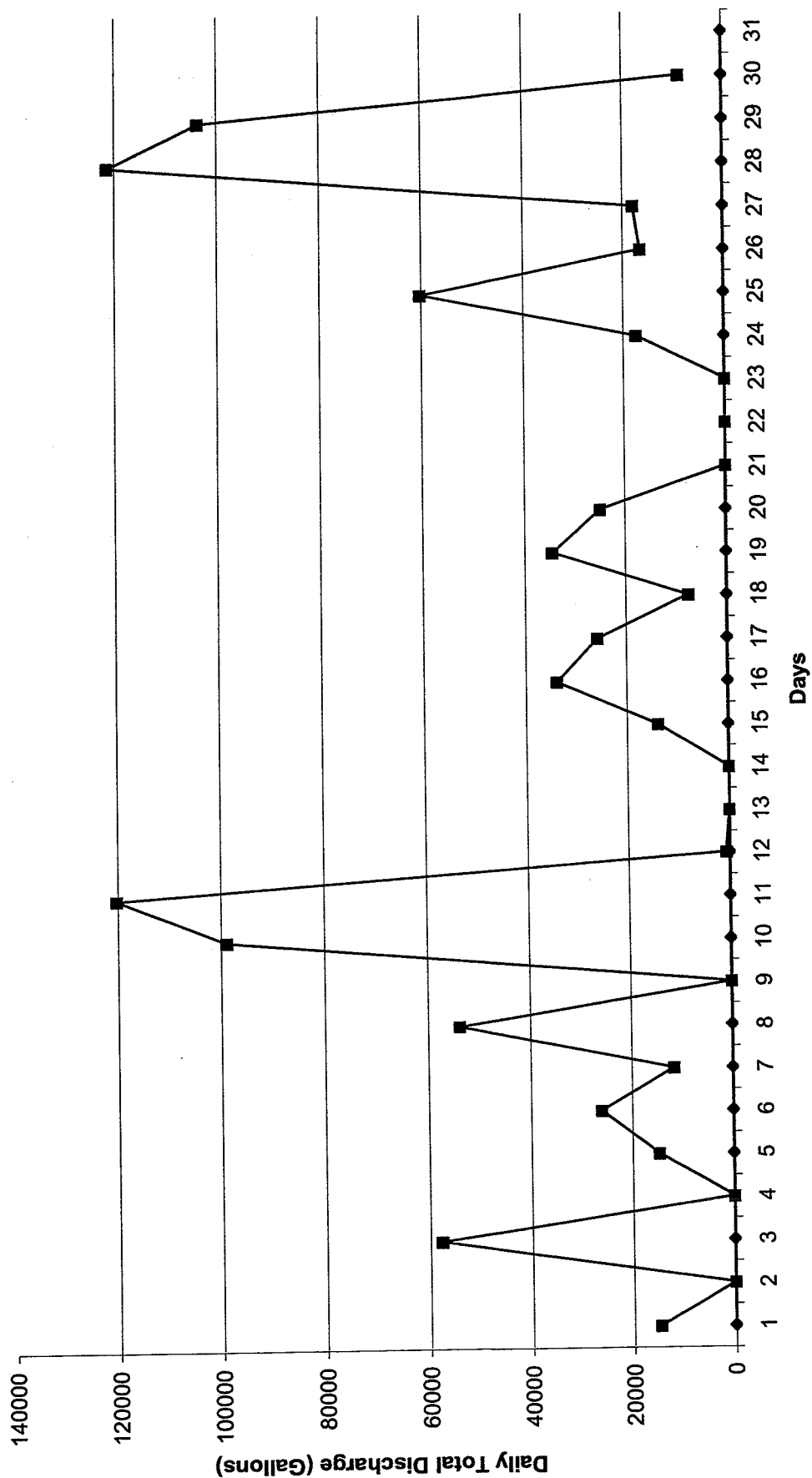
MAY - 5 2010

ENGINEERING
DEPT

Direct Discharge Flow Data

3/31/2010		10979527	55,405	10,633,214	
April-10	Time; 11:58pm unless otherwise stated	Totalizer Reading (Gallons)	Daily Total Discharge (Gallons)		Notes
1		10994269	14,742	10,647,956	
2		10994269	0	10,647,956	
3		11051974	57,705	10,705,661	
4		11051974	0	10,705,661	
5		11066759	14,785	10,720,446	
6		11092789	26,030	10,746,476	
7		11104459	11,668	10,758,144	
8		11158373	53,916	10,812,060	
9		11158373	0	10,812,060	
10		11257215	98,842	10,910,902	
11		11377424	120,209	11,031,111	
12		11378192	768	11,031,879	
13		11378192	0	11,031,879	
14		11378192	0	11,031,879	
15		11392069	13,877	11,045,756	
16		11425979	33,910	11,079,666	
17		11451857	25,878	11,105,544	
18		11459536	7,679	11,113,223	
19		11494096	34,560	11,147,783	
20		11519110	25,014	11,172,797	
21		11519110	0	11,172,797	
22		11519110	0	11,172,797	
23		11519110	0	11,172,797	
24		11536623	17,513	11,190,310	
25		11156862	60,239	11,250,549	
26		11613515	16,653	11,267,202	
27		11631436	17,921	11,285,123	
28		11752782	121,346	11,406,469	
29		11856492	103,710	11,510,179	
30		11865195	8,703	11,518,882	
31					
		885,668	885,668	885,668	

Pfohl Bros.
April
2010



Auto Dialer System Log

[illegible]

THE TOWN OF
CHEEKTOWAGA



JON W. NICHY
Superintendent

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

June 5, 2010

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

Re: Pfohl Bros. Flow Data

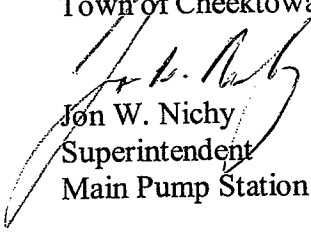
Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **May 2010** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

A monthly log sheet indicating inhibiting and enabling of pumping operation at the site is included with this package.

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

Yours truly,
Town of Cheektowaga

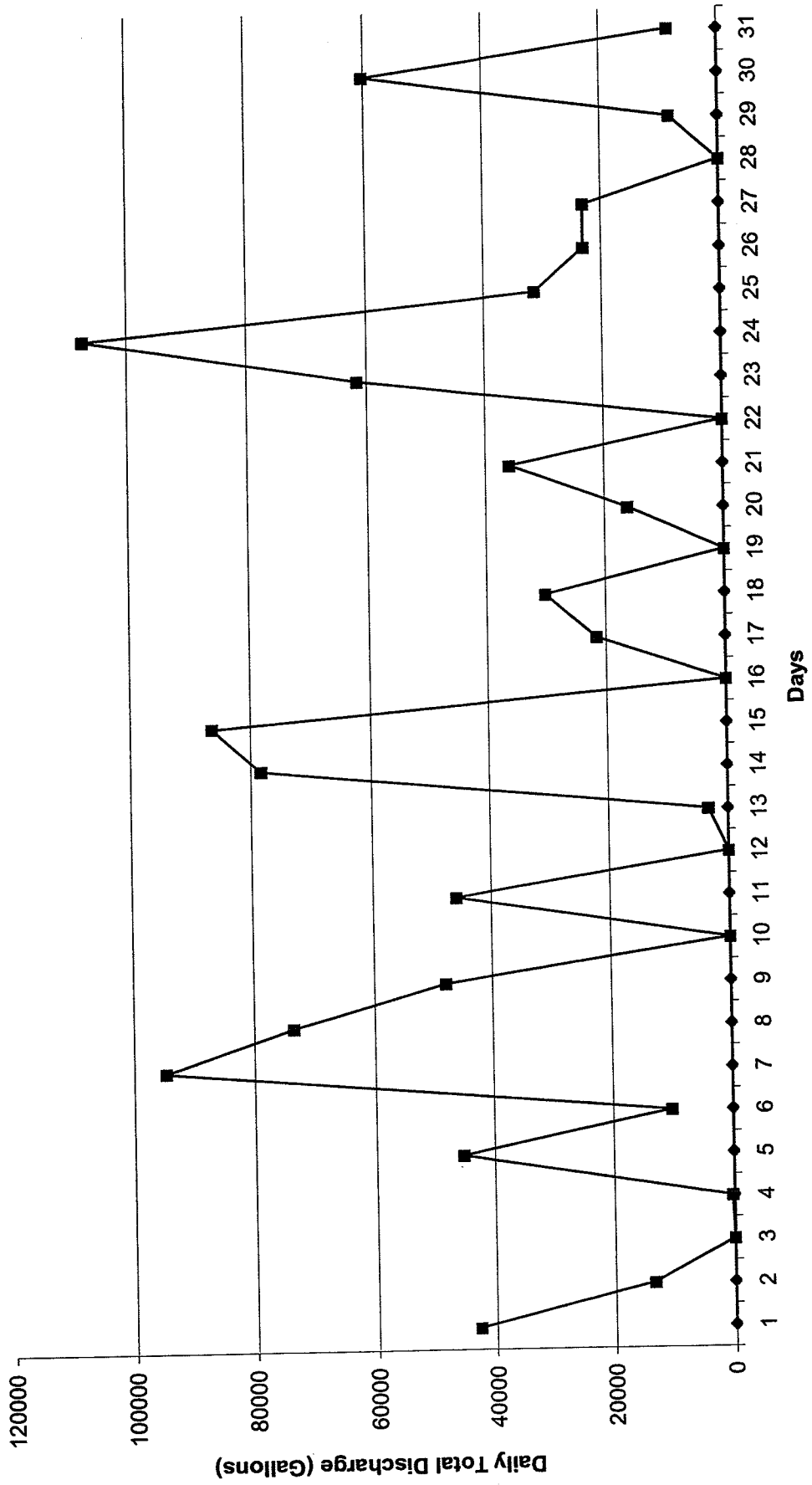

Jon W. Nichy
Superintendent
Main Pump Station

RECEIVED
JUN 08 2010
ENGINEERING
DEPT

Direct Discharge Flow Data

4/30/2010		11865195	8,703	11,518,882	
May-10	Time; 11:58pm unless otherwise stated	Totalizer Reading (Gallons)	Daily Total Discharge (Gallons)		Notes
1		11907973	42,778	11,561,660	
2		11921401	13,428	11,575,088	
3		11921401	0	11,575,088	
4		11921766	365	11,575,453	
5		11967180	45,414	11,620,867	
6		11977415	10,235	11,631,102	
7		12072080	94,665	11,725,767	
8		12145484	73,404	11,799,171	
9		12193456	47,972	11,847,143	
10		12193456	0	11,847,143	
11		12239516	46,060	11,893,203	
12		12239516	0	11,893,203	
13		12242770	3,254	11,896,457	
14		12321073	78,303	11,974,760	
15		12407388	86,315	12,061,075	
16		12407388	0	12,061,075	
17		12429046	21,658	12,082,733	
18		12459187	30,141	12,112,874	
19		12459187	0	12,112,874	
20		12475292	16,105	12,128,979	
21		12511220	35,928	12,164,907	
22		12511220	0	12,164,907	
23		12572805	61,585	12,226,492	
24		12680075	107,270	12,333,762	
25		12711533	31,458	12,365,220	
26		12734345	23,012	12,388,232	
27		12757589	23,044	12,411,276	
28		12757589	0	12,411,276	
29		12765945	8,356	12,419,632	
30		12826215	60,270	12,479,902	
31		12834710	8,495	12,488,397	
		969,515	969,515	969,515	

Pfohl Bros.
May
2010



Auto Dialer System Log

[illegible]

THE TOWN OF
CHEEKTOWAGA



JON W. NICHY
Superintendent

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

July 7, 2010

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

Re: Pfohl Bros. Flow Data

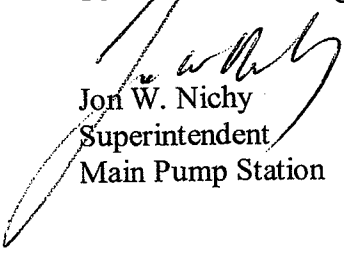
Dear Mr. Pugh,

Enclosed for your review, please find a copy of the **June 2010** Direct Discharge Flow Data Report, prepared by Jon W. Nichy.

A monthly log sheet indicating inhibiting and enabling of pumping operation at the site is included with this package.

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

Yours truly,
Town of Cheektowaga


Jon W. Nichy
Superintendent
Main Pump Station

RECEIVED

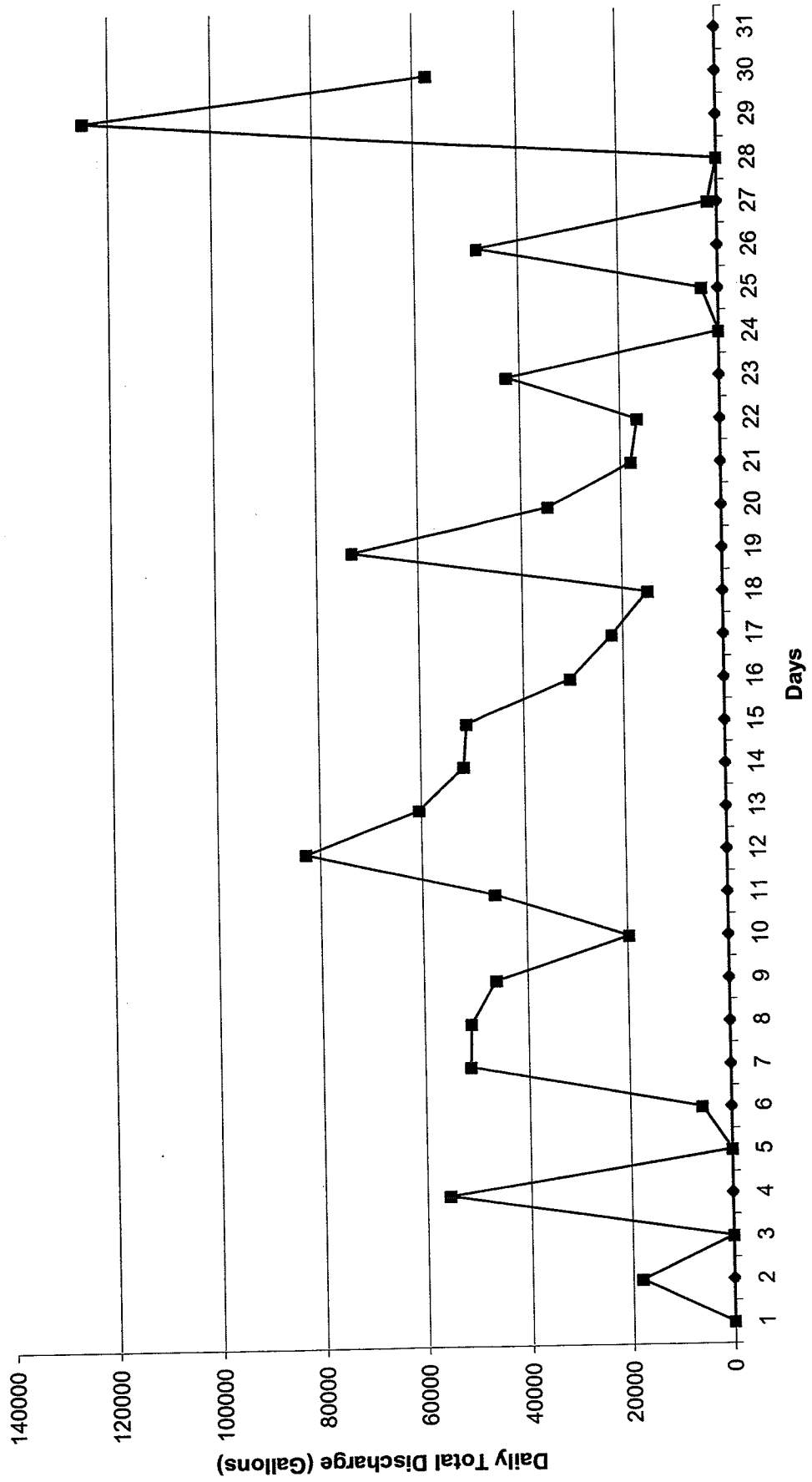
JUL - 8 2010

ENGINEERING
DEPT

Direct Discharge Flow Data

5/31/2010		12834710	8,495	12,488,397	
June-10	Time; 11:58pm unless otherwise stated	Totalizer Reading (Gallons)	Daily Total Discharge (Gallons)		Notes
1		12834710	0	12,488,397	
2		12852887	18,177	12,506,574	
3		12852887	0	12,506,574	
4		12908542	55,655	12,562,229	
5		12908542	0	12,562,229	
6		12914317	5,775	12,568,004	
7		12965595	51,278	12,619,282	
8		13016712	51,117	12,670,399	
9		13062761	46,049	12,716,448	
10		13082480	19,719	12,736,167	
11		13128528	46,048	12,782,215	
12		13211343	82,815	12,865,030	
13		13271834	60,491	12,925,521	
14		13323638	51,804	12,977,325	
15		13374865	51,227	13,028,552	
16		13405620	30,755	13,059,307	
17		13427949	22,329	13,081,636	
18		13442932	14,983	13,096,619	
19		13515853	72,921	13,169,540	
20		13550525	34,672	13,204,212	
21		13568412	17,887	13,222,099	
22		13584967	16,555	13,238,654	
23		13627393	42,426	13,281,080	
24		13627393	0	13,281,080	
25		13630705	3,312	13,284,392	
26		13678637	47,932	13,332,324	
27		13680524	1,887	13,334,211	
28		13680524	0	13,334,211	
29		13805337	124,813	13,459,024	
30		13862636	57,299	13,516,323	
31					
		1,027,926	1,027,926	1,027,926	

Pfohl Bros.
June
2010



Auto Dialer System Log

[illegible]

APPENDIX C

HYDRAULIC MONITORING TABLES

TABLE 1
PFOHL BROTHERS LANDFILL SITE
GROUNDWATER ELEVATIONS
JANUARY - JUNE 2010

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								5/25/2010 0000	3.32	692.80	0.00	692.80	
MNW								6/15/2010 0000	2.58	693.54	0.00	693.54	
GW-01S	1073087.779	1117961.500	694.53	NM	696.19	S	1						
MNW								5/25/2010 0000	4.52	691.67	0.00	691.67	
MNW								6/15/2010 0000	4.10	692.09	0.00	692.09	
GW-03D	1073819.106	1114602.426	692.35	NM	693.88	D	1						
MNW								5/25/2010 0000	2.35	691.53	0.00	691.53	
MNW								6/15/2010 0000	2.07	691.81	0.00	691.81	
GW-03S	1073812.622	1114605.762	692.61	NM	693.80	S	1						
MNW								3/25/2010 0000	2.09	691.71	0.00	691.71	
MNW								5/25/2010 0000	3.13	690.67	0.00	690.67	
MNW								6/15/2010 0000	3.05	690.75	0.00	690.75	
GW-04D	1072289.432	1114685.625	690.89	NM	692.75	D	1						
MNW								5/25/2010 0000	13.37	679.38	0.00	679.38	
MNW								6/15/2010 0000	13.16	679.59	0.00	679.59	
GW-04S	1072284.456	1114685.127	690.76	NM	692.72	S	1						
MNW								3/25/2010 0000	3.97	688.75	0.00	688.75	
MNW								5/25/2010 0000	4.78	687.94	0.00	687.94	
MNW								6/15/2010 0000	4.27	688.45	0.00	688.45	
GW-07D	1071242.458	1117669.925	697.15	NM	699.94	D	1						
MNW								5/25/2010 0000	43.20	656.74	0.00	656.74	
MNW								6/15/2010 0000	58.09	641.85	0.00	641.85	

NM - No Measurement

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

Type:

MH

MNW

SG

Manhole Monitoring Point

Monitoring Well

Staff Gauge

TABLE 1
PFOHL BROTHERS LANDFILL SITE
GROUNDWATER ELEVATIONS
JANUARY - JUNE 2010

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-07S	1071238.157	1117666.265	697.47	NM	699.51	S	1						
MNW								3/25/2010 0000	4.04	695.47	0.00	695.47	
MNW								5/25/2010 0000	5.20	694.31	0.00	694.31	
MNW								6/15/2010 0000	4.29	695.22	0.00	695.22	
GW-08D	1073713.617	1116795.328	695.28	NM	697.79	D	1						
MNW								5/25/2010 0000	6.33	691.46	0.00	691.46	
MNW								6/15/2010 0000	6.04	691.75	0.00	691.75	
GW-08SR	1073714.172	1116786.343	695.08	NM	697.50	S	1						
MNW								3/25/2010 0000	5.17	692.33	0.00	692.33	
MNW								5/25/2010 0000	5.39	692.11	0.00	692.11	
MNW								6/15/2010 0000	5.35	692.15	0.00	692.15	
GW-26D	1071698.573	1115997.470	696.01	NM	698.50	D	1						
MNW								5/25/2010 0000	7.17	691.33	0.00	691.33	
MNW								6/15/2010 0000	6.90	691.60	0.00	691.60	
GW-28S	1073129.479	1117648.927	698.60	NM	700.95	S	1						
MNW								3/25/2010 0000	8.15	692.80	0.00	692.80	
MNW								5/25/2010 0000	9.53	691.42	0.00	691.42	
MNW								6/15/2010 0000	8.78	692.17	0.00	692.17	
GW-29S	1072552.638	1117761.993	697.50	NM	699.63	S	1						
MNW								3/25/2010 0000	6.47	693.16	0.00	693.16	
MNW								5/25/2010 0000	8.79	690.84	0.00	690.84	
MNW								6/15/2010 0000	7.95	691.68	0.00	691.68	
GW-30S	1072096.109	1117743.563	693.67	NM	696.58	S	1						
MNW								3/25/2010 0000	7.50	689.08	0.00	689.08	
MNW								5/25/2010 0000	8.14	688.44	0.00	688.44	

NM - No Measurement

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

Type:

MH

MNW

SG

Manhole Monitoring Point

Monitoring Well

Staff Gauge

TABLE 1
PFOHL BROTHERS LANDFILL SITE
GROUNDWATER ELEVATIONS
JANUARY - JUNE 2010

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
MNW								6/15/2010 0000	8.02	688.56	0.00	688.56	
GW-31S	1071786.280	1117191.441	695.84	NM	698.62	S	1						
MNW								3/25/2010 0000	2.17	696.45	0.00	696.45	
MNW								5/25/2010 0000	3.76	694.86	0.00	694.86	
MNW								6/15/2010 0000	2.79	695.83	0.00	695.83	
GW-32S	1071613.793	1116364.200	696.19	NM	698.37	S	1						
MNW								3/25/2010 0000	2.19	696.18	0.00	696.18	
MNW								5/25/2010 0000	4.04	694.33	0.00	694.33	
MNW								6/15/2010 0000	3.06	695.31	0.00	695.31	
GW-33S	1072165.625	1115561.866	695.94	NM	698.24	S	1						
MNW								3/25/2010 0000	3.28	694.96	0.00	694.96	
MNW								5/25/2010 0000	5.59	692.65	0.00	692.65	
MNW								6/15/2010 0000	4.63	693.61	0.00	693.61	
GW-34S	1072979.205	1114730.200	692.51	NM	694.77	S	1						
MNW								3/25/2010 0000	2.70	692.07	0.00	692.07	
MNW								5/25/2010 0000	3.27	691.50	0.00	691.50	
MNW								6/15/2010 0000	3.07	691.70	0.00	691.70	
GW-35S	1071701.925	1115985.585	696.19	NM	697.39	S	1						
MNW								3/25/2010 0000	2.85	694.54	0.00	694.54	
MNW								5/25/2010 0000	4.26	693.13	0.00	693.13	
MNW								6/15/2010 0000	3.49	693.90	0.00	693.90	
MH-01	1073806.665	1114810.501	698.62	NM	698.62	NA	1						
MH								3/25/2010 0000	9.37	689.25	0.00	689.25	
MH								5/25/2010 0000	10.91	687.71	0.00	687.71	
MH								6/15/2010 0000	10.26	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

MNW

SG

Manhole Monitoring Point

Monitoring Well

Staff Gauge

TABLE 1
PFOHL BROTHERS LANDFILL SITE
GROUNDWATER ELEVATIONS
JANUARY - JUNE 2010

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
MH-03 MH	1073736.789	1115259.334	699.40	NM	699.40	NA	1	3/25/2010 0000	10.29	689.11	0.00	689.11	
								5/25/2010 0000	11.89	687.51	0.00	687.51	
								6/15/2010 0000	11.11	688.29	0.00	688.29	
MH-07 MH	1073838.229	1116243.757	696.82	NM	696.82	NA	1	3/25/2010 0000	8.52	688.30	0.00	688.30	
								5/25/2010 0000	9.96	686.86	0.00	686.86	
								6/15/2010 0000	9.31	687.51	0.00	687.51	
MH-10 MH	1073540.729	1117381.524	703.01	NM	703.01	NA	1	3/25/2010 0000	14.48	688.53	0.00	688.53	
								5/25/2010 0000	14.43	688.58	0.00	688.58	
								6/15/2010 0000	14.87	688.14	0.00	688.14	
MH-15 MH	1072531.567	1117761.125	699.02	NM	699.02	NA	1	3/25/2010 0000	14.41	684.61	0.00	684.61	
								5/25/2010 0000	14.86	684.16	0.00	684.16	
								6/15/2010 0000	14.87	684.15	0.00	684.15	
MH-16 MH	1072133.714	1117748.238	698.57	NM	698.57	NA	1	3/25/2010 0000	14.11	684.46	0.00	684.46	
								5/25/2010 0000	14.45	684.12	0.00	684.12	
								6/15/2010 0000	14.44	684.13	0.00	684.13	
MH-17 MH	1071813.137	1117180.019	702.16	NM	702.16	NA	1	3/25/2010 0000	17.92	684.24	0.00	684.24	
								5/25/2010 0000	18.11	684.05	0.00	684.05	
								6/15/2010 0000	18.11	684.05	0.00	684.05	

NM - No Measurement

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

Type:

MH

MNW

SG

Manhole Monitoring Point

Monitoring Well

Staff Gauge

TABLE 1
PFOHL BROTHERS LANDFILL SITE
GROUNDWATER ELEVATIONS
JANUARY - JUNE 2010

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
MH-20 MH	1071756.395	1115997.024	706.20	NM	706.20	NA	1	3/25/2010 0000	19.56	686.64	0.00	686.64	
								5/25/2010 0000	19.74	686.46	0.00	686.46	
								6/15/2010 0000	19.70	686.50	0.00	686.50	
MH-22 MH	1072158.023	1115589.309	698.05	NM	698.05	NA	1	3/25/2010 0000	8.55	689.50	0.00	689.50	
								5/25/2010 0000	8.98	689.07	0.00	689.07	
								6/15/2010 0000	9.05	689.00	0.00	689.00	
MH-25 MH	1072483.928	1114820.313	698.17	NM	698.17	NA	1	3/25/2010 0000	8.72	689.45	0.00	689.45	
								5/25/2010 0000	10.52	687.65	0.00	687.65	
								6/15/2010 0000	9.83	688.34	0.00	688.34	
SG-01 SG	1073882.887	1114813.101	NM	NM	690.00	NA	1	3/25/2010 0000	-1.37	691.37	0.00	691.37	
								5/25/2010 0000	-1.00	691.00	0.00	691.00	
								6/15/2010 0000	-1.18	691.18	0.00	691.18	
SG-02 SG	1073738.27	1116805.85	NM	NM	690.00	NA	1	3/25/2010 0000	-3.35	693.35	0.00	693.35	
								5/25/2010 0000	-2.98	692.98	0.00	692.98	
								6/15/2010 0000	-3.18	693.18	0.00	693.18	
WW-01 MH	1073676.903	1115710.476	NM	NM	684.02	NA	1	3/25/2010 0000	-4.9	688.92	0.00	688.92	
								5/25/2010 0000	-3.3	687.32	0.00	687.32	
								6/15/2010 0000	-4.1	688.12	0.00	688.12	

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

TABLE 1
PFOHL BROTHERS LANDFILL SITE
GROUNDWATER ELEVATIONS
JANUARY - JUNE 2010

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-02 MH	1073684.724	1116792.311	NM	NM	684.18	NA	1	3/25/2010 0000	-4.7	688.88	0.00	688.88	
								5/25/2010 0000	-4.7	688.88	0.00	688.88	
								6/15/2010 0000	-4.3	688.48	0.00	688.48	
WW-03 MH	1073140.339	1117618.499	NM	NM	683.80	NA	1	3/25/2010 0000	-5.6	689.40	0.00	689.40	
								5/25/2010 0000	-5.6	689.40	0.00	689.40	
								6/15/2010 0000	-5.6	689.40	0.00	689.40	
WW-04 MH	1072057.563	1117610.508	NM	NM	676.62	NA	1	3/25/2010 0000	-7.3	683.92	0.00	683.92	
								5/25/2010 0000	-7.0	683.62	0.00	683.62	
								6/15/2010 0000	NM	-	NM	-	
WW-05 MH	1071661.368	1116370.876	NM	NM	676.14	NA	1	3/25/2010 0000	-7.6	683.74	0.00	683.74	
								5/25/2010 0000	-7.0	683.14	0.00	683.14	
								6/15/2010 0000	-7.2	683.34	0.00	683.34	
WW-06 MH	1072988.420	1114811.518	NM	NM	681.89	NA	1	3/25/2010 0000	NM	-	NM	-	
								5/25/2010 0000	-5.9	687.79	0.00	687.79	
								6/15/2010 0000	-6.7	688.59	0.00	688.59	

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

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)
3/25/2010	688.92	---	---	688.88	692.33	3.45	693.35	4.47
5/25/2010	687.32	---	---	688.88	692.11	3.23	692.98	4.10
6/15/2010	688.12	---	---	688.48	692.15	3.67	693.18	4.70

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)
3/25/2010	689.40	692.80	3.40	683.92	---	---
5/25/2010	689.40	691.42	2.02	683.62	---	---
6/15/2010	689.40	692.17	2.77	NM	---	---

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)
3/25/2010	683.74	696.18	12.44	NM	692.07	NA
5/25/2010	683.14	694.33	11.19	687.79	691.50	3.71
6/15/2010	683.34	695.31	11.97	688.59	691.70	3.11

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)
3/25/2010	689.25	691.37	2.12	684.61	693.16	8.55
5/25/2010	687.71	691.00	3.29	684.16	690.84	6.68
6/15/2010	688.36	691.18	2.82	684.15	691.68	7.53

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)
3/25/2010	684.46	689.08	4.62	684.24	696.45	12.21
5/25/2010	684.12	688.44	4.32	684.05	694.86	10.81
6/15/2010	684.13	688.56	4.43	684.05	695.83	11.78

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)
3/25/2010	686.64	694.54	7.90	689.50	694.96	5.46
5/25/2010	686.46	693.13	6.67	689.07	692.65	3.58
6/15/2010	686.50	693.90	7.40	689.00	693.61	4.61

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: 5/28/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	4.75'	Depth to Well Bottom:	14.94'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	6.3	Estimated Purge Volume (liters):	8.3
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Sample ID:	GW-1S	Sample Time:	11:44	QA/QC:	None
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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.

PURGE PARAMETERS

	TIME	pH	TEMP (°C)	COND. (mS/cm)	DISS. O ₂ (mg/l)	TURB. (NTU)	Eh (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
	10:54	7.39	12.20	0.074	7.50	370	-104.0	190	4.75
	10:59	7.13	11.48	0.078	1.33	290	-99.5	190	5.08
	11:04	7.12	11.49	0.077	0.92	130	-104.5	190	5.32
	11:09	7.12	11.46	0.075	0.65	110	-103.0	190	5.57
	11:14	7.18	11.92	0.073	0.58	110	-105.3	150	5.48
	11:19	7.18	11.99	0.072	0.67	75	-101.2	150	5.47
	11:24	7.07	12.02	0.072	0.65	50	-99.2	150	5.47
	11:29	7.09	11.83	0.072	0.49	31	-99.1	150	5.47
	11:34	7.08	11.90	0.072	0.47	21	-97.8	150	5.47
	11:39	7.09	11.94	0.072	0.41	15	-97.7	150	5.47
	11:44	7.09	11.97	0.072	0.36	13	-96.7	150	5.47
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 ($v_{ql} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/28/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	3.37'	Depth to Well Bottom:	39.65'	Well Diameter:	4"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	89.6	Estimated Purge Volume (liters):	56.0
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Sample ID:	GW-1D	Sample Time:	10:41	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information: Sulfur odor

PURGE PARAMETERS

[illegible]

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 ($v_{ql} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/25/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	3.13'	Depth to Well Bottom:	13.23'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	6.2	Estimated Purge Volume (liters):	7.1
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Sample ID:	GW-3S	Sample Time:	15:27	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

[illegible]

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 ($v_{ql} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/25/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

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

Measuring Below Top of Initial Depth Depth to Well Well Screen
Point: Riser to Water: 2.35' Bottom: 35.70' Diameter: 4" Length:

Casing Volume in 1 Estimated
Type: Stainless Steel Well Casing (liters): 82.4 Purge Volume (liters): 80.1

Sample ID: GW-3D Sample Time: 14:12 QA/QC: MS/MSD

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

13:22-13:42- Took probe apart to dry out connections causing errors.

PURGE PARAMETERS

TIME	pH	TEMP (°C)	COND. (mS/cm)	DISS. O ₂ (mg/l)	TURB. (NTU)	Eh (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
12:42	6.91	9.96	1.450	2.50	3.5	-35.5	890	2.35
12:47	6.82	9.73	1.450	0.84	0.30	-37.5	890	2.35
12:52	6.80	9.68	1.451	0.52	0.55	-38.9	890	2.35
12:57	6.81	9.72	1.451	0.49	0.00	-42.3	890	2.35
13:02	6.82	9.68	1.451	0.41	0.00	-41.0	890	2.35
13:07	6.82	9.71	1.451	0.43	0.00	-42.3	890	2.35
13:12	6.83	9.69	1.451	0.36	0.00	-37.5	890	2.35
13:17	6.87	ERROR	ERROR	ERROR	0.00	-44.1	890	2.35
13:22	6.88	ERROR	ERROR	ERROR	0.15	-45.8	890	2.35
13:42	6.83	9.82	1.454	1.68	0.00	-26.7	890	2.35
13:47	6.79	9.68	1.451	1.28	0.20	-30.0	890	2.35
13:52	6.81	9.67	1.451	0.98	0.00	-34.2	890	2.35
13:57	6.83	9.71	1.450	0.86	0.00	-37.0	890	2.35
14:02	6.84	9.68	1.450	0.70	0.00	-38.1	890	2.35
14:07	6.85	9.74	1.451	0.49	0.00	-39.6	890	2.35
14:12	6.86	9.89	1.450	0.32	0.00	-39.9	890	2.35
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 ($vq_{ft} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/28/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	5.12'	Depth to Well Bottom:	16.23'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	6.9	Estimated Purge Volume (liters):	22.5
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Sample ID:	GW-4S	Sample Time:	14:30	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

Well historically goes dry at very low purge rates (<75ml/min). Pumped dry and sampled after recovery.

PURGE PARAMETERS

[illegible]

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 ($vql_w = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/28/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	13.07'	Depth to Well Bottom:	45.57'	Well Diameter:	4"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	80.3	Estimated Purge Volume (liters):	6.3
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Sample ID:	GW-4D	Sample Time:	14:01	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

[illegible]

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 ($vql_w = \pi r^2 h$)

WELL PURGING LOG

URS Corporation

SITE NAME:	Pfohl Brothers Landfill	WELL NO.:	GW-7S
PROJECT NO.:	11175616.00000		
STAFF:	Rob Murphy, Tim Ifkovich		
DATE(S):	5/25/10, 5/26/10		

1. TOTAL CASING AND SCREEN LENGTH (FT.)	=	<u>35.04</u>	WELL ID. 1"	VOL. (GAL/FT) 0.040
2. WATER LEVEL BELOW TOP OF CASING (FT.)	=	<u>5.20</u>	2"	0.17
3. NUMBER OF FEET STANDING WATER (#1 - #2)	=	<u>29.84</u>	3"	0.38
4. VOLUME OF WATER/FOOT OF CASING (GAL.)	=	<u>0.17</u>	4"	0.66
5. VOLUME OF WATER IN CASING (GAL.)(#3 x #4)	=	<u>5.1</u>	5"	1.04
6. VOLUME OF WATER TO REMOVE (GAL.)(#5 x 3)	=	<u></u>	6"	1.50
7. VOLUME OF WATER ACTUALLY REMOVED (GAL.)	=	<u>7.5</u>	8"	2.60

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

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	Initial	2	4	6	7.5						
pH	8.17	8.12	8.10	8.10	8.09						
SPEC. COND. (mS/cm)	0.599	0.585	0.588	0.591	0.575						
DO (mg/l)	8.29	3.93	8.40	10.51	10.19						
TEMPERATURE (°C)	11.05	10.25	10.59	11.28	11.69						
TURBIDITY (NTU)	16	28	65	150	260						
ORP (millivolts)	20.4	29.3	36.0	51.6	46.6						
TIME	11:41	11:49	11:52	11:58	12:03						

COMMENTS: - Begin handbailing well.
 12:03 - Well dry after removing 7.5 gallons

5/25/2010 12:25 - return to well, depth to water = 5.41 feet.
 12:30 - Collect sample.

WELL PURGING LOG

URS Corporation

SITE NAME:	Pfohl Brothers Landfill	WELL NO.:	GW-7D
PROJECT NO.:	11175616.00000		
STAFF:	Rob Murphy, Tim Ifkovich		
DATE(S):	5/25/10, 5/26/10		

			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.)	=	43.20	2"	0.17
3. NUMBER OF FEET STANDING WATER (#1 - #2)	=	17.25	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)	=	11.4	5"	1.04
6. VOLUME OF WATER TO REMOVE (GAL.)(#5 x 3)	=		6"	1.50
7. VOLUME OF WATER ACTUALLY REMOVED (GAL.)	=	11.5	8"	2.60

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

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)									
	Initial	3	6	9	11.5					
pH	7.75	7.79	7.88	7.96	8.03					
SPEC. COND. (mS/cm)	0.938	0.692	0.733	0.767	0.805					
DO (mg/l)	3.83	9.01	9.37	9.16	6.51					
TEMPERATURE (°C)	13.31	12.18	11.79	11.80	12.78					
TURBIDITY (NTU)	6.7	17	20	22	24					
ORP (millivolts)	-194.6	-80.6	-93.0	-98.3	-102.5					
TIME	10:42	10:52	11:04	11:12	11:30					

COMMENTS:

11:30 - Handbailed the well to dryness.

5/26/2010 12:38 - return to well, depth to water = 59.47 feet.

12:40 - Collect sample, only enough volume to fill 3 voa vials, 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: 5/26/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	5.42'	Depth to Well Bottom:	13.03'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	4.7	Estimated Purge Volume (liters):	8.7
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Sample ID:	GW-8SR	Sample Time:	9:36	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

[illegible]

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 ($vql_w = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/26/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	6.36'	Depth to Well Bottom:	36.54'	Well Diameter:	4"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	74.5	Estimated Purge Volume (liters):	43.7
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Sample ID:	GW-8D	Sample Time:	11:10	QA/QC:	Duplicate (ID=Duplicate)
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

10:31 - take probe apart to dry out inside connections, in addition highspeed side of pump breaks.

PURGE PARAMETERS

[illegible]

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 ($v_{ql} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/28/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	7.26'	Depth to Well Bottom:	40.72'	Well Diameter:	4"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	82.6	Estimated Purge Volume (liters):	52.8
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Sample ID:	GW-26D	Sample Time:	8:27	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

Occasional pulses of iron stained particulates in purge water.

PURGE PARAMETERS

[illegible]

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 ($v_{ql} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/27/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	9.54'	Depth to Well Bottom:	15.53'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	3.7	Estimated Purge Volume (liters):	12.2
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Sample ID:	GW-28S	Sample Time:	11:05	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (°C)	COND. (mS/cm)	DISS. O ₂ (mg/l)	TURB. (NTU)	Eh (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
10:00	7.22	12.59	0.680	2.80	36	136.5	240	9.54
10:05	7.19	12.47	0.665	1.21	11	121.4	240	10.87
10:10	7.17	13.42	0.659	1.04	13	107.2	160	10.82
10:15	7.16	13.34	0.653	1.09	9.3	90.8	180	10.88
10:20	7.17	13.17	0.659	1.15	8.0	76.7	180	10.94
10:25	7.12	13.00	0.667	1.05	6.0	57.4	180	11.03
10:30	7.08	13.06	0.672	0.93	6.4	48.3	180	11.07
10:35	7.08	12.88	0.678	0.84	5.3	35.7	180	11.09
10:40	7.05	12.78	0.685	0.73	5.1	27.2	180	11.11
10:45	7.03	12.73	0.692	0.69	4.8	25.0	180	11.14
10:50	7.02	12.63	0.695	0.60	3.8	19.9	180	11.18
10:55	7.02	12.75	0.701	0.52	4.1	16.5	180	11.20
10:59	7.03	12.92	0.703	0.41	4.0	5.3	180	11.25
11:02	7.03	12.69	0.706	0.41	3.8	3.7	180	11.28
11:05	7.03	12.71	0.705	0.41	3.7	2.8	180	11.30
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 ($vql_w = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/27/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device: <u>Geopump 2</u>	Tubing Type: <u>LDPE/Silicone</u>	Pump/Tubing Inlet Location: <u>Screen midpoint</u>
Measuring Point: <u>Below Top of Riser</u>	Initial Depth to Water: <u>8.89'</u>	Depth to Well Bottom: <u>19.96'</u>
	Well Diameter: <u>2"</u>	Screen Length: <u></u>
Casing Type: <u>Stainless Steel</u>	Volume in 1 Well Casing (liters): <u>6.8</u>	Estimated Purge Volume (liters): <u>9.9</u>

Sample ID: GW-29S Sample Time: 12:36 QA/QC: None

Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information: Water red brown at beginning of purge.

PURGE PARAMETERS

TIME	pH	TEMP (°C)	COND. (mS/cm)	DISS. O ₂ (mg/l)	TURB. (NTU)	Eh (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
11:34	Establish flow rate and bypass orange floc round flow cell						250	8.89
11:36	Establish flow rate and bypass orange floc round flow cell						175	-
11:40	7.23	15.85	1.268	18.00	550	-115.2	175	10.35
11:45	7.06	14.43	1.225	1.10	500	-104.0	175	10.63
11:50	7.03	14.14	1.218	0.73	340	-98.4	150	10.92
11:55	7.00	14.61	1.206	0.61	280	-95.5	150	11.03
12:00	7.00	14.43	1.213	0.61	260	-95.9	150	11.11
12:05	6.95	14.56	1.214	0.49	190	-94.0	150	11.20
12:10	6.94	14.62	1.218	0.46	170	-91.9	150	11.28
12:15	6.91	14.58	1.225	0.44	150	-92.7	150	11.32
12:20	6.89	14.47	1.223	0.38	130	-91.2	150	11.35
12:25	6.89	14.58	1.225	0.37	110	-91.3	150	11.39
12:30	6.89	14.53	1.225	0.36	100	-92.9	150	11.41
12:33	6.89	14.25	1.227	0.37	95	-93.1	150	11.43
12:36	6.90	13.94	1.226	0.34	90	-92.8	150	11.45
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 ($vq_{ft} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/27/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	8.19'	Depth to Well Bottom:	17.95'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	6.0	Estimated Purge Volume (liters):	16.2
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Sample ID:	GW-30S	Sample Time:	13:45	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

[illegible]

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 ($v_{ql} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/27/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	4.21'	Depth to Well Bottom:	9.57'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	3.3	Estimated Purge Volume (liters):	3.6
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Sample ID:	GW-31S	Sample Time:	14:40	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

[illegible]

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 ($vql_w = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/27/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	4.40'	Depth to Well Bottom:	9.92'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	3.4	Estimated Purge Volume (liters):	4.8
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Sample ID:	GW-32S	Sample Time:	15:44	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

TIME	pH	TEMP (°C)	COND. (mS/cm)	DISS. O₂ (mg/l)	TURB. (NTU)	Eh (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
15:14	7.73	15.43	0.179	5.01	16	20.4	160	4.40
15:19	7.51	14.61	0.167	1.51	5.2	20.3	160	4.88
15:24	7.55	13.97	0.169	1.07	2.4	19.6	160	4.90
15:29	7.49	14.02	0.163	0.87	1.1	19.3	160	4.93
15:34	7.60	13.96	0.287	0.65	1.8	9.9	160	4.94
15:39	7.55	13.95	0.275	0.56	0.70	11.1	160	4.94
15:44	7.53	14.00	0.276	0.46	0.40	10.8	160	4.94
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 ($vql_w = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/27/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	6.04'	Depth to Well Bottom:	8.18'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	1.3	Estimated Purge Volume (liters):	5.4
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Sample ID:	GW-33S	Sample Time:	16:55	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

[illegible]

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 ($v_{ql} = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/25/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	3.27'	Depth to Well Bottom:	10.00'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	4.2	Estimated Purge Volume (liters):	8.7
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Sample ID:	GW-34S	Sample Time:	17:01	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

16:40-16:55 take probe apart to remove moisture from connections.

PURGE PARAMETERS

[illegible]

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 ($vql_w = \pi r^2 h$)

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

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

Date: 5/28/2010 Sampling Personnel: Rob Murphy, Tim Ifkovich Company: URS Corporation

Purging/ Sampling Device:	Geopump 2	Tubing Type:	LDPE/Silicone	Pump/Tubing Inlet Location:	Screen midpoint
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Measuring Point:	Below Top of Riser	Initial Depth to Water:	4.48'	Depth to Well Bottom:	7.47'	Well Diameter:	2"	Screen Length:
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Casing Type:	Stainless Steel	Volume in 1 Well Casing (liters):	1.8	Estimated Purge Volume (liters):	9.0
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Sample ID:	GW-35S	Sample Time:	9:13	QA/QC:	None
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Sample Parameters: VOCs, SVOCs, and TAL Metals

Other Information:

PURGE PARAMETERS

[illegible]

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 ($v_{ql} = \pi r^2 h$)

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: Pfohl Brothers

Project Number: 11175616.00000

Sampling Crew Members: R. Murphy, T. Ifkovich

Supervisor: J. Sundquist

Date of Sampling: May 25, 2010

Sample I.D. Number	Well Number	Well Volume (liters)	Volume Purged (liters)	Sample Time	Sample Description	Analysis Required	Chain-of-Custody Number
GW-3D	GW-3D	82.4	80.1	14:12	Groundwater	VOCs/SVOCs/ Metals	Not Applicable
GW-3D-MS	GW-3D	82.4	80.1	14:12	Matrix Spike		Not Applicable
GW-3D-MSD	GW-3D	82.4	80.1	14:12	Matrix Spike Duplicate		Not Applicable
GW-3S	GW-3S	6.2	7.1	15:27	Groundwater		Not Applicable
GW-34S	GW-34S	4.2	8.7	17:01	Groundwater		Not Applicable
TB-052510	---	---	---	---	Trip Blank	VOCs	Not Applicable

Additional Comments: All wells were purged using low flow methods until parameter stabilization.
Some wells went dry even at very low flow conditions.

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: Pfohl Brothers

Project Number: 11175616.00000

Sampling Crew Members: R. Murphy, T. Ifkovich

Supervisor: J. Sundquist

Date of Sampling: May 26, 2010

Sample I.D. Number	Well Number	Well Volume (liters)	Volume Purged (liters)	Sample Time	Sample Description	Analysis Required	Chain-of-Custody Number
GW-8SR	GW-8SR	4.7	8.7	9:36	Groundwater	VOCs/SVOCs/ Metals	Not Applicable
GW-8D	GW-8D	74.5	43.7	11:10	Groundwater		Not Applicable
DUPLICATE	GW-8D	74.5	43.7	11:10	Blind Duplicate		Not Applicable
GW-7S	GW-7S	5.1	7.5	12:30	Groundwater		Not Applicable
GW-7D	GW-7D	11.4	11.5	12:40	Groundwater		Not Applicable
TB-052610	---	---	---	---	Trip Blank	VOCs	Not Applicable

Additional Comments: All wells were purged using low flow methods until parameter stabilization.
Some wells went dry even at very low flow conditions.

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: Pfohl Brothers

Project Number: 11175616.00000

Sampling Crew Members: R. Murphy, T. Ifkovich

Supervisor: J. Sundquist

Date of Sampling: May 27, 2010

Sample I.D. Number	Well Number	Well Volume (liters)	Volume Purged (liters)	Sample Time	Sample Description	Analysis Required	Chain-of-Custody Number
GW-28S	GW-28S	3.7	12.2	11:05	Groundwater	VOCs/SVOCs/ Metals	Not Applicable
GW-29S	GW-29S	6.8	9.9	12:36	Groundwater		Not Applicable
GW-30S	GW-30S	6.0	16.2	13:45	Groundwater		Not Applicable
GW-31S	GW-31S	3.3	3.6	14:40	Groundwater		Not Applicable
GW-32S	GW-32S	3.4	4.8	15:44	Groundwater		Not Applicable
GW-33S	GW-33S	1.3	5.4	16:55	Groundwater		Not Applicable
TB-052710	---	---	---	---	Trip Blank	VOCs	Not Applicable

Additional Comments: All wells were purged using low flow methods until parameter stabilization.
Some wells went dry even at very low flow conditions.

GROUNDWATER SAMPLING - SAMPLE COLLECTION DATA SHEET

Project Name: Pfohl Brothers

Project Number: 11175616.00000

Sampling Crew Members: R. Murphy, T. Ifkovich

Supervisor: J. Sundquist

Date of Sampling: May 28, 2010

Sample I.D. Number	Well Number	Well Volume (liters)	Volume Purged (liters)	Sample Time	Sample Description	Analysis Required	Chain-of-Custody Number
GW-26D	GW-26D	82.6	52.8	8:27	Groundwater	VOCs/SVOCs/ Metals	Not Applicable
GW-35S	GW-35S	1.8	9.0	9:13	Groundwater		Not Applicable
GW-1D	GW-1D	89.6	56.0	10:41	Groundwater		Not Applicable
GW-1S	GW-1S	6.3	8.3	11:44	Groundwater		Not Applicable
GW-4D	GW-4D	80.3	6.3	14:01	Groundwater		Not Applicable
GW-4S	GW-4S	6.9	22.5	14:30	Groundwater		Not Applicable
TB-052810	---	---	---	---	Trip Blank	VOCs	Not Applicable

Additional Comments: All wells were purged using low flow methods until parameter stabilization.
Some wells went dry even at very low flow conditions.

APPENDIX E

HISTORICAL ANALYTICAL RESULTS

FIGURE E-1
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-01D

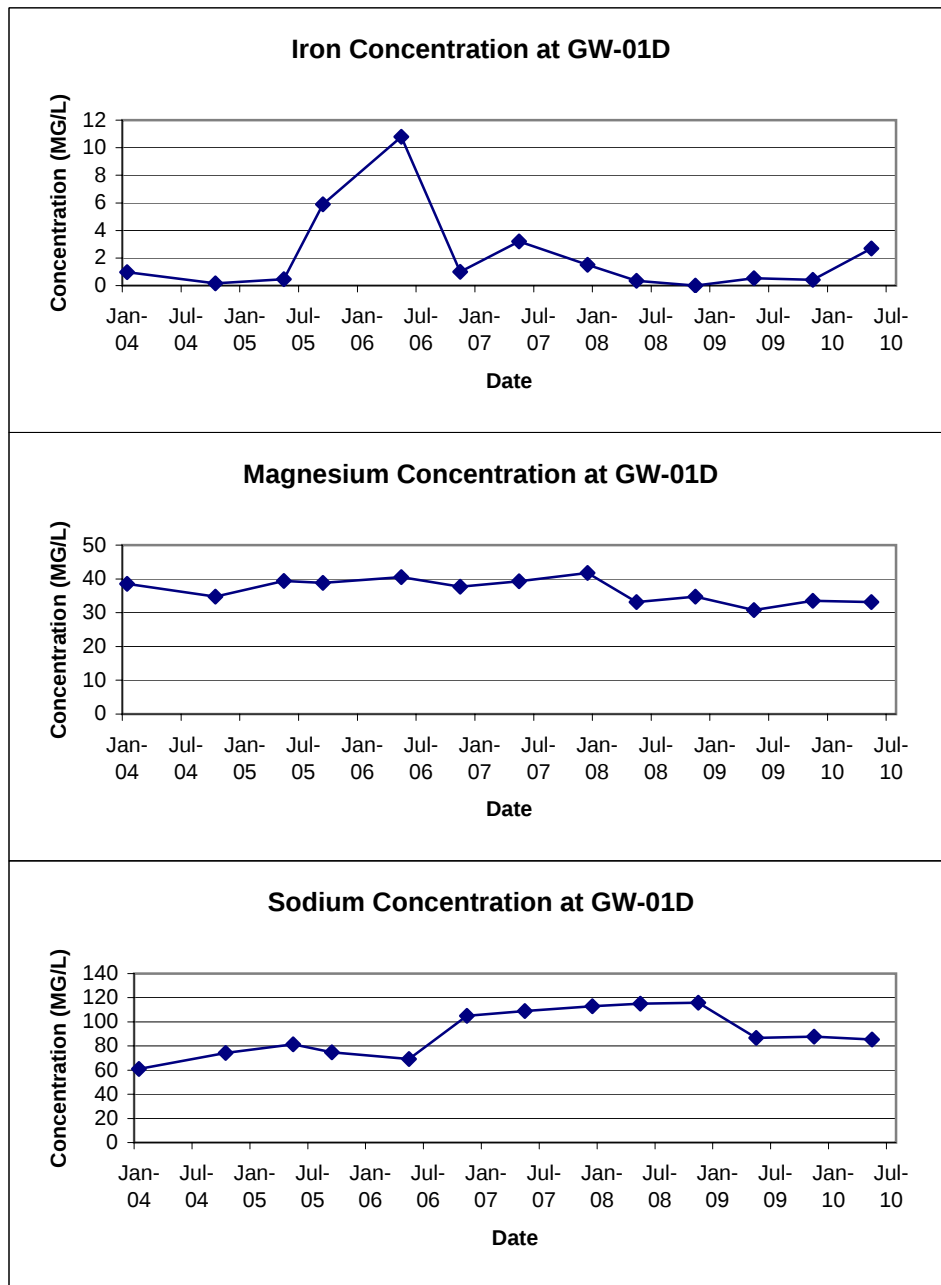


FIGURE E-2
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-1S

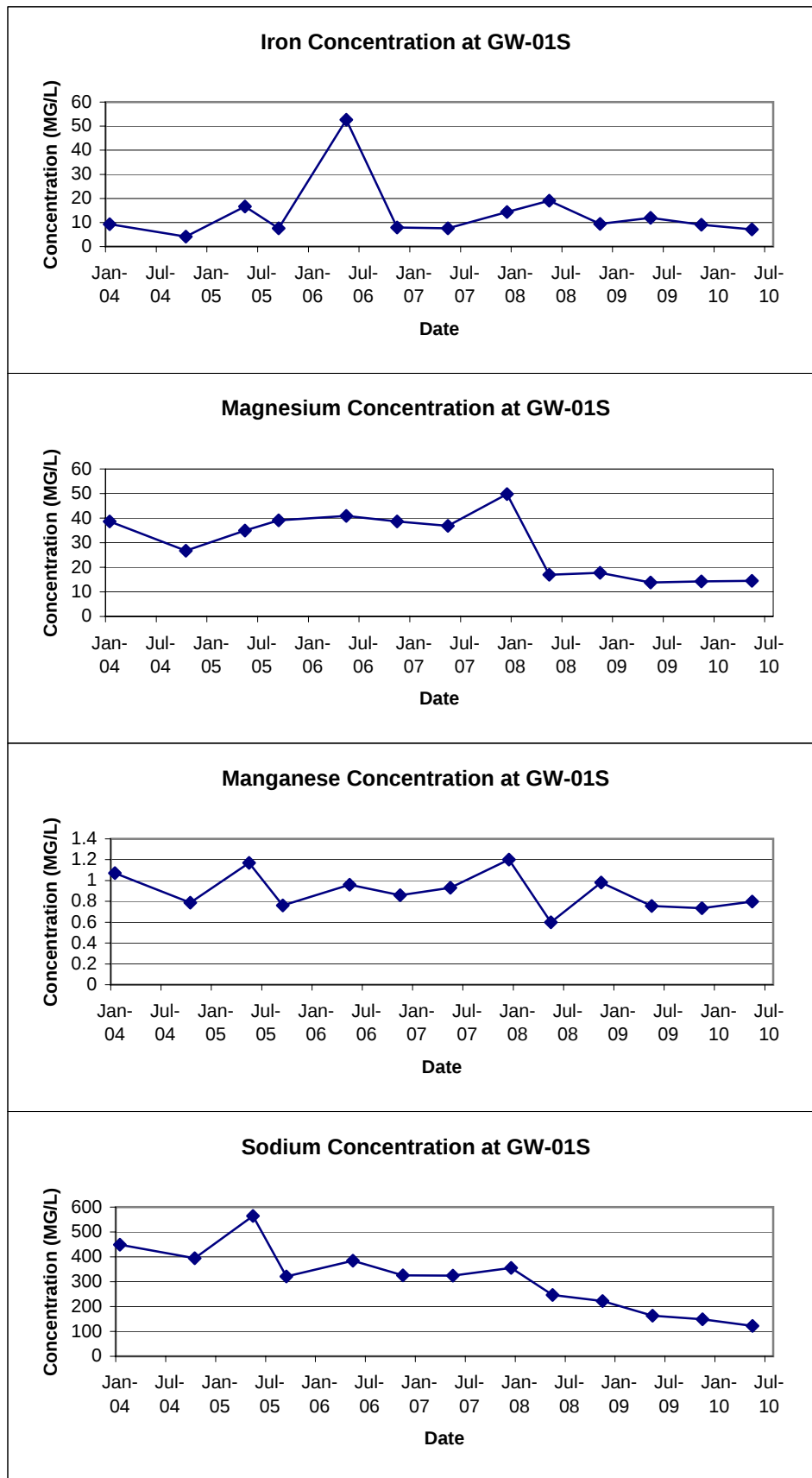


FIGURE E-3
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-3D

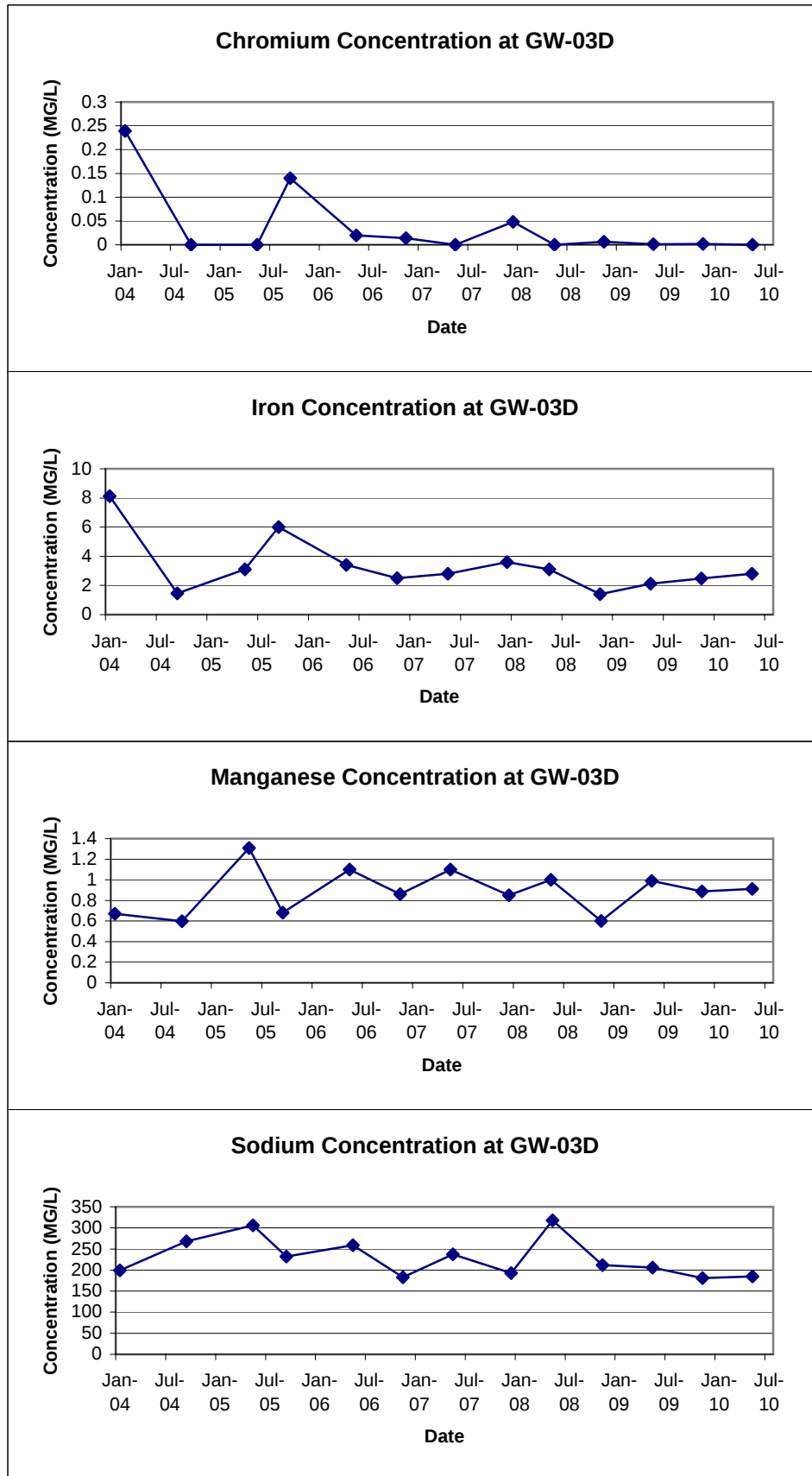


FIGURE E-4
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-03S

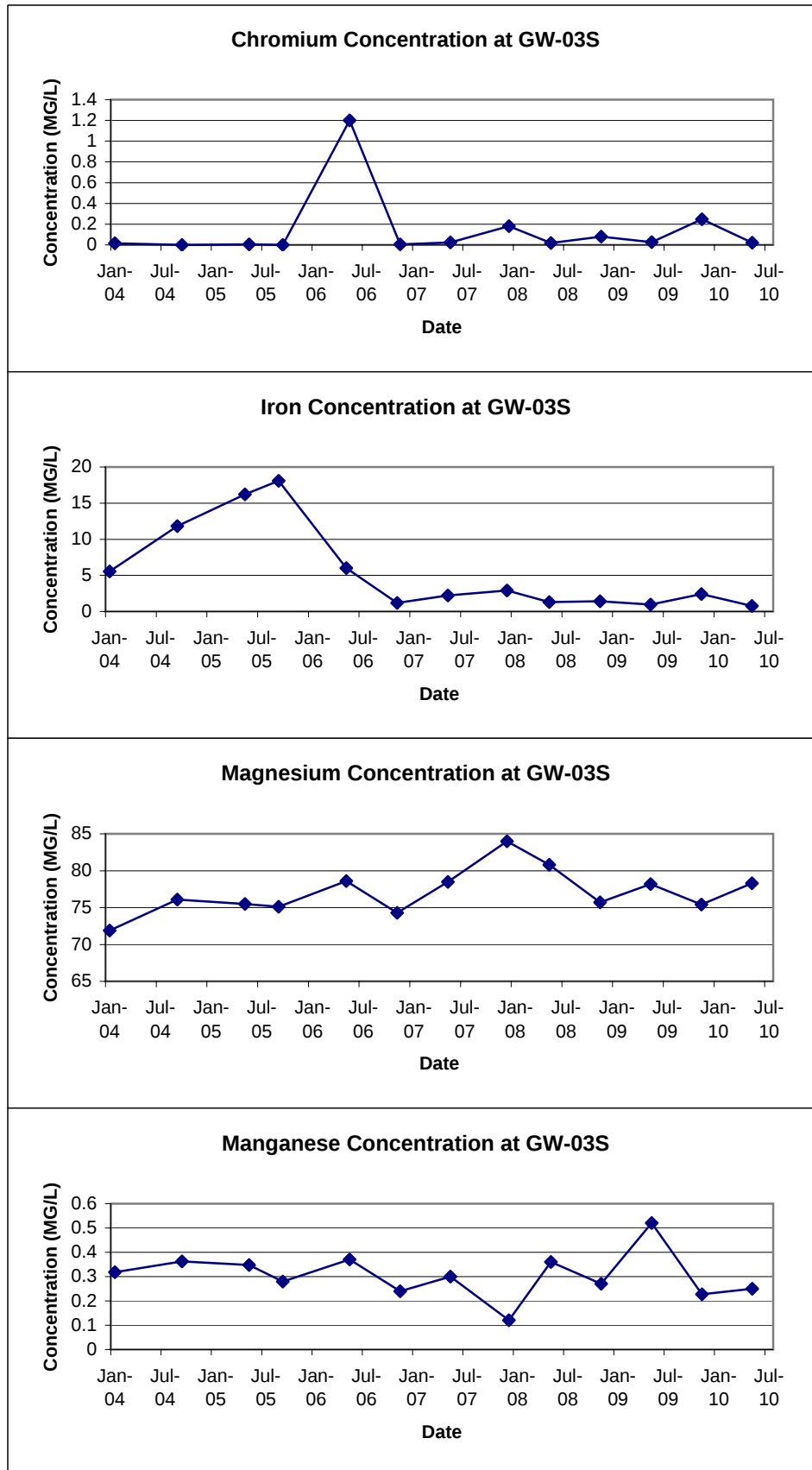


FIGURE E-4
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-3S

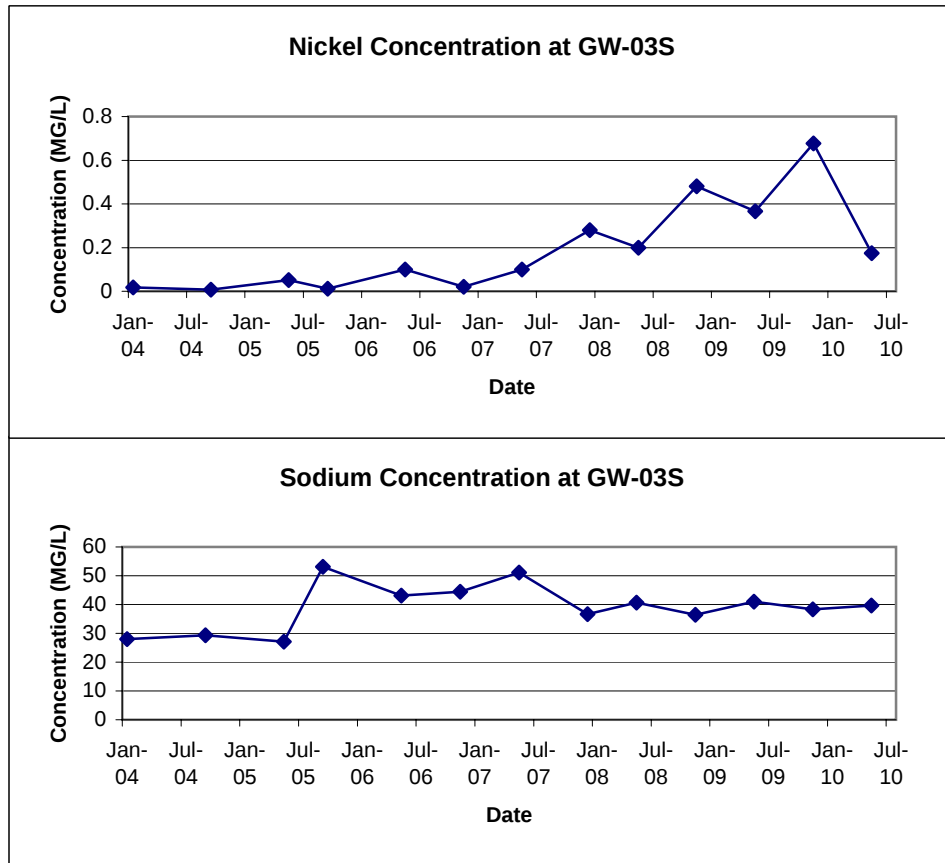


FIGURE E-5
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-04D

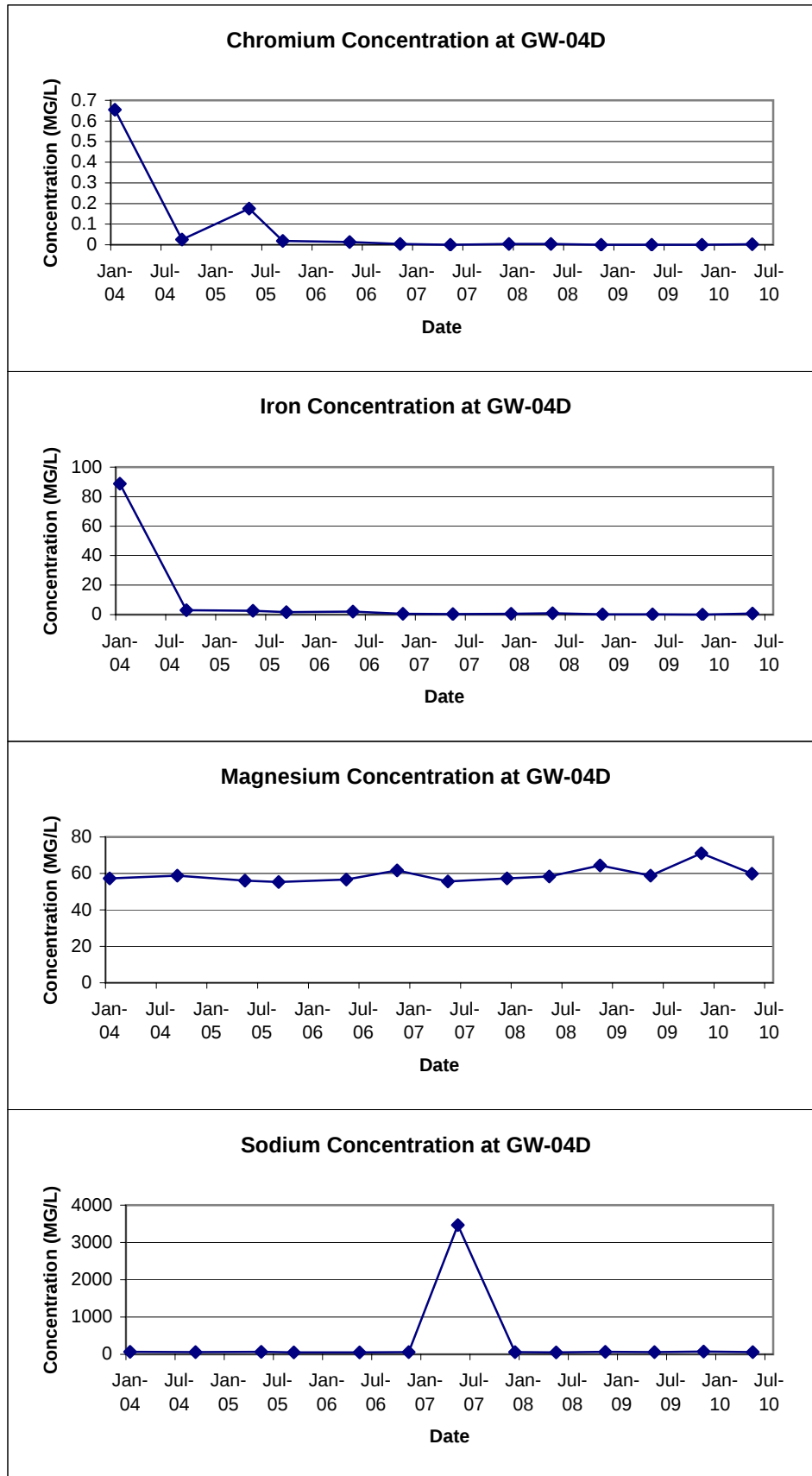


FIGURE E-6
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-4S

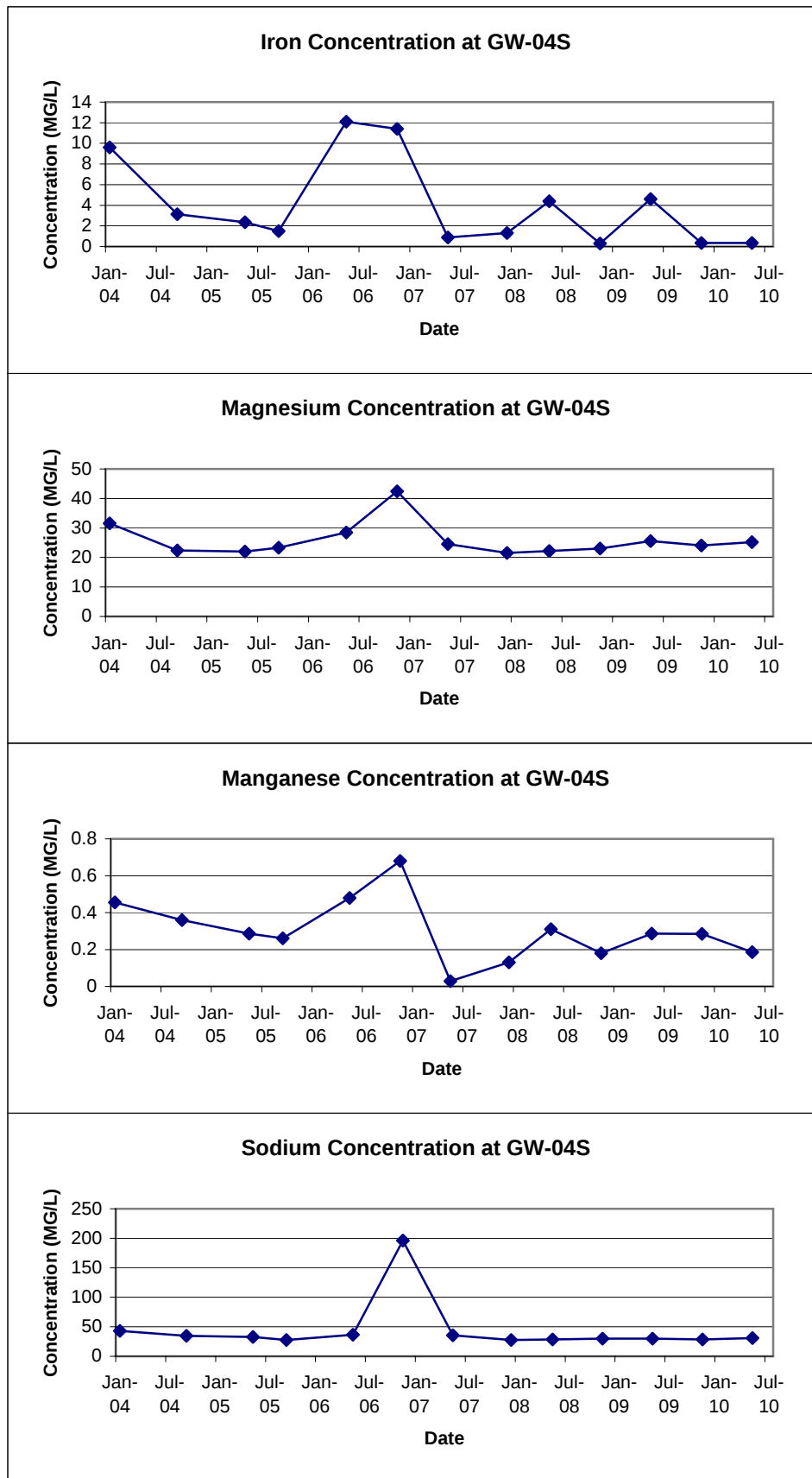


FIGURE E-7
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-7D

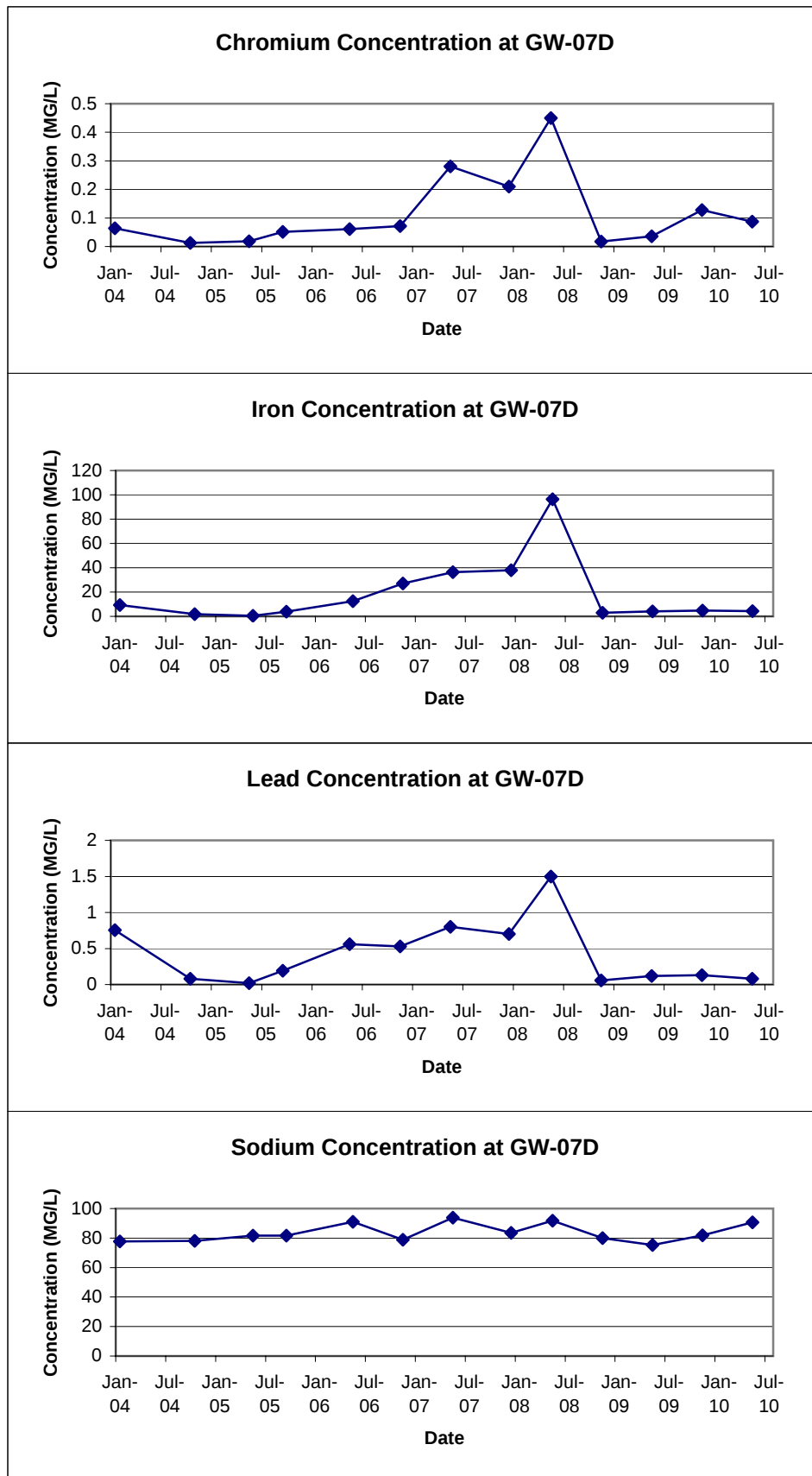


FIGURE E-8
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-7S

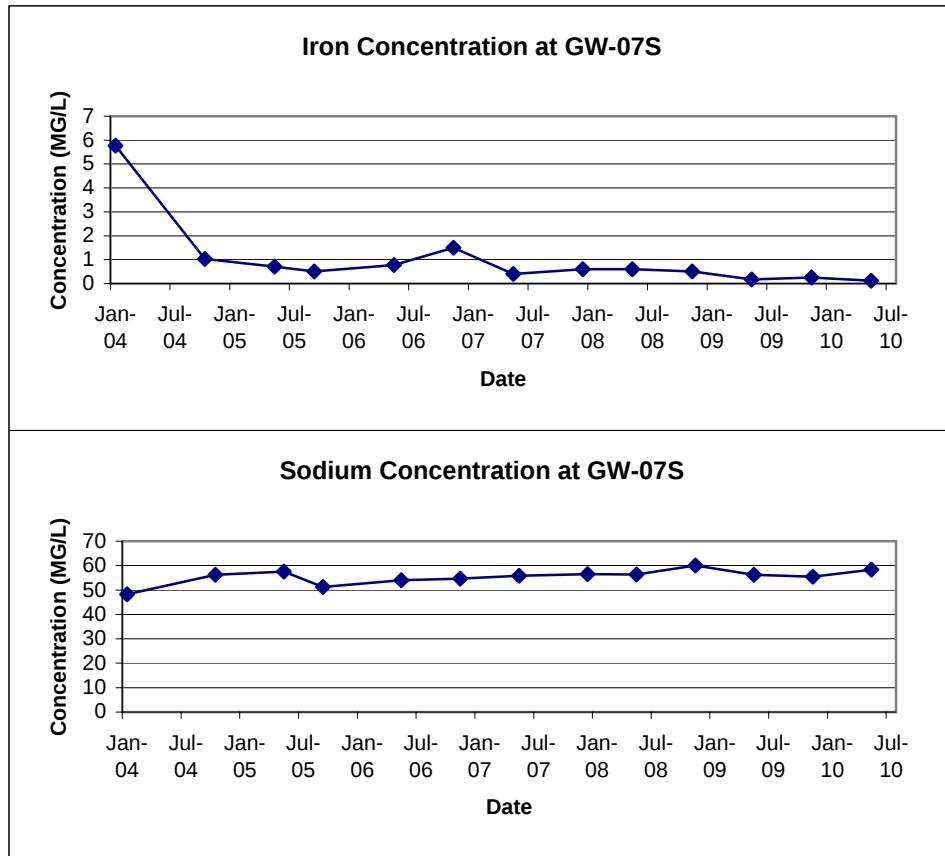


FIGURE E-9
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-8D

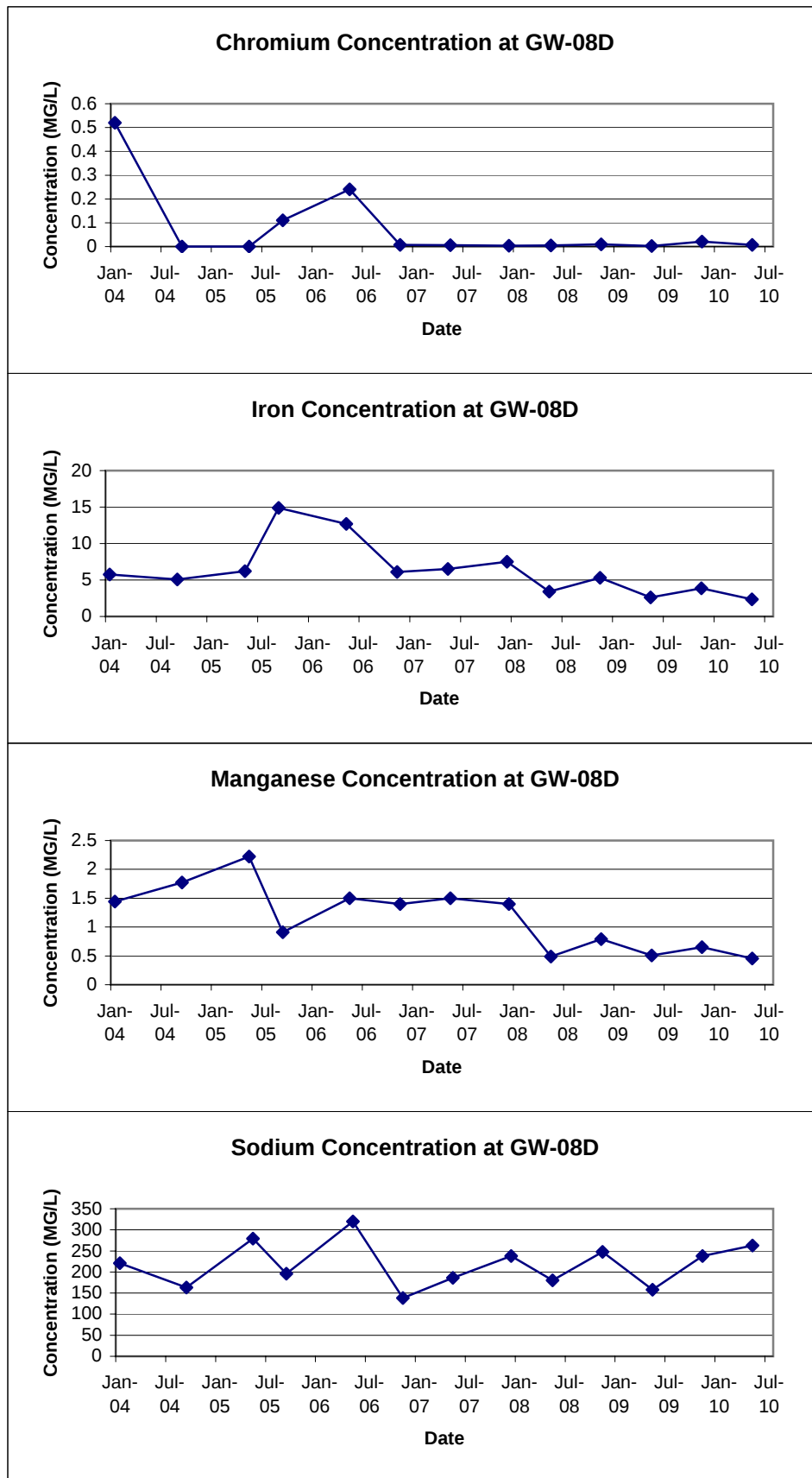


FIGURE E-10
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-08SR

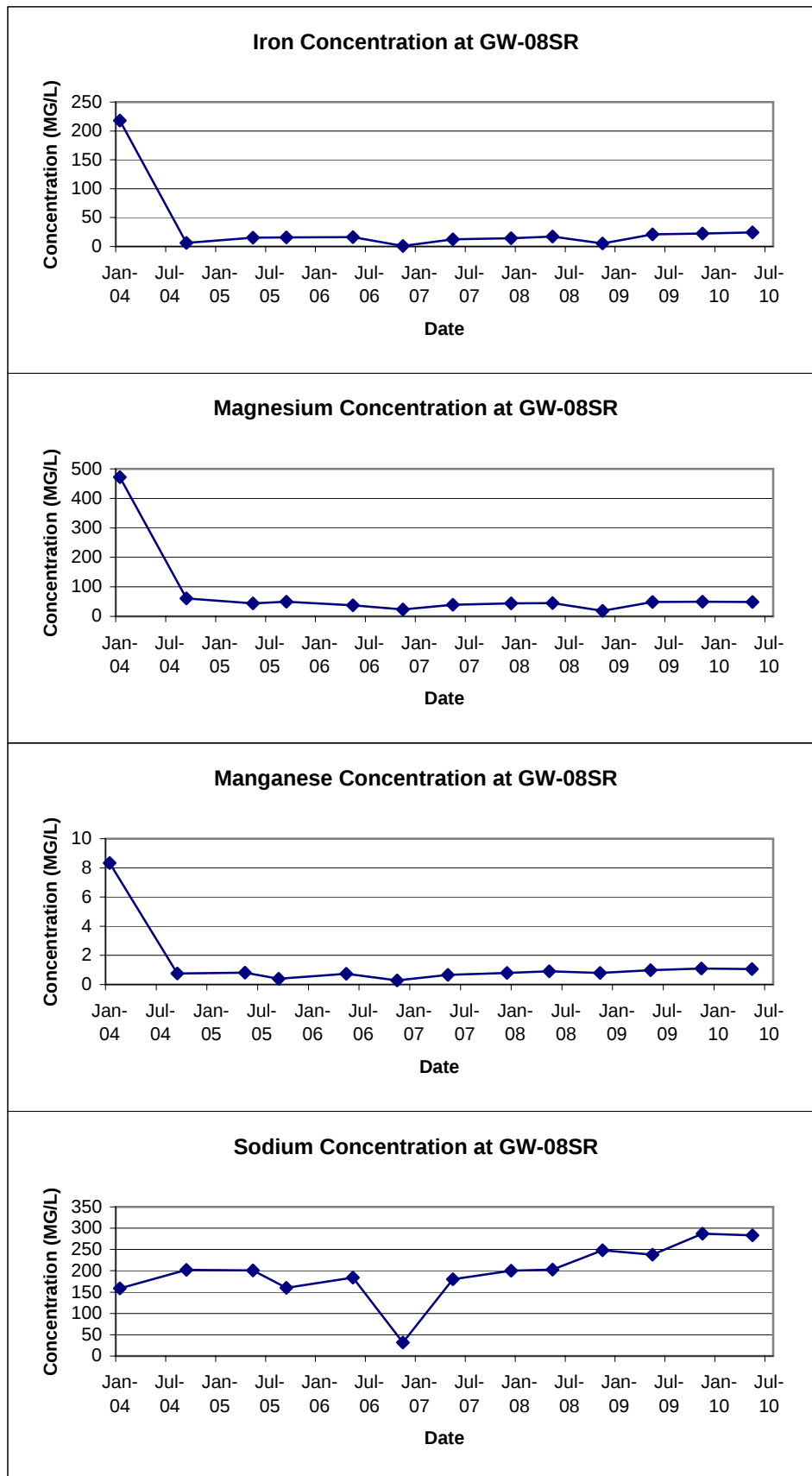


FIGURE E-11
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-26D

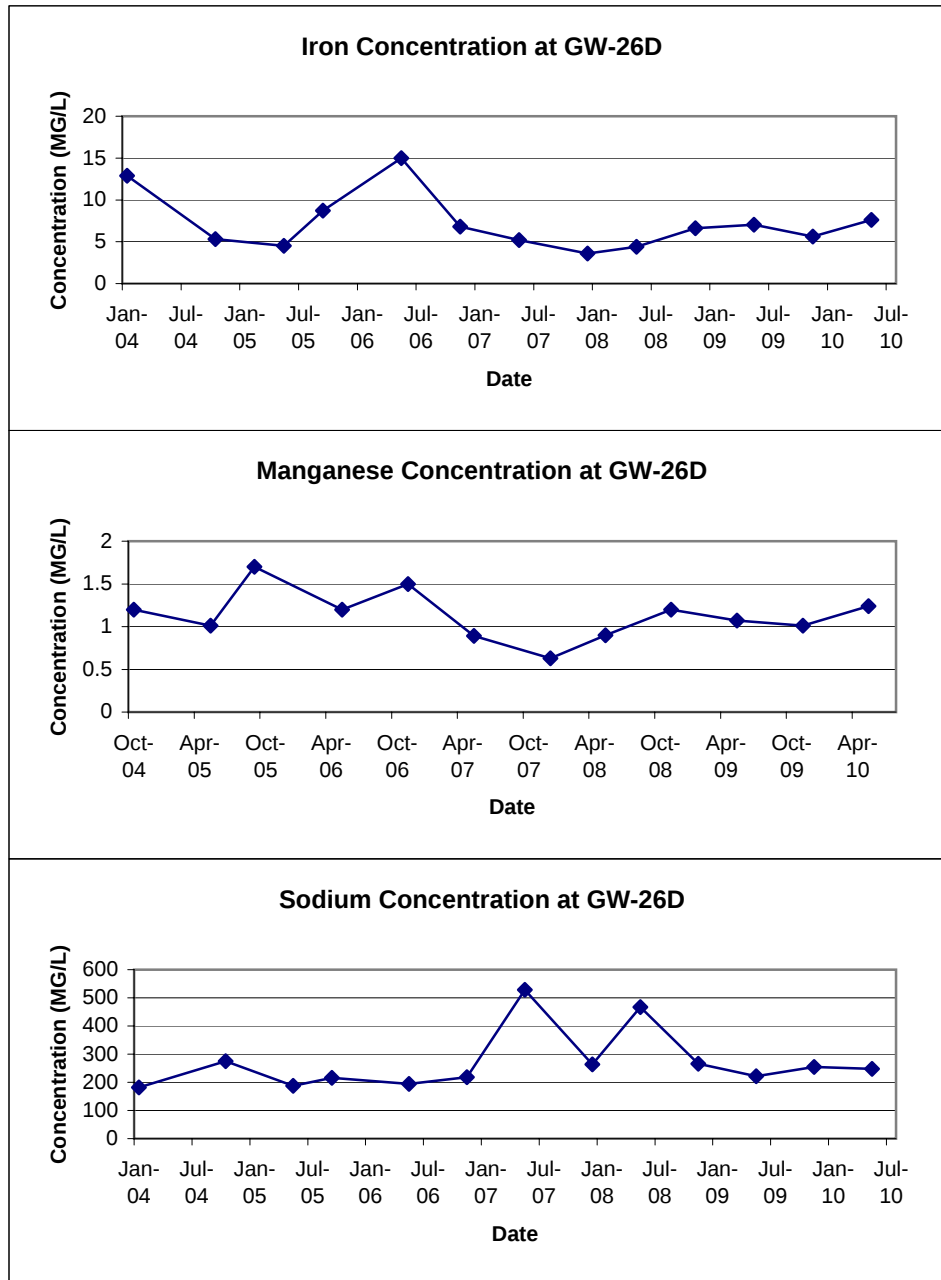


FIGURE E-12
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-28S

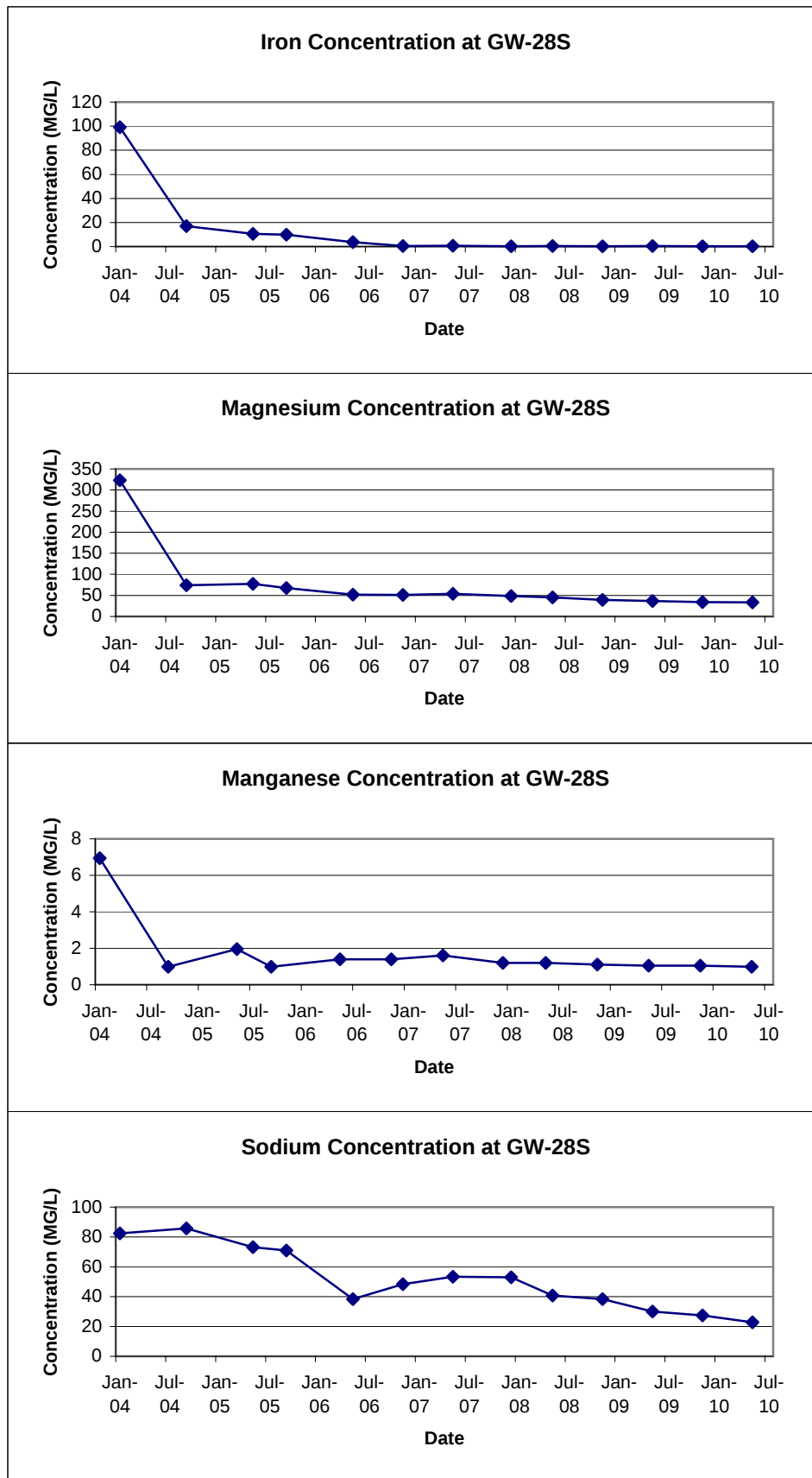


FIGURE E-13
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-29S

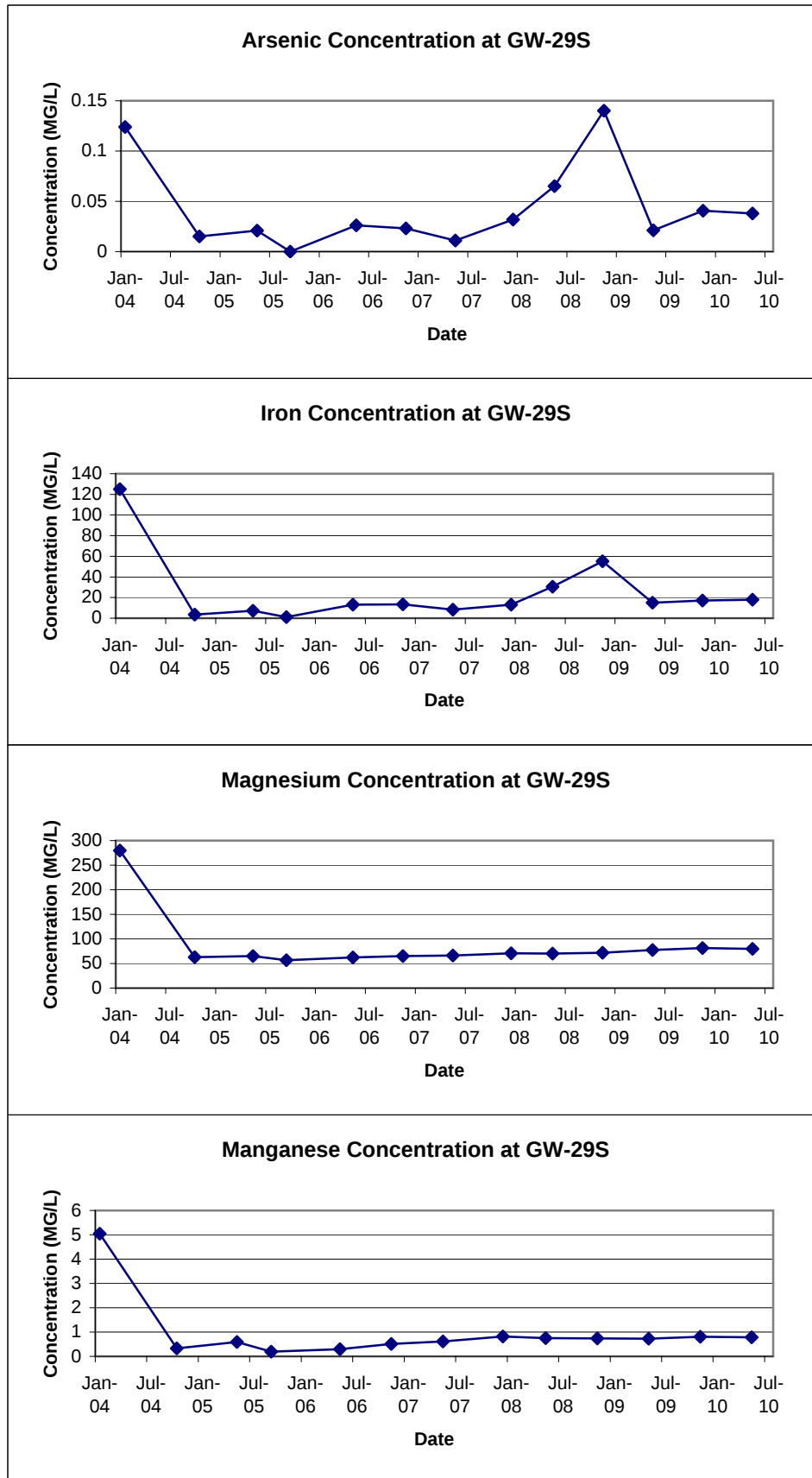


FIGURE E-13
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-29S

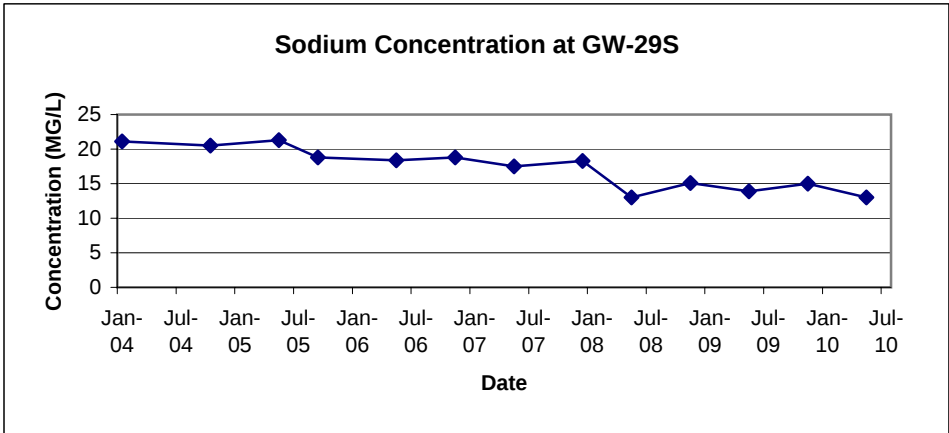


FIGURE E-14
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-30S

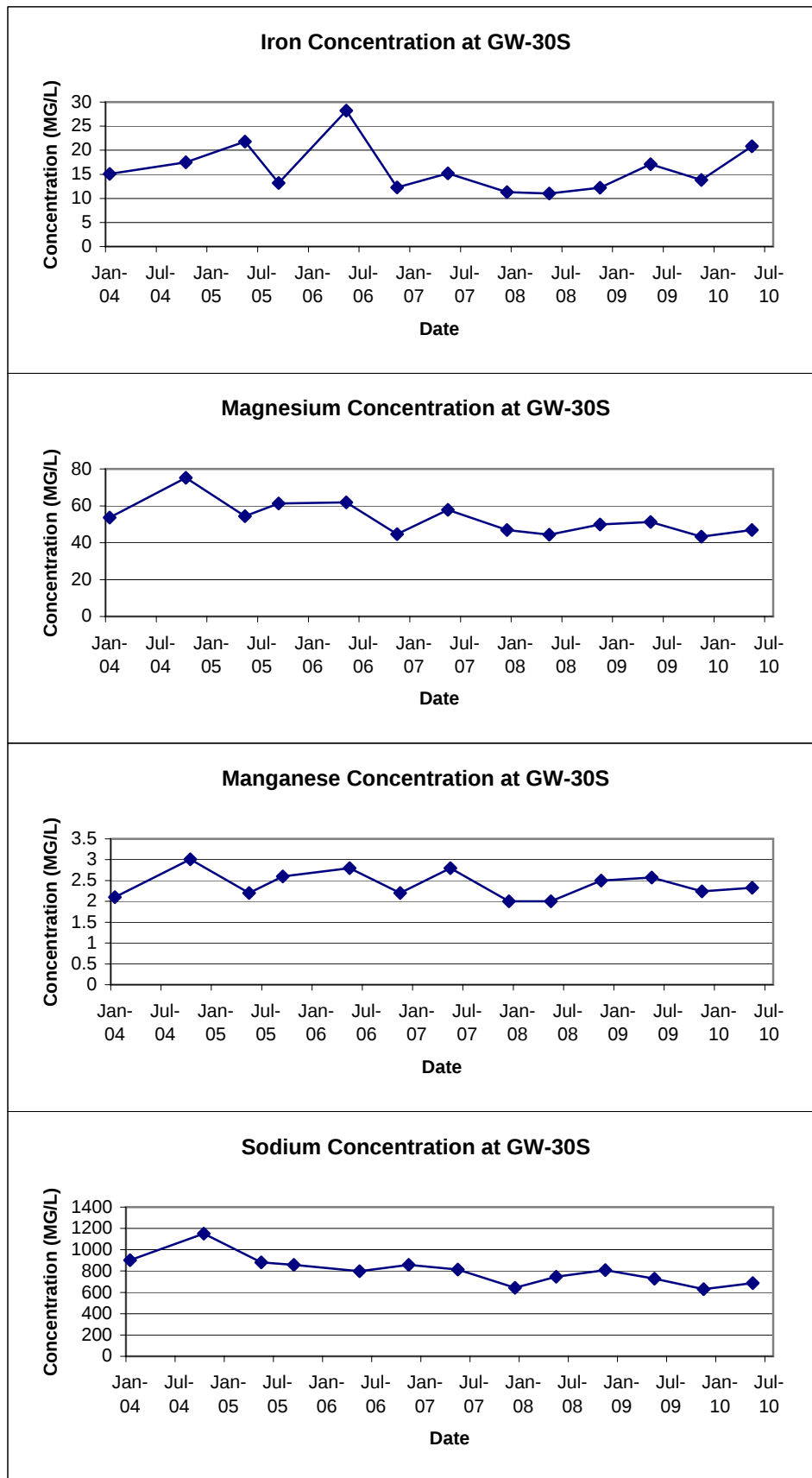


FIGURE E-15
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-31S

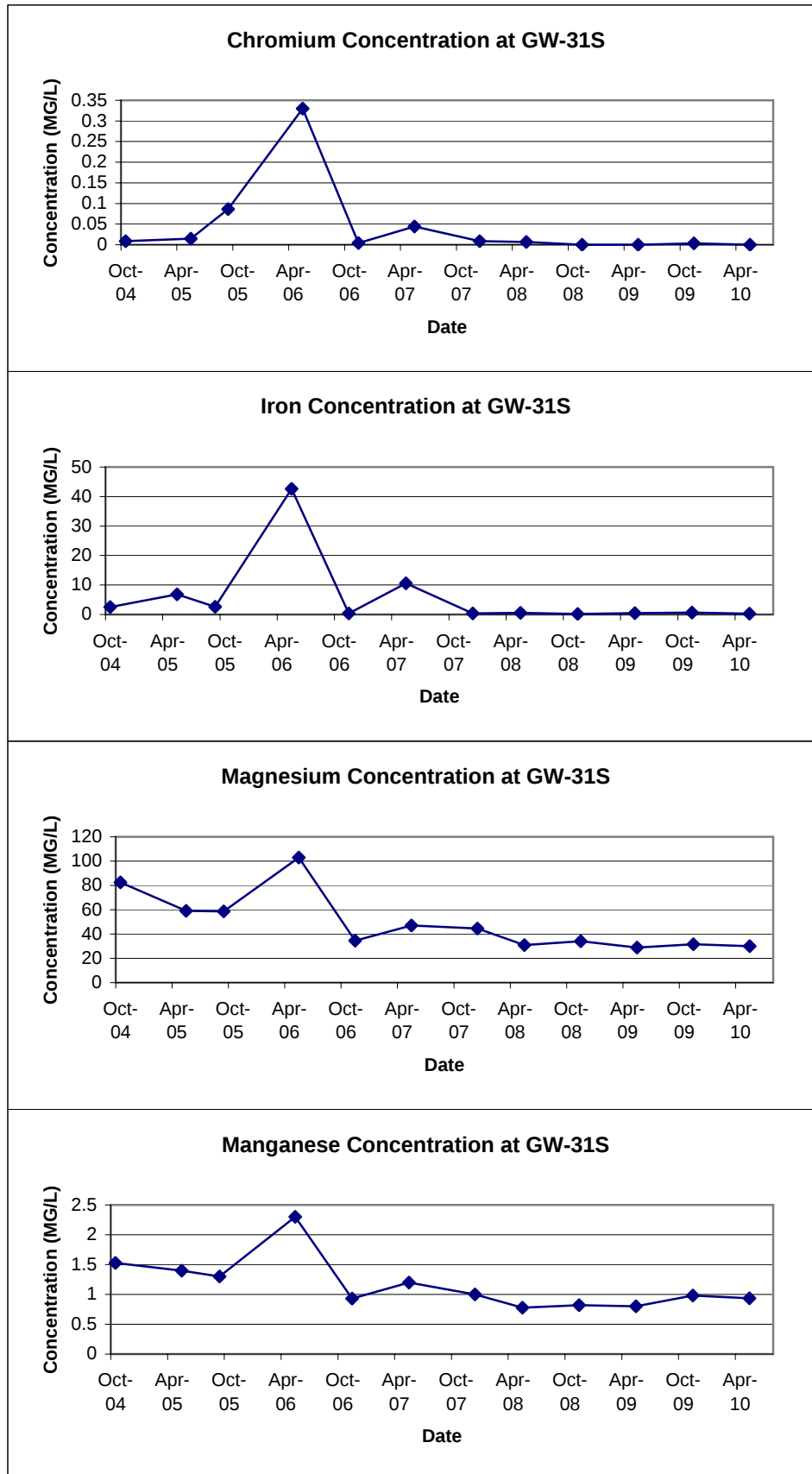


FIGURE E-16
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-32S

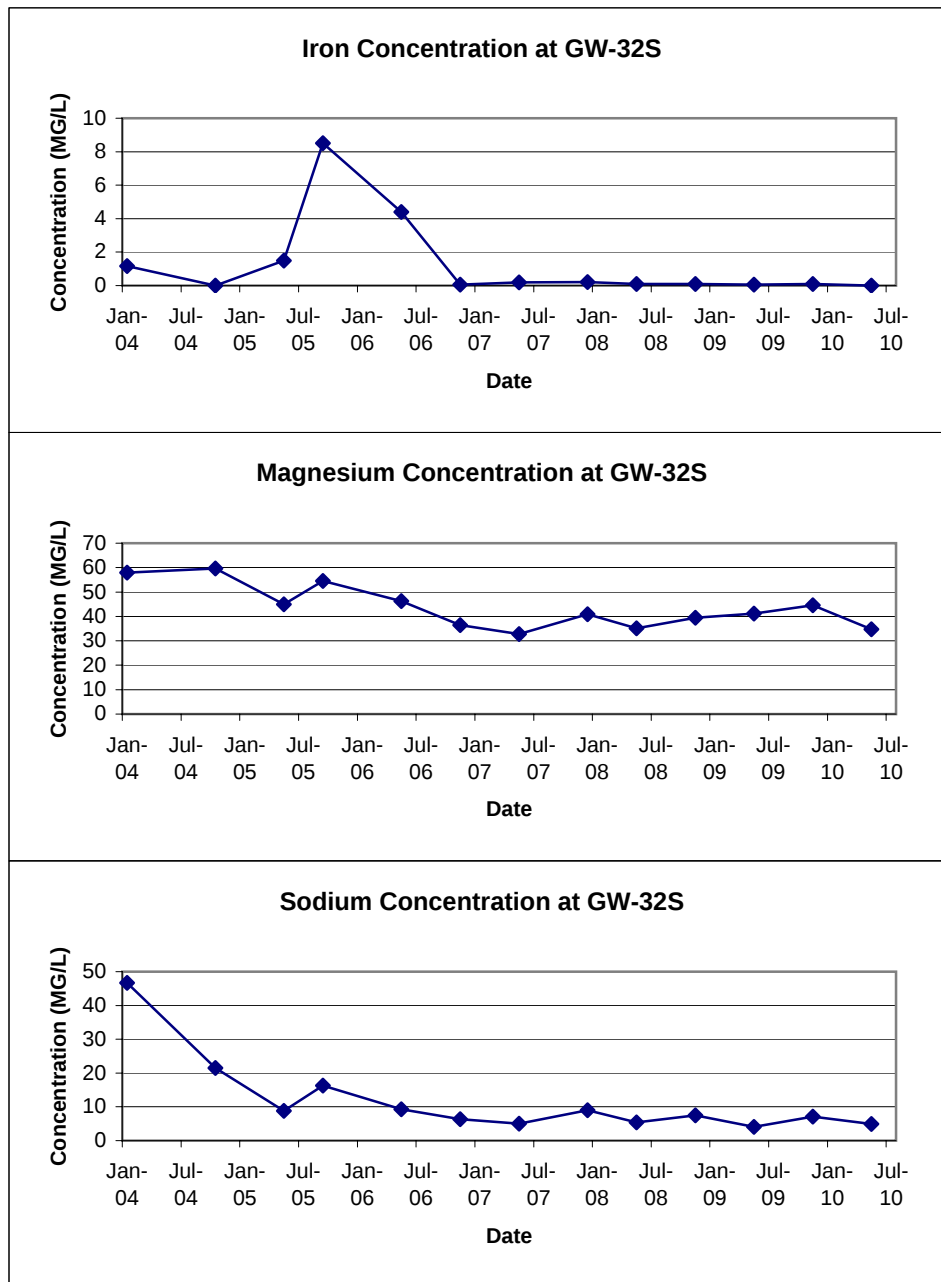


FIGURE E-17
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-33S

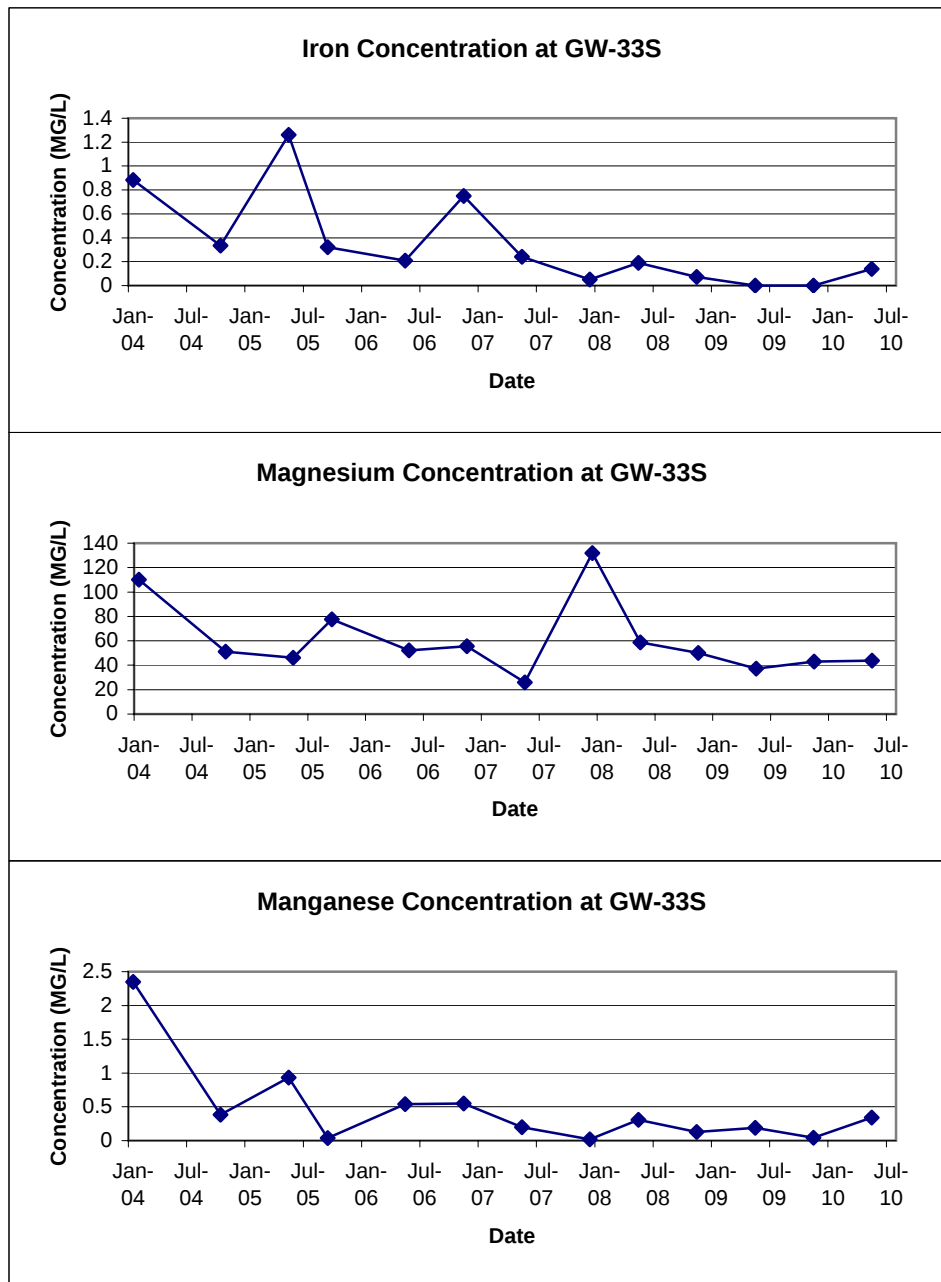


FIGURE E-18
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-34S

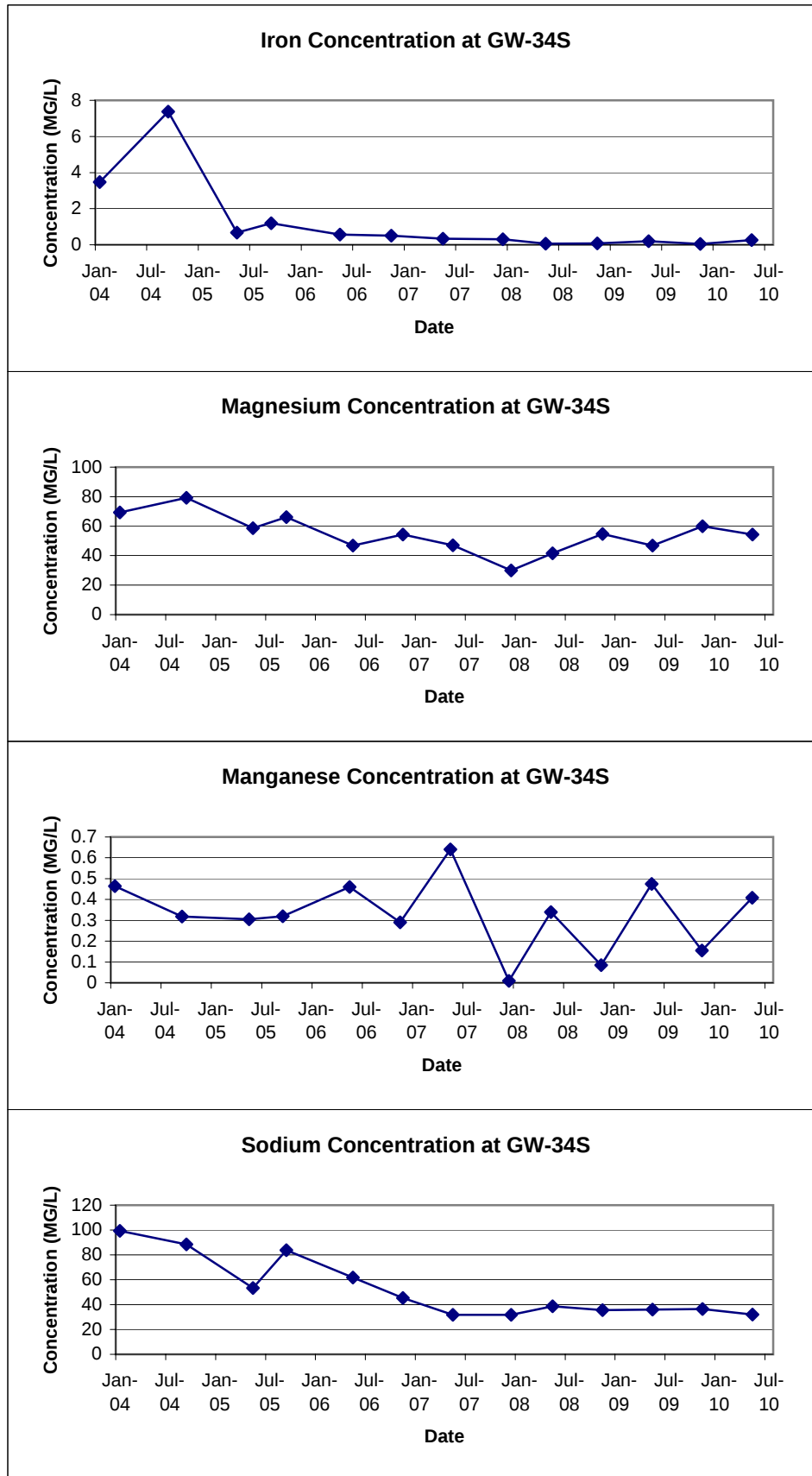
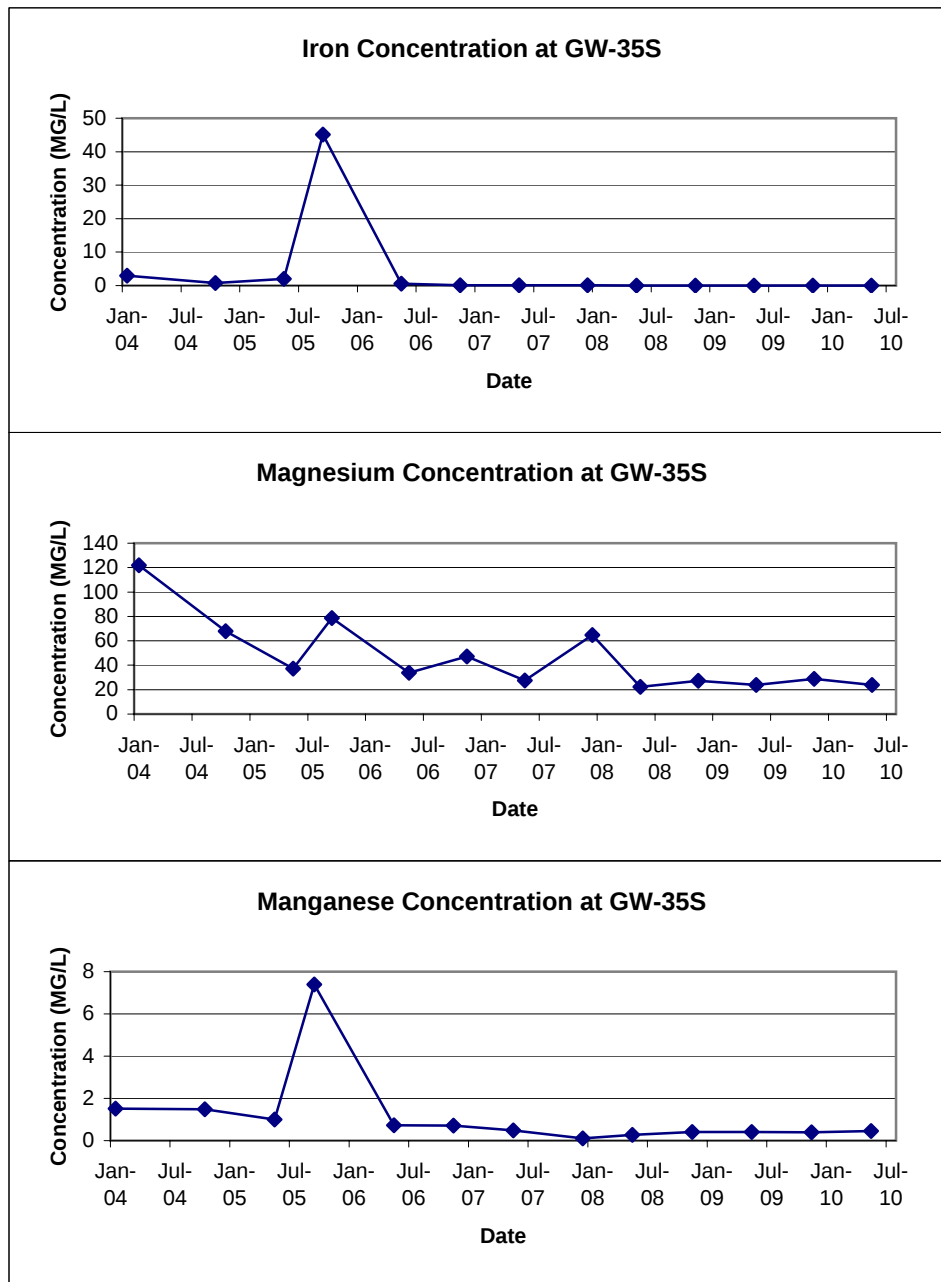


FIGURE E-19
TRENDS OF PARAMETERS ROUTINELY EXCEEDING GROUNDWATER STANDARDS
IN MONITORING WELL GW-35S



APPENDIX F

BSA PERMIT NO. 05-12-CH016

**AUTHORIZATION TO DISCHARGE UNDER THE BUFFALO
POLLUTANT DISCHARGE ELIMINATION SYSTEM**

**PERMIT NO. 05-12-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 April, 2006

To Expire the 31st day of March, 2009



General Manager

Signed this 30th day of March, 2006

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⁾	Sampling Requirements	
		Daily Max	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⁾	Sampling Requirements	
		Daily Max	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

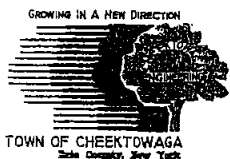
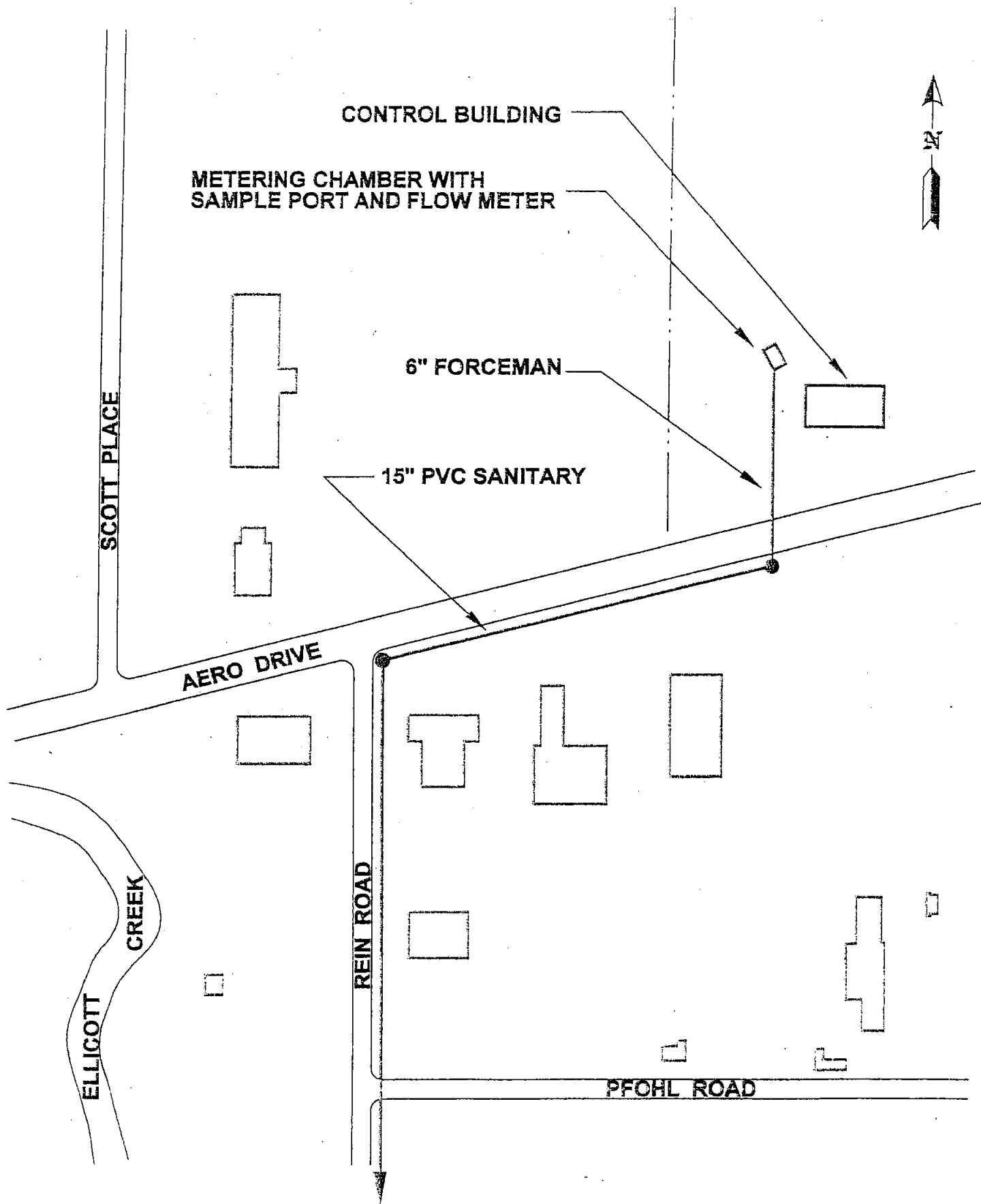
During the period beginning the effective date of this permit and lasting until the expiration date, discharge monitoring results shall be summarized and reported **quarterly** by the permittee on the days specified below:

Sample Point	Parameter	Reporting Requirements	
		Initial Report	Subsequent Reports
001	All except USEPA Test Methods 608, 624, 625 & T Mercury	June 30, 2006	Every March 31 st , June 30 th , September 30 th and December 31 st
	USEPA Test Methods 608, 624 and 625 & T Mercury	March 31, 2008	

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.



TOWN OF CHEEKTOWAGA
CHEEKTOWAGA ENGINEERING DEPT.
ALEXANDER COMMUNITY CENTER
275 ALEXANDER AVE.
CHEEKTOWAGA, NEW YORK 14221
PHONE: (716) 897-7288
FAX: (716) 897-7299

PFOHL BROTHERS LANDFILL SITE

DRAWN BY:	MARK J. CHRISTEL
DATE:	10/28/2002
REVISED:	-
SCALE:	NONE

EXHIBIT

1

FILE: (M: PFOHL BROS.)

APPENDIX G

DISCHARGE REPORT SUMMARY TABLES

SAMPLING FIELD SHEET

URS

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: 3/25/10 Crew: R. Murphy, R. Piurek, T. Ifkovich

Weather: 40° F, cloudy, light rain

Sampling Device: NA

Time of Installation: 10:40 Type of Sample: Composite

Sample Interval: NA Sample Volume: NA

Comments and Observations: Wells WW-01 and WW-5 were running at the time of sample setup.
PLC display volumes: WW-01 (1,097,869 gals), WW-02 (13,788 gals), WW-03 (65 gals),
WW-04 (444,033 gals), WW-05 (4,532,161 gals), WW-06 (4,425,596 gals) & MH-25 (10,531,739 gals).

Date: 3/26/10 Crew: R. Murphy, R. Piurek, T. Ifkovich

Weather: 28° F, clear

Time of Collection: 10:50

Field Measurements:

10:55/RJM pH Calibration: Buffer 7- 7 Buffer 4- 4 Buffer 10- 10
(time/initial)

pH Measurement: 7.0

Temperature: 7.5°C

Identification: EFF-032610

Physical Observations: _____

Laboratory: TestAmerica, Buffalo, NY

Comments: Wells WW-01 and WW-5 were running at the time of sample collection.
PLC display volumes: WW-01 (1,142,801 gals), WW-02 (13,788 gals), WW-03 (65 gals),
WW-04 (444,033 gals), WW-05 (4,585,420 gals), WW-06 (4,425,596 gals) & MH-25 (10,630,269 gals).

Reviewed By: _____ Date: _____
(Supervisor)

TABLE 1

**PFOHL BROTHERS LANDFILL - EFFLUENT MONITORING
ANALYTICAL RESULTS, TOTAL FLOW, AND MASS LOADINGS
MARCH 2010**

Sample ID	EFF-032610			
Matrix	Effluent Water			
Date Sampled	3/26/2010			
Parameter	Result	Mass Loading	Discharge Limitation	Violations
	(mg/L)	(lbs/day)	(lbs/day)	(Y/N)
Total Barium	0.228	0.187	2.34	No
Total Cadmuim	ND ⁽¹⁾	NA ⁽²⁾	1.17	No
Total Chromium	ND	NA	1.17	No
Total Copper	0.0019	0.002	3.74	No
Total Lead	0.0044	0.004	1.17	No
Total Nickel	0.0033	0.003	3.27	No
Total Zinc	0.0523	0.043	5.84	No
Total Suspended Solids	4.8	NA	250 ⁽³⁾	No
pH ⁽⁴⁾	6.99	NA	5.0 - 12.0	No
Total Flow ⁽⁵⁾		98,530	140,000	No

Notes:

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

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

SAMPLING FIELD SHEET

URS

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: 6/15/10 Crew: R. Murphy, T. Ifkovich, M. Kandefer

Weather: 79° F, mostly clear

Sampling Device: NA

Time of Installation: 13:55 Type of Sample: Composite

Sample Interval: NA Sample Volume: NA

Comments and Observations: Well WW-5 was running at the time of sample setup.

PLC display volumes: WW-01 (1,839,370 gals), WW-02 (45,596 gals), WW-03 (65 gals),

WW-04 (785,133 gals), WW-05 (5,568,914 gals), WW-06 (5,098,601 gals) & MH-25 (13,353,815 gals).

Date: 6/16/10 Crew: R. Murphy, T. Ifkovich, M. Kandefer

Weather: 80° F, partly cloudy, windy

Time of Collection: 13:55

Field Measurements:

13:55/RJM pH Calibration: Buffer 7- 7 Buffer 4- 4 Buffer 10- 10
(time/initial)

pH Measurement: 7.2

Temperature: 17.9°C

Identification: EFF-061610

Physical Observations: _____

Laboratory: TestAmerica, Buffalo, NY

Comments: Wells WW-01 and WW-5 were running at the time of sample collection.

PLC display volumes: WW-01 (1,839,370 gals), WW-02 (45,596 gals), WW-03 (65 gals),

WW-04 (785,133 gals), WW-05 (5,598,858 gals), WW-06 (5,098,601 gals) & MH-25 (13,384,255 gals).

Reviewed By: _____ Date: _____

(Supervisor)

TABLE 1

**PFOHL BROTHERS LANDFILL - EFFLUENT MONITORING
ANALYTICAL RESULTS, TOTAL FLOW, AND MASS LOADINGS
JUNE 2010**

Sample ID	EFF-061610			
Matrix	Effluent Water			
Date Sampled	6/16/2010			
Parameter	Result	Mass Loading	Discharge Limitation	Violations
	(mg/L)	(lbs/day)	(lbs/day)	(Y/N)
Total Barium	0.269	0.068	2.34	No
Total Cadmuim	ND ⁽¹⁾	NA ⁽²⁾	1.17	No
Total Chromium	ND	NA	1.17	No
Total Copper	0.0021	0.001	3.74	No
Total Lead	ND	NA	1.17	No
Total Nickel	0.0064	0.002	3.27	No
Total Zinc	0.014	0.004	5.84	No
Total Suspended Solids	ND	NA	250 ⁽³⁾	No
pH ⁽⁴⁾	6.99	NA	5.0 - 12.0	No
Total Flow ⁽⁵⁾		30,440	140,000	No

Notes:

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

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

APPENDIX H

MONITORING WELL INSPECTION LOGS

WELL INSPECTION SUMMARY

Project Name: Pfohl Brothers Landfill

Project Number: 11175616.00000

Inspection Crew Members: R. Murphy, T. Ifkovich

Supervisor: J. Sundquist

Date(s) of Inspection: May 25, 2010

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	4.52	14.94	
GW-1D	OK	OK	OK	Bulged	3.32	39.65	Replaced Lock
GW-3S	OK	OK	OK	OK	3.13	13.23	
GW-3D	OK	OK	OK	OK	2.35	35.7	
GW-4S	OK	OK	OK	OK	4.78	16.23	
GW-4D	OK	OK	OK	OK	13.37	45.57	
GW-7S	OK	OK	OK	OK	5.20	35.04	
GW-7D	OK	OK	OK	Damaged	43.20	60.45	

Additional Comments:

WELL INSPECTION SUMMARY

Project Name: Pfohl Brothers Landfill

Project Number: 11175616.00000

Inspection Crew Members: R. Murphy, T. Ifkovich

Supervisor: J. Sundquist

Date(s) of Inspection: May 25, 2010

<i>Well I.D. Number</i>	<i>Lock</i>	<i>Surface Seal</i>	<i>Protective Casing</i>	<i>Riser</i>	<i>Water Level (ft. BTOC)</i>	<i>Well Depth (ft. BTOC)</i>	<i>Other Comments</i>
GW-8SR	OK	OK	OK	OK	5.39	13.03	
GW-8D	OK	OK	OK	OK	6.33	36.54	
GW-26D	OK	OK	OK	OK	7.17	40.72	
GW-28S	OK	OK	OK	OK	9.53	15.53	
GW-29S	OK	OK	OK	OK	8.79	19.96	
GW-30S	OK	OK	OK	OK	8.14	17.95	
GW-31S	OK	OK	OK	OK	3.76	9.57	
GW-32S	OK	OK	OK	OK	4.04	9.92	

Additional Comments:

WELL INSPECTION SUMMARY

Project Name: Pfohl Brothers Landfill

Project Number: 11175616.00000

Inspection Crew Members: R. Murphy, T. Ifkovich

Supervisor: J. Sundquist

Date(s) of Inspection: May 25, 2010

<i>Well I.D. Number</i>	<i>Lock</i>	<i>Surface Seal</i>	<i>Protective Casing</i>	<i>Riser</i>	<i>Water Level (ft. BTOC)</i>	<i>Well Depth (ft. BTOC)</i>	<i>Other Comments</i>
GW-33S	OK	OK	OK	OK	5.50	8.18	
GW-34S	OK	OK	OK	OK	3.27	10.00	
GW-35S	OK	OK	OK	OK	4.26	7.47	

Additional Comments:
