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Operation, Maintenance, and Monitoring Report for the Bethpage Park Groundwater Containment System

2014 Annual Summary

Operable Unit 3 (Former Grumman Settling Ponds)
Bethpage, New York

NYSDEC ID # 1-30-003A

August 27, 2015

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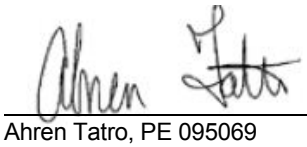

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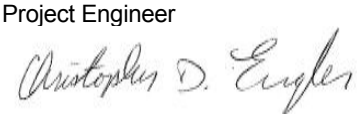

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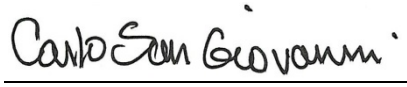

Carlo San Giovanni
Project Manager

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NY001496.114I.OMMI4

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Table of Contents

Tables

Figures

Appendices

Acronyms and Abbreviations

AOC	Administrative Order on Consent
ASP	Analytical Services Protocol
BPGWCS	Bethpage Park Groundwater Containment System
DAR-1	Division of Air Resources AirGuide-1
ECU	emission control unit
GAC	granular activated carbon
gpm	gallons per minute
µg/L	micrograms per liter
MASC	Maximum Allowable Stack Concentration
NWIRP	Navy Weapons Industrial Reserve Plant
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OM&M	Operation, Maintenance, and Monitoring
OU	Operable Unit
PPZ	potassium permanganate-impregnated zeolite
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
SCADA	supervisory control and data acquisition

SCG	standard, criteria, and guidance
SPDES	State Pollutant Discharge Elimination System
TCL	Target Compound List
TVOC	total volatile organic compound
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

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Operation, Maintenance, and Monitoring Report Bethpage Park Groundwater Containment System

2014 Annual Summary

1. Introduction

Pursuant to the Administrative Order on Consent (AOC) Index # W1-0018-04-01 (NYSDEC 2005) and the Operable Unit 3 (OU3) Record of Decision (ROD; NYSDEC 2013), ARCADIS of New York, Inc. (ARCADIS), on behalf of Northrop Grumman Systems Corporation (Northrop Grumman), has prepared this OU3 Bethpage Park Groundwater Containment System (BPGWCS) Annual Operation, Maintenance, and Monitoring (OM&M) Report for submittal to the New York State Department of Environmental Conservation (NYSDEC). The present day Bethpage Community Park property (Park) and the McKay Field and Former Grumman Plant 24 Access Roads, which the NYSDEC has termed the "Former Grumman Settling Ponds Area" and designated as OU3, are referred to herein as the Site Area. A Site Area Location map is provided as Figure 1.

The BPGWCS has been operational since July 21, 2009. This annual OM&M report summarizes the OM&M activities conducted, data collected, summary of system alarms, conclusions, recommendations, and engineering certification for the BPGWCS during 2014 (i.e., from January 1 to December 31, 2014). This report also describes the OM&M activities performed during the fourth quarter of 2014 (i.e., October 1 through December 31, 2014 [the "fourth quarter reporting period"]) in additional detail. Detailed OM&M descriptions of the previous three 2014 operational quarterly periods were provided in the following reports (2014 Quarterly Reports):

- Quarterly OM&M Report for the BPGWCS, January 1 through March 31 (ARCADIS 2014a)
- Quarterly OM&M Report for the BPGWCS, April 1 through June 31 (ARCADIS 2014b)
- Quarterly OM&M Report for the BPGWCS, July 1 through September 30 (ARCADIS 2014c)

During 2014, Remedial System and Environmental Effectiveness Monitoring Programs were conducted in accordance with the NYSDEC-approved OU3 Interim Groundwater Interim Remedial Measure (IRM) OM&M Manual (OM&M Manual; ARCADIS 2009) and the remedial well maintenance program described in the 2011 Annual Report (ARCADIS 2012).

As discussed in the OU3 Site Area Remedial Investigation Report (Site Area RI) (ARCADIS 2011), Northrop Grumman does not take responsibility for certain compounds (e.g., Freon 12 and Freon 22) present in the Site Area groundwater. This report distinguishes between the "Project" and "Non-Project" volatile organic compounds (VOCs), which are defined as follows:

- "Project VOCs:" VOCs that may be related to former Northrop Grumman historical activities. For this report, Project VOCs include 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethene; vinyl chloride; cis-1,2-dichloroethene; trans-1,2-dichloroethene; benzene; toluene; and total xylenes.

- "Non-Project VOCs:" VOCs, such as Freon 12 and Freon 22, that are understood to be unrelated to former Northrop Grumman activities but have been detected in the Site Area groundwater. As noted in the Site Area RI (ARCADIS 2011), a sub-plume of Freon 22 has been identified originating from the area of the Town of Oyster Bay's (Town's) former ice rink (shown on Figure 2). Based on Town information (Zervos, Theodore 2007), Freon 22 was used by the Town and released to the environment.

2. Bethpage Park Groundwater Containment System Objectives

The remedial action objectives (RAOs) for the BPGWCS are as follows:

- Mitigate the off-site migration of dissolved-phase VOCs. Specifically, the BPGWCS addresses:
  - Groundwater that exhibits total volatile organic compound (TVOC) concentrations higher than 5 micrograms per liter (µg/L) in the upper 20 feet of the surficial aquifer across the 1,200-foot-wide lateral extent of the Site Area southern boundary
  - Groundwater below the upper 20 feet of the surficial aquifer that exhibits TVOC concentrations higher than 50 µg/L across the 1,200-foot-wide lateral extent of the Site Area southern boundary
- Comply with applicable NYSDEC standards, criteria, and guidance values (SCGs) for treated water and air emissions.

A secondary benefit of the BPGWCS is the creation of a clean-water front atop the downgradient groundwater, which minimizes the potential for vapor intrusion downgradient of the Site Area.

3. Bethpage Park Groundwater Containment System Description

The BPGWCS consists of:

- A "pump-and-treat system" where groundwater is:
  - Extracted along the Plant 24 Access Road via four remedial wells
  - Conveyed to a treatment plant at McKay Field via four underground pipelines
  - Treated via air stripping to reduce concentrations of Project and Non-Project VOCs
  - Filtered to remove oxidized metals to comply with applicable NYSDEC SCGs for treated water
  - Returned to the aquifer via a discharge pipeline routed to a recharge basin located on the adjacent former Bethpage Navy Weapons Industrial Reserve Plant (NWIRP) property.
- A vapor-phase treatment system that reduces concentrations of Project VOCs in the air stripper off-gas prior to discharge to the atmosphere
- A groundwater monitoring network that is periodically monitored to assess the environmental effectiveness of the BPGWCS.

The major components of the BPGWCS are:

- Four remedial wells (RW-1, RW-2, RW-3, and RW-4) with design pumping rates of 30 gallons per minute (gpm), 75 gpm, 75 gpm, and 30 gpm, respectively; for a total design influent rate of 210 gpm
- One low-profile air stripper to remove VOCs from the extracted groundwater prior to discharge to the recharge basins

- Two bag filters configured so that one is “operational” and the other is in “standby” mode. The system control logic automatically switches from the “operational” filter unit to the “standby” filter unit when the bag filters have reached capacity to prevent a system shutdown. The spent filters are then replaced, and the unit is placed in “standby” mode.

- Four emission control units (ECUs), two containing vapor-phase granular activated carbon (VPGAC) and two containing potassium permanganate-impregnated zeolite (PPZ). The VPGAC ECUs treat the Project VOCs in the air stripper off gas, except for vinyl chloride, which is treated by the PPZ ECUs.

- The groundwater monitoring network consists of 35 monitoring locations, including 17 groundwater monitoring wells, four remedial wells, and 14 piezometers.

Additional information about the BPGWCS is provided in the OM&M Manual (ARCADIS 2009). The layout of the BPGWCS is shown on Figure 2, and a schematic drawing is provided on Figure 3. The groundwater sampling locations that form the groundwater monitoring network are shown on Figure 4. Construction details for the monitoring wells and piezometers are provided in Appendix A.

4. Operation and Maintenance Activities

4.1 Fourth Quarter 2014

The BPGWCS operated continuously during the fourth quarter reporting period with the exception of brief shutdown periods for routine maintenance and alarm conditions. BPGWCS operation and maintenance (O&M) activities conducted during the fourth quarter reporting period are described below and are summarized in Table 1:

- The system operated full-time, 92 out of 92 days (greater than 99% uptime).

- Based on the volume of groundwater recovered, the remedial wells operated at quarterly average flow rates of 30 gpm (RW-1), 54 gpm (RW-2), 73 gpm (RW-3), and 30 gpm (RW-4). The observed quarterly average flow rate for remedial well RW-2 was lower than its design quarterly flow rate (75 gpm) due to approximately 10 days of downtime attributed to a faulty pump in RW-2 (October 6, 2014 to October 16, 2014) and approximately 57 days of reduced flow due to an underperforming pump in RW-2 (October 22, 2014 to December 18, 2014). The

extended period of reduced flow occurred during the assessment of the pumps and subsequent pump repairs.

- Remedial wells operated at reduced instantaneous flow rates (between 68% and 99% of design) during portions of the reporting period due to iron buildup in the pumps, influent pipelines, valves, and the underperforming pump described above. The reduced flow rates were corrected by adjusting the manifold globe valves and performing remedial well maintenance. The underperforming pump was replaced on December 18, 2014 following the pump assessments noted above to ensure the pumps in stock were in good working condition.

- The system was monitored during the majority of business days, either via a site visit or remotely by wireless computer link-up.

- The Supervisory Control and Data Acquisition (SCADA) system operated as designed, and when conditions warranted (see below), shut the system down automatically and instantaneously, and provided notification of system advisories and alarms to plant operators.

- Intentional system shutdowns were as follows (see Table 1 for more information):

  – Installation of a new pump and motor shroud at Remedial Well RW-2 (October 16, 2014)

  – Routine system maintenance (November 4, 2014)

  – Installation of a new pump in Remedial Well RW-2 (December 18, 2014)

- System shutdowns due to alarm conditions were as follows (see Table 1 for more information):

  – Low pressure alarm at Remedial Well RW-2 (October 6, 2014): Problem – The pump spline had sheared off due to overtightening of the pump during repairs by the subcontractor. Solution – the pump was replaced following an assessment of all pumps used for Remedial Wells RW-2 and RW-3.

  – Air stripper sump high level alarm (October 22, 2014): Problem – the strainer prior to the transfer pump was clogged. Solution – the strainer was cleaned and the system restarted.

4.2 2014 Annual System Performance and Alarm Summary

The 2014 system operation up-time is provided in Table 1 and summarized below. System shutdowns that occurred in 2014 are summarized below, and are described in the three 2014 Quarterly Reports (ARCADIS 2014a, ARCADIS 2014b, and ARCADIS 2014c) and in this report. In general, system operation in 2014 is consistent with operation in previous years:

- The system operated full-time, 349 out of 365 days (96% uptime).

- The remedial wells operated at reduced flow rates (between 68% to 99% of design) during portions of the year due to pump malfunctions and iron buildup in the pumps, influent pipelines, and valves. The reduced flow rates were corrected by adjusting the manifold globe valve or through the performance of periodic maintenance (e.g., remedial well Aqua Gard™ and Aqua Freed™ treatments, pulling and replacing the remedial well pumps, and valve cleaning). Other, non-periodic maintenance was also performed to correct the reduced flow rates experienced at the recovery wells. This maintenance included the installation of motor shrouds at RW-2 and RW-3. While the maintenance measures did not eliminate the problems associated with iron fouling, they lessened the flow rate impacts and provided a means to manage problematic iron fouling and maintain system uptime.

- There were 27 system shutdowns, of which:

  - One shutdown was due to temporary power interruptions or suspected poor local power service.

  - Thirteen shutdowns were for system maintenance (e.g., periodic preventative system maintenance, remedial well maintenance, and required system repairs/upgrade).

  - Thirteen shutdowns were due to alarm conditions encountered during the normal operation of the system:

    - Seven shutdowns were due to well alarms (e.g., low pressure, motor overload). As noted above, these problems were corrected by replacing the motors and pumps and installing motor shrouds at RW-2 and RW-3.

- One shutdown was due to an air stripper high sump level. When the system shut down, the building temperature dropped below freezing, and attempts to restart damaged the transfer pump. This problem was corrected by placing temporary heaters in the building and replacing the transfer pump.

- One shutdown was due to an air stripper high sump level caused by a clogged strainer. This problem was corrected by cleaning the strainer.

- One shutdown was due to an air stripper high sump level. This alarm appeared to be an anomaly.

- One shutdown was due to a building high sump level caused by a leak at the bag filter differential pressure switch. This problem was corrected by repairing the leak and emptying the building sump.

- One shutdown was caused when the second bag filter clogged before an operator could change out the first spent bag filter. As noted above, this situation is atypical and the solution is to change out the bag filters and restore normal operations as soon as feasible.

- One shutdown was due to a bag filter differential high pressure alarm due to a malfunctioning valve. This problem was corrected by inspecting the valve and changing the bag filter.

For the most part, the system was able to be restarted without incident the same day or the day following an alarm. As described above, the majority of the operational issues were related to iron fouling in the remedial wells.

5. Treatment System Compliance and Performance Monitoring

5.1 Fourth Quarter 2014 System Monitoring Activities

The following compliance and performance monitoring events were performed during this fourth quarter reporting period (see Appendix B, Table B-1 for a summary of the compliance and performance monitoring program requirements):

- Three sampling events to collect required water samples and air samples.

- Thirteen weekly site visits to monitor and record key system operational parameters.

The system operation and monitoring results are summarized in the following tables, graphs, and appendices:

- An Operational Summary, including monitoring events, system operational days, and noteworthy site activities (Table 1).

- Summary of Influent and Effluent Water Sample Analytical Results (Tables 2 and 3, respectively). Table 3 also provides the BPGWCS treatment system removal efficiency. Complete validated Water Sample Analytical Result Summaries for each sampling event are included in Appendix B.

- Summary of Influent and Effluent Vapor Sample Analytical Results (Tables 4 and 5, respectively). Table 5 also provides the BPGWCS treatment system removal efficiency. Complete, validated Vapor Sample Analytical Results for each sample event are included in Appendix C.

- System parameters including flow rates, line pressures, and temperatures are provided in Table 6.

- Summaries of Groundwater Recovered, VOC Mass Recovered, and VOC Recovery Rates (Table 7). Table 7 provides a breakdown of these parameters by remedial well and system and also breaks down the VOC mass recovered and VOC recovery rates into Project, Non-Project, and total VOCs.

- Air Discharge Quality Evaluation and Compliance Table is provided in Appendix D and Table 8, respectively.

- Concentrations of VOCs and metals in remedial well groundwater samples are provided in Tables 9 and 10, respectively.

- Cumulative total, Project, and Non-Project VOC mass removed is illustrated on Figure 5.

- Remedial well total, Project, and Non-Project VOC concentrations are illustrated on Figures 6A, 6B, and 6C, respectively.

- Influent total, Project, and Non-Project VOC concentrations are illustrated on Figure 7.

- Total, Project, and Non-Project VOC mass recovery rates are illustrated on Figures 8A, 8B, and 8C, respectively.

5.2 2014 System Monitoring Activities

In addition to the fourth quarter system monitoring discussed in Section 5.1 above, the system compliance and performance monitoring activities performed during the previous three quarterly periods are described in the 2014 Quarterly Reports (ARCADIS 2014a, ARCADIS 2014b, and ARCADIS 2014c).

5.3 Summary of OM&M Results and Conclusions

5.3.1 System Operation and Effectiveness

Fourth quarter and annual BPGWCS OM&M results and conclusions are summarized below:

- Total volume of groundwater recovered and treated (Table 7):
  - Fourth Quarter 2014: 25 million gallons
  - 2014 Annual Total: 96 million gallons
  - Cumulative Total Since System Startup: 557 million gallons
- Total VOC mass recovered (Table 7 and Figures 5, 8A, 8B, and 8C):
  - Fourth Quarter 2014: 16 pounds (lbs) of VOCs
  - 2014 Annual Total: 85 lbs of VOCs
  - Cumulative Total Since System Startup: 2,054 lbs of VOCs
- Project and Non-Project VOC mass recovered and mass removal rates (Table 7 and Figures 8A, 8B, and 8C):

  - The majority of total VOCs recovered during the fourth quarter reporting period were Project VOCs (78% or 12 lbs). The majority of total VOCs recovered during 2014 were Project VOCs (79% or 67 lbs).

  - The majority of Project VOCs are recovered by RW-2 (95.2% during the fourth quarter reporting period and 95.8% during 2014) and RW-3 (3.6% during the fourth quarter reporting period and 2.7% during 2014).

  - The majority of the Non-Project VOCs are recovered by RW-3 (42% during the fourth quarter reporting period and 47% during 2014) and RW-4 (48% during the fourth quarter reporting period and 45% during 2014).

- Treatment system influent concentrations (Table 2 and Figure 7):

  - Project VOC influent concentrations (ranging from 36 to 45 µg/L) during the fourth quarter reporting period are consistent with the range of values detected throughout 2014, but are well below the peak concentration observed in 2014 (105 µg/L). Additionally, concentrations detected during 2014 are significantly below the peak project concentration of approximately 1,000 µg/L (in July, 2009). Project VOC influent concentrations have generally decreased since 2010.

  - Non-Project VOC influent concentrations (ranging from 10.7 to 12.4 µg/L) during the fourth quarter reporting period are consistent with the range of values detected throughout 2014, and are below the peak concentration observed in 2014 (55 µg/L). Additionally, concentrations detected during 2014 are significantly below the peak project concentration of 650 µg/L (May, 2010). Non-Project VOC influent concentrations have generally decreased since 2010.

  - Mercury has not been detected in an influent sample since system startup.

- Project VOCs in samples collected from Remedial Wells RW-1, RW-3 and RW-4 (Table 9) for the fourth quarter reporting period were not detected above applicable SCGs, while in RW-2 samples, several Project VOCs (cis-1,2-dichloroethene, toluene, trichloroethene, and vinyl chloride) continue to be detected at concentrations higher than applicable SCGs. Similar to total influent concentrations, Project VOC remedial well concentrations have generally decreased since 2010.

- Non-Project VOCs in samples collected from all four remedial wells (Table 9) for the fourth quarter reporting period were not detected at concentrations higher than applicable SCGs. Similar to total influent concentrations, Non-Project VOC remedial well concentrations have generally decreased since 2010.

- Metals concentrations in samples collected from all four remedial wells in 2014 were consistent with concentrations in previous years, including infrequent, anomalously high iron concentrations in Remedial Well RW-2 (in October and November, 2014). These anomalous concentrations are believed to be attributed to the iron precipitate that coats the well and pipeline; specifically, small pieces of the iron precipitate can break off and become entrained in the influent groundwater (Table 10).

- The air stripper, air stripper off gas treatment system, and bag filter system performed within acceptable operating ranges for this reporting period and for 2014, as indicated by:

  – The air stripper VOC removal efficiency was greater than 99.9 percent for Project and Non-Project VOCs (Table 3).

  – Both the water and air discharges comply with applicable SCGs and discharge limits (Tables 3, 5, and 8).

5.3.2 Regulatory Status of Discharges

5.3.2.1 Air Discharge

To determine the compliance status of air discharge from the BPGWCS treatment system, the system's effluent vapor concentrations were compared to NYSDEC Division of Air Resources Air Guide-1 (DAR-1) Model Short-term Guideline Concentrations (SGCs [NYSDEC 2014]; Table 5), and the effluent vapor laboratory results were compared to a site-specific modeled annual maximum allowable stack concentration (MASC). The annual MASC was calculated during each monitoring event for individual compounds using the output from the United States Environmental Protection Agency (USEPA) SCREEN3 Model in conjunction with the NYSDEC DAR-1 Annual Guideline Concentrations (AGCs). A scaling factor was calculated using the SCREEN3 model with site-specific physical layout information (e.g., building dimensions, stack height, terrain) and operating data (e.g., air flow rate, temperature) inputs for each monitoring event. The scaling factor was then used to adjust (scale) the

NYSDEC DAR-1 AGC to a site-specific MASC. A summary of the instantaneous percent (i.e., not time- weighted) of the site-specific annual MASC for Project VOCs, Freon 12, and Freon 22 is provided in Table 8. A summary of the cumulative annual percent (i.e., time-weighted) of the site-specific MASC for detected compounds is also provided in Table 8. A summary of the model inputs, outputs, and backup calculations is provided in Appendix D.

The BPGWCS air effluent met NYSDEC requirements throughout the fourth quarter reporting period and 2014, as indicated by the following:

- The measured concentrations of individual VOCs in the vapor effluent did not exceed applicable SGCs (Table 5).

- The measured concentrations of individual VOCs in the vapor effluent did not exceed their applicable, instantaneous MASCs, as calculated using the USEPA SCREEN 3 Model (Table 8). Similarly, the time-weighted rolling averages for the individual Project VOCS, Freon 12, and Freon 22 are below their respective MASCs.

5.3.2.2 Water Discharge

The BPGWCS treated water effluent met NYSDEC regulatory requirements during the fourth quarter reporting period and during 2014 (Table 3 and Appendix B), as indicated by the following:

- The measured concentrations of individual VOCs in the treated water effluent were lower than applicable discharge limits per the interim State Pollutant Discharge Elimination System (SPDES) equivalency permit.

- The measured concentrations of total iron and total mercury in the treated water effluent were lower than applicable discharge limits per the interim SPDES equivalency permit. In addition, total mercury continues to be non-detect and has not been detected in any treated water effluent samples since system startup.

6. Environmental Effectiveness Monitoring

BPGWCS treatment system environmental effectiveness activities and results (i.e., hydraulic monitoring and groundwater quality monitoring) for the quarterly reporting period and for 2014 are discussed below.

6.1 Hydraulic Monitoring

In accordance with the OM&M Manual requirements and methodologies (ARCADIS 2009), a quarterly round of groundwater hydraulic monitoring was performed during the fourth quarter reporting period. Specifically, depth-to-water measurements were collected on December 23, 2014 at the 34 locations forming the approved monitoring well network (Table 11). The groundwater monitoring network site plan is provided on Figure 4.

6.2 Groundwater Quality Monitoring

An annual groundwater sampling round was performed in May and June 2014 as part of site-wide sampling. Monitoring wells identified in the OU3 OM&M Manual (ARCADIS 2009) were sampled. Groundwater samples were collected from 17 monitoring wells and analyzed for the Target Compound List (TCL) VOCs, plus Freon 12 and Freon 22, using NYSDEC Analytical Services Protocol (ASP) 2005 Method OLM4.3 and total and dissolved metals (cadmium and chromium) using USEPA Method 6010. Groundwater quality data are summarized in the following tables:

- Table 12 summarizes the results of laboratory analysis for VOCs in groundwater samples collected from monitoring wells associated with the BPGWCS.

- Table 13 summarizes the results of laboratory analysis of metals in groundwater samples collected from monitoring wells associated with the BPGWCS.

6.3 Environmental Effectiveness Monitoring Conclusions

The findings and conclusions of the ongoing BPGWCS Hydraulic Effectiveness Study are forthcoming and will be used to update and/or modify future quarterly report environmental effectiveness conclusions, as necessary.

7. Recommendations

- Remove mercury from the SPDES equivalency monitoring program because mercury has not been detected in any system effluent water samples analyzed for mercury since beginning operation of the BPGWCS in July 2009.

- Continue operating, maintaining, and monitoring the system in accordance with the OM&M Manual (ARCADIS 2009) including the current quarterly preventive

maintenance program performed at Remedial Wells RW-2 and RW-3 to remove iron buildup in the wells and pipelines.

- Based on the consistent operation of the BPGWCS since July 2009, the current quarterly reporting frequency should be reduced to annual. When this change is approved by NYSDEC, an annual report will be prepared each year to summarize system operation, performance, and monitoring data; this annual report will be consistent with the NYSDEC-approved OU3 Groundwater IRM OM&M Manual (ARCADIS 2009) and prepared under the supervision of a licensed, professional engineer. Additionally, pertinent data collected for the BPGWCS during the year will be submitted to the NYSDEC as part of the quarterly progress reports currently completed in accordance with Section III of AOC Index #W1-0018-04-01. Upon NYSDEC approval of this recommendation, the OU3 Groundwater IRM OM&M Manual (ARCADIS 2009) will be updated to reflect this change.

8. References

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Tables

Table 1. Operational Summary, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

MONTH	DAY																													Days Operational (1)
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
2009 Total																																160
2010 Total																																352
2011 Total																																351
2012 Total																																353
2013 Total																																354
Jan-14				b	(2)	(3)	(4)b		(5)											#/##							(6)		(7)bbbbb		b	29
Feb-14	b				b					b		(8)				b		#/##/*			(9)b						b					28
Mar-14					b				(10)#/##**		b					b										b	(11)b		b		b	31
Apr-14						b		#/##			b					b		b					b			b	(12)	b	(13)	b		30
May-14			b		#/##/*/**			b			b			b				b	(14)								(15)			bb		23
Jun-14	b			b					b					b				b	#/##				b				(16)b					30
Jul-14	b				(17)b		(18)	#/##/b					b	b				b				b		(19)b	(20)b	b					(21)b	30
Aug-14				b					b				b					b				b			(22)				b			26
Sep-14	(23)b		b	#/##	b							b					b						b						(24)	b		30
Oct-14	#/##	b				(25)b										(26)b	b			#/##		(27)(28)	b	(28)			b					31
Nov-14				(29)	b												#/##/* /**b											b				30
Dec-14										b					#/##			(30)b	b					b								31
4Q 2014																																92
2014 Total																																349
TOTAL																																**1,919**

Table 1. Operational Summary, Bethpage Park Groundwater Containment System, Operable Unit 3
(Former Grumman Settling Ponds), Bethpage, New York.

Legend:

	Indicates system online for at least the majority of the day.
	Indicates system operated with reduced flow rates.
	Indicates system off-line for at least the majority of the day.
#	Indicates water compliance samples were collected.
##	Indicates water performance samples were collected.
**	Indicates vapor compliance samples were collected.
*	Indicates vapor performance samples were collected.
b	Indicates filter bag unit changed over.
K	Indicates PPZ change-out.
C	Indicates carbon change-out.

Acronyms\Key:

PPZ	potassium permanganate-impregnated zeolite

Notes:

(1) Days in which the system was operational for the majority of the day are counted as one day.

First Quarter 2014

(2) The system shut down at 1:15 am on January 5, 2014 due to a motor overload at Remedial Well RW-2. The motor was unable to be restarted at RW-2 and the system was restarted without RW-2 at 10:30 am on January 5, 2014. The system was offline for approximately 9 hours.

(3) The system shut down at 2:40 am on January 6, 2014 due to a motor overload at Remedial Well RW-3. The motor was unable to be restarted at RW-3 and the system was restarted without RW-2 and RW-3 at 10:00 am on January 6, 2014. The system was offline for approximately 6.5 hours.

(4) The system shut down at 5:20 am on January 7, 2014 due to an air stripper high sump level. The building temperature was just above freezing with ambient temperatures in the single digits. A system restart was attempted at 6:42 am but the system continued to shutdown. The system was left offline and temporary heaters were used to raise the building temperature. At 4:57 pm, the building was sufficiently heated and a system restart was attempted. It was noted that the transfer pump P-400 was only discharging 30 gpm at 60 Hertz. The system continued to shutdown and it was determined that the transfer pump would need to be replaced. The transfer pump was replaced with a spare pump and the system was restarted at 4:00 pm on January 8, 2014. The system was offline for approximately 34.5 hours.

(5) The system shut down at 9:42 pm on January 8, 2014 due to a building sump high level. The system was left offline overnight. On the following day, it was determined that a hose to the bag filter differential pressure switch leaked and lead to the building sump high level. The water was pumped down, the hose repaired and the system was restarted without RW-2 and RW-3 at 9:15 am on January 9, 2014. The system was offline for approximately 11.5 hours.

(6) The system shut down at 1:01 am on January 27, 2014 due to an air stripper high sump level. The system was restarted without RW-2 and RW-3 at 8:27 am on the same day. The system was offline for approximately 7.5 hours.

(7) The system was shut down at 3:45 pm on January 30, 2014 to modify the HDPE drop pipe and install new pumps and motors at Remedial Wells RW-2 and RW-3. The system was restarted and shut down multiple times due to rapid bag filter changes. The system was restarted at 6:36 pm on the same day and was offline for approximately 3 hours.

(8) The system was shut down at 11:13 am on February 12, 2014 for preventative maintenance and to install new bag filter influent gate valves. The system was restarted at 5:45 pm on the same day and was offline for approximately 6.5 hours.

Table 1. Operational Summary, Bethpage Park Groundwater Containment System, Operable Unit 3
(Former Grumman Settling Ponds), Bethpage, New York.

Notes continued:

(9) The system was shut down at 1:09 pm on February 21, 2014 for alarm testing and was restarted at 4:46 pm on the same day. The system was offline for approximately 3.5 hours.
(10) Sample VSP-5 was retaken on March 10, 2014 due to operator error on February 18, 2014.
(11) The system shut down at 11:49 am on March 27, 2014 due to a low manifold pressure at Remedial Well RW-3. The system was restarted at 2:16 pm on the same day and was offline for approximately 2.5 hours.

Second Quarter 2014

(12) The system shut down at 6:22 pm on April 27, 2014 due to a bag filter differential high pressure alarm resulting from multiple bag filter changes. The alarm was cleared, both of the bag filters changed and the system restarted at 9:19 am on April 28, 2014. The system was offline for approximately 17 hours.
(13) The system was shut down at 3:36 pm on April 29, 2014 to install new gaskets at GAC-501 and adjust electric controls. The system was restarted at 5:47 pm on the same day and was offline for approximately 2.2 hours.
(14) The system was shut down at 9:14 am on May 19, 2014 for mechanical redevelopment utilizing carbon dioxide at Remedial Well RW-2. The system was restarted without RW-2 at 10:47 am on May 23, 2014. The system was offline for approximately 97.5 hours.
(15) The system was shut down at 8:47 am on May 27, 2014 to continue mechanical redevelopment utilizing carbon dioxide at Remedial Well RW-2. The system was restarted at 4:45 pm on May 30, 2014. The system was offline for approximately 80 hours.
(16) The system shut down at 12:59 pm on June 27, 2014 due to a low manifold pressure at Remedial Well RW-3. There was no apparent cause for the alarm. The system was restarted at 2:32 pm on the same day and was offline for approximately 1.5 hours.

Third Quarter 2014

(17) The system shut down at 4:30 am on July 5, 2014 due to a bag filter differential high pressure alarm resulting from a malfunctioning valve. The alarm was cleared, the valve was checked, the bag filter changed and the system restarted at 12:15 pm on July 5, 2014. The system was offline for approximately 7.7 hours.
(18) The system shut down at 2:26 am on July 7, 2014 due to a motor overload alarm at Remedial Well RW-2. The alarm was cleared and the system was restarted with RW-2 at 10:09 am on the same day. The system was offline for approximately 7.8 hours. The system shut down at 12:28 pm on the same day due to the same alarm condition. The system was restarted with RW-2 online and the well flow rate was increased to 85 gpm to allow for improved motor cooling. The system was restarted at 4:55 pm on the same day and was offline for approximately 4.5 hours.
(19) The system was shut down at 11:12 am on July 24, 2014 for preventative maintenance. The system was restarted at 4:22 pm on the same day and was offline for approximately 5.1 hours.
(20) The system shut down at 7:24 am on July 25, 2014 due to a motor overload alarm at Remedial Well RW-3. RW-3 was unable to be restarted and the system was restarted without RW-3 at 10:57 am on the same day. The system was offline for approximately 3.5 hours.
(21) The system was shut down at 7:26 am on July 31, 2014 to install a new motor and replacement pump at Remedial Well RW-3. The system was restarted at 1:58 pm on the same day and was offline for approximately 6.5 hours.
(22) The system was shut down at 8:54 am on August 25, 2014 for mechanical redevelopment utilizing carbon dioxide at Remedial Well RW-3 and chemical redevelopment utilizing carbon dioxide at Remedial Well RW-2. The system was restarted at 4:53 pm on August 29, 2014 without RW-3. RW-3 remained off through September 29, 2014 due to additional mechanical redevelopment and a faulty motor. The system was offline for approximately 104 hours.

Table 1. Operational Summary, Bethpage Park Groundwater Containment System, Operable Unit 3
(Former Grumman Settling Ponds), Bethpage, New York.

Notes continued:

(23) The system shut down at 12:08 pm on September 1, 2014 due to site wide electrical issues. The system was restarted at 9:53 am on September 2, 2014 and was offline for approximately 23 hours.

(24) The system was shut down at 7:58 am on September 29, 2014 to install a new motor and motor shroud at Remedial Well RW-3 and swap the pump and install a new motor shroud at Remedial Well RW-2. The work was completed; however, RW-2 was installed without the motor shroud, since the shroud was too wide and would not fit past the pitless adaptor. The system was restarted with all of the remedial wells at 6:45 pm on the same day and was offline for approximately 11 hours.

Fourth Quarter 2014

(25) The system shut down at 3:56 pm on October 6, 2014 due to a low pressure alarm at Remedial Well RW-2. Attempts to restart the RW-2 were unsuccessful and the system was restarted at 4:54 pm on the same day without RW-2. The system was offline for approximately 1 hour.

(26) The system was shut down at 8:00 am on October 16, 2014 to install a new pump and motor shroud in Remedial Well RW-2. It was discovered that the pump removed from RW-2 had a mechanical failure caused by improper repairs. The system was restarted at 2:51 pm on the same day and was offline for approximately 6.9 hours.

(27) The system shut down at 12:23 pm on October 22, 2014 due to a high level alarm at the air stripper sump. The alarm was cleared, the sump strainer was cleaned, and the system was restarted at 1:30 pm on the same day. The system was offline for approximately 1.1 hours.

(28) On October 22, 2014, RW-2 began operating at a reduced flow rate and operated at a reduced flow rate until it was replaced on December 18, 2014. The pump replacement was delayed to perform an assessment of the pump conditions due to improper repairs and failure of several pumps.

(29) The system was shut down at 7:09 am on November 4, 2014 for scheduled maintenance of the air stripper. The system was restarted at 4:12 pm on the same day and was offline for approximately 9 hours.

(30) The system was shut down at 8:12 am on December 18, 2014 to install a new pump in Remedial Well RW-2. The system was restarted at 12:31 pm on the same day and was offline for approximately 4.3 hours.

Table 2. Summary of Influent Water Sample Analytical Results, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

Compound [2]	01/20/14 (µg/L)	02/18/14 (µg/L)	03/10/14 (µg/L)	04/08/14 (µg/L)	05/05/14 (µg/L)	06/19/14 (µg/L)	07/08/14 (µg/L)	9/4/14[5] (µg/L)	10/1/14[6] (µg/L)	10/20/14 (µg/L)	11/17/14 (µg/L)	12/15/14 (µg/L)
Project VOCs												
1,1,1 - Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 - Dichloroethane	0.30	0.36	0.37	0.36	0.37	0.57	0.42	0.59	0.27	ND	ND	ND
1,2 - Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 - Dichloroethene	ND	ND	0.26	0.26	ND	0.30	ND	ND	ND	ND	ND	ND
Tetrachloroethene	0.48	0.24	0.22	0.36	0.41	0.28	0.30	0.31	ND	ND	ND	ND
Trichloroethene	0.66	4.0	4.0	4.5	3.9	4.6	**5.1**	**7.1**	4.0	**3.7**	**3.4**	**3.5**
Vinyl Chloride	ND	**24**	**22**	22	**18**	**32**	**24**	**30**	**13**	**17**	**15**	**16**
cis 1,2-Dichloroethene	0.31	**30**	**23**	**26**	**24**	**32**	**25**	**28**	**13**	**11**	**9.9**	**9.0**
trans 1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	**22**	**24**	20	**13**	**31**	**22**	**29**	**13**	**12**	**11**	**7.1**
Xylenes	ND	2.5	2.5	2.2	1.7	4.1	2.6	3.2	1.5	1.2	1.1	0.67
Subtotal Project VOCs	**1.8**	**83**	**76**	**76**	**61**	**105**	**79**	**98**	**45**	**45**	**40**	**36**
Non-Project VOCs												
Dichlorodifluoromethane (Freon 12)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodifluoromethane (Freon 22)	**55**	**23**	**24**	**23**	**19**	**18**	**18**	**9.7**	**7.5**	**12.4**	**10.7**	**11**
Subtotal Non-Project VOCs	**55**	**23**	**24**	**23**	**19**	**18**	**18**	**9.7**	**7.5**	**12.4**	**10.7**	**11**
Total VOCs [3]	**57**	**106**	**100**	**99**	**80**	**123**	**97**	**108**	**53**	**57**	**51**	**47**
Inorganics												
Total Iron	**660**	**270**	**5,020**	**350**	**26,300**	**380**	**19,500**	**1,820**	**1,040**	**330**	**359**	**292**
Total Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH [4]	5.3	5.5	5.9	6.0	6.0	5.4	5.9	5.4	5.6	5.6	5.7	5.8

See notes on last page.

Table 2. Summary of Influent Water Sample Analytical Results, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1)

Notes:

(1) Water samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per NYSDEC ASP 2005, Method OLM 4.3 (prior to September 1, 2014) and per USEPA Method 8260C (after September 1, 2014), for iron analyses per USEPA Method 6010C and for mercury analyses per USEPA Method 7470A. The VOC analyte list is provided in the DRAFT Groundwater IRM OM&M Manual (ARCADIS 2009). Influent water samples were collected from Water Sampling Port-5 (WSP-5); refer to Figure 3 of this OM&M Report for the schematic location of WSP-5.

(2) Only VOCs associated with the interim SPDES equivalency program, plus Toluene, Benzene, Xylenes, non-project related Freon 12 and Freon 22, Mercury and Iron are included in this table. Complete VOC and inorganic data summary tables, including VOC TICs, are provided in Appendix B. Laboratory data qualifiers are included in the Appendix B tables.

(3) "Total VOCs" represents the sum of individual concentrations of the compounds detected. The values used in calculations referenced in this report have been rounded to the nearest whole number.

(4) Influent pH samples collected and measured in the field by ARCADIS personnel on the dates listed using an Oakton Model 300 pH/conductivity meter. pH units are standard units.

(5) The August 2014 monthly sample from WSP-5 was collected on September 4, 2014 due to system maintenance activies throughout August.

(6) The September 2014 monthly sample from WSP-5 was collected on October 1, 2014 due to system maintenance activities throughout September.

Acronyms\Key:

700	Bold data indicates that the analyte was detected at or above its reporting limit.
16	Data that is not bold indicates analyte detected but below its reporting limit; the value is estimated.
ASP	Analytcial Services Protocol
ELAP	Environmental Laboratory Approval Program
IRM	Interim remedial measure.
NA	Not analyzed.
ND	Analyte not detected at, or above its laboratory quantification limit.
NM	Not measured.
NYSDEC	New York State Department of Environmental Conservation.
NYSDOH	New York State Department of Health
OM&M	Operation, maintenance and monitoring.
SPDES	State Pollutant Discharge Elimination System
TICs	Tentatively identified compounds.
USEPA	United States Environmental Protection Agency.
VOC	Volatile organic compound.
µg/L	Micrograms per liter.

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Table 3. Summary of Effluent Water Sample Analytical Results, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

Compound [2]	Discharge Limit [3] (µg/L)	01/20/14 (µg/L)	02/18/14 (µg/L)	03/10/14 (µg/L)	04/08/14 (µg/L)	05/05/14 (µg/L)	06/19/14 (µg/L)	07/08/14 (µg/L)	9/4/14[7] (µg/L)	10/1/14[8] (µg/L)	10/20/14 (µg/L)	11/17/14 (µg/L)	12/15/14 (µg/L)
Project VOCs													
1,1,1 - Trichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 - Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 - Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 - Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis 1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans 1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Subtotal Project VOCs	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-Project VOCs													
Dichlorodifluoromethane (Freon 12)	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorodifluoromethane (Freon 22)	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Subtotal Non-Project VOCs	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total VOCs [4]	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Treatment Efficiency [5]	--	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%
Inorganics													
Total Iron	600	**430**	**250**	**330**	**260**	**280**	**520**	**580**	**1,000[9]**	**470**	**265**	**276**	**220**
Total Mercury	250	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH [6]	5.5 - 8.5	5.5	6.3	6.8	6.3	7.3	7.4	6.3	6.5	6.8	6.3	6.5	6.2

See notes on last page.

Table 3. Summary of Effluent Water Sample Analytical Results, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1)

Notes:

(1) Water samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per NYSDEC ASP 2005, Method OLM 4.3 (prior to September 1, 2014) and per USEPA Method 8260C (after September 1, 2014), for iron analyses per USEPA Method 6010C and for mercury analyses per USEPA Method 7470A. The VOC analyte list is provided in the DRAFT Groundwater IRM OM&M Manual (ARCADIS 2009). Effluent water samples were collected from Water Sampling Port-7 (WSP-7); refer to Figure 3 of this OM&M Report for the location of WSP-7.

(2) Only VOCs associated with the interim SPDES equivalency program, including Toluene, Benzene, Xylenes, non-project related Freon 12 and Freon 22, Mercury and Iron are included in this table. Complete VOC and inorganic data summary tables, including VOC TICs, are provided in Appendix B. Laboratory data qualifiers are included in the Appendix B tables.

(3) Discharge limits per the interim SPDES equivalency program or Division of Water Technical and Operational Guidance Series (TOGS 1.1.1) Quality Standards and Guidance Values and Groundwater Effluent Limitations, if the compound is not part of the interim SPDES equivalency program.

(4) "Total VOCs" represents the sum of individual concentrations of compounds detected. The values used in calculations referenced in this report have been rounded to the nearest whole number.

(5) Treatment efficiency was calculated by dividing the difference between the influent and effluent total VOC concentrations by the influent total VOC concentration.

(6) Effluent pH samples collected and measured in the field by ARCADIS personnel on the dates listed using an Oakton Model 300 pH/conductivity meter. pH units are standard units.

(7) The August 2014 monthly sample from WSP-7 was collected on September 4, 2014 due to system maintenance activies

(8) The September 2014 monthly sample from WSP-7 was collected on October 1, 2014 due to system maintenance activities

(9) The September 4, 2014 iron concentration exceeded its discharge limit of 600 µg/l. The exceedance is believed to be the result of iron precipitates in the sample tap. The follow-up sample collected on October 1, 2014 was analyzed with an expedited turnaround and total iron was below the discharge limit of 600 µg/l.

Acronyms\Key:

	Bold box indicates value is greater than discharge criterion.
700	Bold data indicates that the analyte was detected at or above its reporting limit.
16	Data that is not bold indicates analyte detected but below its reporting limit; the value is estimated.
ASP	Analytical Services Protocol.
ELAP	Environmental Laboratory Approval Program
IRM	Interim remedial measure.
ND	Analyte not detected at, or above its laboratory quantification limit.
NM	Not measured.
NYSDEC	New York State Department of Environmental Conservation.
NYSDOH	New York State Department of Health
OM&M	Operation, maintenance, and monitoring.
SPDES	State Pollutant Discharge Elimination System
TICs	Tentatively identified compounds.
USEPA	United States Environmental Protection Agency.
VOC	Volatile organic compound.
µg/L	Micrograms per liter.
--	Not applicable.

Table 4. Summary of Influent Vapor Sample Analytical Results, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

Compound [2]	2/18/2014 (µg/m^3)	5/5/2014 (µg/m^3)	10/1/2014[5] (µg/m^3)	11/17/2014 (µg/m^3)
Project VOCs				
1,1,1 - Trichloroethane	**0.95**	**0.90**	**0.83**	**0.82**
1,1 - Dichloroethane	**5.8**	**5.4**	**4.9**	**4.9**
1,2 - Dichloroethane	ND	ND	ND	ND
1,1 - Dichloroethene	**3.1**	**3.6**	**1.6**	**1.6**
Tetrachloroethene	**4.2**	**3.6**	**2.9**	**3.6**
Trichloroethene	**62**	**62**	**59**	**47**
Vinyl Chloride	**360**	**350**	**250**	**187**
cis 1,2-Dichloroethene	**530**	**480**	**240**	**150**
trans 1,2-Dichloroethene	ND	ND	ND	ND
Benzene	**1.1**	ND	ND	**1.1**
Toluene	**400**	**310**	**240**	**184**
Xylenes	**51**	**37**	**25**	**21**
Subtotal Project VOCs	**1,418**	**1,253**	**824**	**601**
Non-Project VOCs				
Dichlorodifluoromethane (Freon 12)	**2.6**	**2.3**	**2.4**	**3.0**
Chlorodifluoromethane (Freon 22)	**290**	**140**	**61**	**120**
Subtotal Non-Project VOCs	**293**	**142**	**63**	**123**
Total VOCs [3]	**1,711**	**1,395**	**888**	**724**

See notes on last page.

Table 4. Summary of Influent Vapor Sample Analytical Results, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1)

Notes:

(1) Vapor samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15. A VOC analyte list is provided in the DRAFT Groundwater IRM OM&M Manual (ARCADIS 2009). Influent samples were collected at Vapor Sampling Port-1 (VSP-1); refer to Figure 3 of this OM&M Report for the location of VSP-1.

(2) Only VOCs that are associated with the interim SPDES equivalency program, Toluene, Benzene, Xylenes, and non-project related Freon 12 and Freon 22 are included in this table. Complete VOC summary tables, including VOC TICs, are provided in Appendix C. Laboratory data qualifiers are included in the Appendix C tables.

(3) "Total VOCs" represents the sum of individual concentrations of compounds detected. The values used in calculations referenced in this report have been rounded to the nearest whole number.

(4) The influent sample container, when it arrived at the laboratory, had a pressure that exceeded the allowable limits. Therefore, per our laboratory data validation program, all the data for this sample have been qualified to indicate that the values are "estimated". Additional information is provided in Table C-1.

(5) The September 2014 quarterly sample from VSP-1 was collected on October 1, 2014 due to system maintenance activities throughout September.

Acronyms\Key:

700	Bold data indicates that the analyte was detected at or above its reporting limit.
16	Data that is not bold indicates analyte detected but below its reporting limit; the value is estimated.
ELAP	Environmental Laboratory Approval Program
IRM	Interim remedial measure.
ND	Analyte not detected at or above its laboratory reporting limit.
NYSDOH	New York State Department of Health
OM&M	Operation, maintenance, and monitoring.
SPDES	State Pollutant Discharge Elimination System
TICs	Tentatively identified compounds.
USEPA	United States Environmental Protection Agency.
VOC	Volatile organic compound.
$\mu g/m^3$	Micrograms per cubic meter.

Table 5. Summary of Effluent Vapor Sample Analytical Results, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

Compound [2]	Discharge Limit [3] (µg/m^3)	3/10/2014[9] (µg/m^3)	5/5/2014 (µg/m^3)	10/1/2014[10] (µg/m^3)	11/17/2014 (µg/m^3)
Project VOCs					
1,1,1 - Trichloroethane	9,000	ND	ND	ND	ND
1,1 - Dichloroethane	NS	**5.7**	**4.3**	**5.7**	**8.5**
1,2 - Dichloroethane	NS	ND	ND	ND	ND
1,1 - Dichloroethene	380 [4]	**0.77**	ND	**1.6**	**1.2**
Tetrachloroethene	300	ND	ND	ND	**10**
Trichloroethene	14,000	**2.3**	**1.1**	**2.3**	**2.6**
Vinyl Chloride	180,000	**14**	**4.7**	**55**	**42**
cis 1,2-Dichloroethene	190,000 [5]	**58**	**17**	**140**	**144**
trans 1,2-Dichloroethene	NS	ND	ND	ND	ND
Benzene	1,300	ND	ND	ND	ND
Toluene	37,000	**33**	**17**	**20**	**19**
Xylenes	22,000	**2.5**	ND	ND	1.6
Project	NA	**116**	**44**	**225**	**229**
Non-Project VOCs					
Dichlorodifluoromethane (Freon 12)	NS	**2.8**	**2.4**	**2.3**	**3.0**
Chlorodifluoromethane (Freon 22)	NS	**110**	**93**	**29**	**122**
Non-	NA	**113**	**95**	**31**	**125**
Total VOCs [6]	NA	**229**	**140**	**256**	**354**
Treatment Efficiency (Total VOCs) [7]	NA	**86.6%**	**90.0%**	**71.2%**	**51.2%**
Treatment Efficiency (Project VOCs) [8]	NA	**91.8%**	**96.5%**	**72.8%**	**62.0%**

See notes on last page.

Table 5. Summary of Effluent Vapor Sample Analytical Results, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1)

Notes:

(1) Vapor samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15. A VOC analyte list is provided in the DRAFT Groundwater IRM OM&M Manual (ARCADIS 2009). Effluent samples were collected at Vapor Sampling Port-5 (VSP-5); refer to Figure 3 of this OM&M Report for the location of VSP-5.

(2) Only VOCs that are associated with the interim SPDES equivalency program, Toluene, Benzene, Xylenes, and non-project related Freon 12 and Freon 22 are included in this table. Complete VOC summary tables, including VOC TICs, are provided in Appendix C. Laboratory data qualifiers are included in the Appendix C tables.

(3) Discharge limit is compound-specific SGC per the NYSDEC DAR-1 AGC/SGC tables revised Februaury 28, 2014.

(4) An SGC was not provided in the DAR-1 AGC/SGC Tables, dated February 28, 2014. An interim SGC was developed based on guidance of the New York State DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants, 1991 edition. Specifically for 1,1- dichloroethene, which is not defined as provided in Section IV.A.2.b.1 a high-toxicity compound, the Interim SGC = (smaller of Time Weighted Average [TWA] - Threshold Limit Value or TWA - Recommended Exposure Limit)/4.2. or 1,600 µg/m^3 / 4.2 = approximately 380 µg/m^3. An interim SGC was developed for this compound because it has a moderate toxicity rating, as specified in the DAR-1 AGC/SGC Tables, dated February 28, 2014.

(5) An SGC was not provided in the DAR-1 AGC/SGC Tables, dated February 28, 2014. An interim SGC was developed based on guidance provided in Section IV.A.2.b.1 of the New York State DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants, 1991 edition. Specifically for cis-1,2 dichloroethene, which is not defined as a high-toxicity compound, the interim SGC = (smaller of Time Weighted Average [TWA] - Threshold Limit Value or TWA - Recommended Exposure Limit)/4.2 or 790,000 µg/m^3 / 4.2 = approximately 190,000 µg/m^3. An interim SGC was developed for this compound because it has a moderate toxicity rating, as specified in the DAR-1 AGC/SGC Tables, dated February 28, 2014.

(6) "Total VOCs" represents the sum of individual concentrations of all compounds detected. The values used in calculations referenced in this report have been rounded to the nearest whole number.

(7) Treatment efficiency was calculated by dividing the difference between the influent and effluent Total VOC concentrations by the influent Total VOC concentration. Treatment efficiency is only calculated when there is a corresponding influent sample.

(8) Treatment efficiency was calculated by dividing the difference between the influent and effluent total Project VOC concentrations by the influent total Project VOC concentration. Treatment efficiency is only calculated when there is a corresponding influent sample.

(9) Sample VSP-5 was retaken on March 10, 2014 due to operator error on February 18, 2014.

(10 The September 2014 quarterly sample from VSP-5 was collected on October 1, 2014 due to system maintenance activities throughout September.

Acronyms\Key:

700	Bold data indicates that the analyte was detected at or above its reporting limit.
16	Data that is not bold indicates analyte detected but below its reporting limit; the value is estimated.
AGC	Annual guideline concentration.
DAR-1	Division of Air Resources Air Guidance-1
ELAP	Environmental Laboratory Approval Program
IRM	Interim remedial measure.
NA	Not applicable.
ND	Analyte not detected at or above its laboratory reporting limit.
NS	Guideline concentrations not specified in the NYSDEC DAR-1 AGC/SGC tables revised February 28, 2014. An interim SGC was not developed for these compounds because they have low toxicity ratings in the NYSDEC DAR-1 AGC/SGC tables revised February 28, 2014.
NYSDEC	New York State Department of Environmental Conservation.
NYSDOH	New York State Department of Health
OM&M	Operation, maintenance, and monitoring.
SGC	Short-term Guidance Concentration
SPDES	State Pollutant Discharge Elimination System
TICs	Tentatively identified compounds.
USEPA	United States Environmental Protection Agency.
VOC	Volatile organic compound.
µg/m^3	Micrograms per cubic meter.

Table 6. Summary of System Parameters, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Date [1]	Water Flow Rates [2],[3]						Water Pressures [2],[3]					Air Flow Rate [2],[3]	Air Pressures [2]					Air Temp. [2]
	Remedial Well				Combined Influent	Effluent	Remedial Well Effluent [4]				Effluent	Effluent	ECU Influents				Effluent	Effluent
	RW-1 (gpm)	RW-2 (gpm)	RW-3 (gpm)	RW-4 (gpm)	(gpm)	(gpm)	RW-1 (psi)	RW-2 (psi)	RW-3 (psi)	RW-4 (psi)	(psi)	(scfm)	GAC-501 (iwc)	GAC-502 (iwc)	PPZ-601 (iwc)	PPZ-602 (iwc)	(iwc)	(^{o}R)
01/20/14	30.3	0.0	0.0	30.2	60	71	58	0.0	0.0	57	6	2,070	9.5	10.8	6.5	5.0	0.0	527
02/18/14	30.9	83.0	84.4	29.6	228	239	57	50	47	57	9	2,013	6.5	7.7	6.0	4.5	0.0	514
03/10/14	30.6	74.9	84.8	30.4	221	252	57	59	41	56	8	1,974	6.5	7.5	5.8	4.4	0.0	531
04/08/14	30.4	75.6	80.6	30.4	217	247	58	49	44	56	11	1,947	6.5	7.5	5.7	4.4	0.0	534
05/05/14	29.7	74.6	79.8	30.2	214	246	58	46	40	57	11	1,963	6.8	7.8	6.0	4.6	0.0	539
06/19/14	29.6	74.5	74.8	30.0	209	204	59	54	49	57	9	1,992	7.6[5]	8.7[5]	6.7[5]	5.1[5]	0.0[5]	540
07/08/14	30.3	85.6	75.3	30.2	221	245	58	27	44	57	30	1,883	7.3	8.2	6.5	5.0	0.0	547
09/04/14	30.3	76.1	0.0	30.4	137	178	58	35	0.0	57	5	1,801	8.6	9.1	7.3	5.2	0.0	550
10/01/14	30.3	82.9	75.7	30.4	219	254	58	45	51	57	19	1,900	4.6[6]	5.2[6]	3.0[6]	1.0[6]	0.0[6]	522
10/20/14	30.1	70.2	75.0	30.4	206	233	58	22	57	56	10	1,918	4.8	5.1	3.1	1.5	0.0	536
11/17/14	30.8	57.6[7]	75.6	30.7	195	230	57	4[7]	52	56	36	1,944	4.8	5.0	2.9	0.5	0.0	530
12/15/14	30.5	51.7[7]	75.3	30.6	188	223	58	4[7]	52	56	12	1,929	4.5	5.3	3.0	0.6	0.0	532

See notes on last page.

Table 6. Summary of System Parameters, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Notes:

(1) Operational data collected by ARCADIS on days noted. Parameters listed were typically recorded during compliance monitoring events.

(2) Instantaneous values from field-mounted instruments, except for the combined influent water-flow rate, which is the sum of individual well flow rates via the SCADA System.

(3) Starting with January's 2013 site visit the following instantaneous parameters are obtained from the SCADA HMI: Water Flow Rate, Water Pressure, Air Flow Rate.

(4) Remedial Well effluent pressure readings measured at the influent manifold within the treatment system building.

(5) Values collected on June 17, 2014 during the weekly site visit. No values collected on day of sampling.

(6) Values collected on September 30, 2014 during the weekly site visit. No values collected on day of sampling.

(7) The flow rate and pressure for RW-2 were lower than typical on the dates shown due to a malfunctioning pump.

Acronyms\Key:

ECU	Emission control unit.
gpm	Gallons per minute.
HMI	Human-machine interface.
iwc	Inches of water column.
NM	Not measured. The value was not measured due to a faulty gauge.
psi	Pounds per square inch.
^{o}R	Degrees Rankine.
SCADA	Supervisory Control and Data Acquisition
scfm	Standard cubic feet per minute.
Temp.	Temperature.

Table 7. Summary of Groundwater Recovered, VOC Mass Recovered, and VOC Mass Recovery Rates, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Operating Period [1]	Volume of Groundwater Recovered (x1,000 gal) [2]					VOC Mass Recovered (lbs) [3]															VOC Mass Recovery Rate (lbs/day) [4]													
						Total VOCs [5]					Project VOCs [6]					Non-Project VOCs [7]					Total VOCs [5]					Project VOCs [6]					Non-Project VOCs [7]				
	RW-1	RW-2	RW-3	RW-4	Total	RW-1	RW-2	RW-3	RW-4	Total	RW-1	RW-2	RW-3	RW-4	Total	RW-1	RW-2	RW-3	RW-4	Total	RW-1	RW-2	RW-3	RW-4	Total	RW-1	RW-2	RW-3	RW-4	Total	RW-1	RW-2	RW-3	RW-4	Total
System Pilot Test, Shakedown and Startup Totals [8]																																		
	137	270	251	150	808	NA	NA	NA	NA	1.1	NA	NA	NA	NA	1.0	NA	NA	NA	NA	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2009 Totals																																		
07/21/09 - 12/30/09	6,592	13,838	16,445	6,574	43,449	0.17	275	53	14	342	0.17	273	19	0.20	293	<0.01	0.56	35	13	48	<0.01	1.7	0.33	0.086	2.1	<0.01	1.7	0.12	<0.01	1.8	<0.01	<0.01	0.22	0.080	0.30
2010 Totals																																		
12/30/09 - 01/05/11	15,726	35,127	38,160	15,689	104,702	0.56	172	412	89	672	0.56	171	28	0.10	200	<0.01	0.17	383	89	469	<0.01	0.46	1.1	0.24	1.8	<0.01	0.46	0.075	<0.01	0.54	<0.01	<0.01	1.0	0.24	1.3
2011 Totals																																		
01/05/11 - 01/09/12	15,218	36,570	37,682	15,196	104,666	0.36	167	271	78	516	0.36	167	35	0.09	203	<0.01	1.1	236	78	314	<0.01	0.45	0.73	0.21	1.4	<0.01	0.45	0.095	<0.01	0.55	<0.01	<0.01	0.64	0.21	0.85
2012 Totals																																		
01/09/12 - 01/07/13	15,260	35,178	36,111	15,336	101,885	0.28	114	113	40	267	0.25	113	12	0.39	126	<0.01	1.5	101	40	141	<0.01	0.31	0.31	0.11	0.73	<0.01	0.31	0.032	<0.01	0.35	<0.01	<0.01	0.28	0.11	0.39
2013 Totals																																		
01/07/13 - 01/06/14	15,968	37,514	36,622	16,036	106,140	0.14	111	41	18	171	0.14	110	4.3	0.36	113	<0.01	1.6	37	18	57	<0.01	0.30	0.11	0.050	0.47	<0.01	0.30	0.012	<0.01	0.31	<0.01	<0.01	0.10	0.049	0.16
January 2014 through March 2014 Totals																																		
01/06/14 - 02/01/14	1,090	176	197	1,090	2,553	<0.01	0.50	0.095	0.77	1.4	<0.01	0.50	0.014	0.021	0.54	<0.01	<0.01	0.080	0.75	0.83	<0.01	0.019	<0.01	0.030	0.054	<0.01	0.019	<0.01	<0.01	0.021	<0.01	<0.01	<0.01	0.029	0.032
02/01/14 - 03/01/14	1,270	3,174	3,390	1,270	9,104	<0.01	9.1	1.6	0.90	12	<0.01	8.9	0.25	0.024	9.2	<0.01	0.16	1.4	0.87	2.4	<0.01	0.33	0.057	0.032	0.43	<0.01	0.32	<0.01	<0.01	0.33	<0.01	<0.01	0.050	0.031	0.086
03/01/14 - 04/01/14	1,421	3,553	3,850	1,421	10,245	<0.01	10	1.8	1.0	13	<0.01	10	0.28	0.027	10	<0.01	0.18	1.6	0.98	2.8	<0.01	0.32	0.058	0.032	0.42	<0.01	0.32	<0.01	<0.01	0.32	<0.01	<0.01	0.052	0.032	0.090
Subtotal Jan - Mar 2014 [10]	3,781	6,903	7,437	3,781	21,902	0.021	20	3.5	2.7	26	0.021	19	0.54	0.072	20	<0.01	0.34	3.1	2.6	6.0	<0.01	0.24	0.041	0.031	0.31	<0.01	0.22	<0.01	<0.01	0.24	<0.01	<0.01	0.036	0.031	0.071
April 2014 through June 2014 Totals																																		
04/01/14 - 05/01/14	1,348	3,371	3,371	1,348	9,438	<0.01	7.8	1.3	0.79	9.9	<0.01	7.7	0.23	0.025	8.0	<0.01	0.12	1.1	0.77	2.0	<0.01	0.26	0.044	0.026	0.33	<0.01	0.26	<0.01	<0.01	0.27	<0.01	<0.01	0.037	0.026	0.067
05/01/14 - 06/01/14	1,086	2,265	2,530	1,086	6,967	<0.01	5.2	1.0	0.64	6.8	<0.01	5.1	0.17	0.020	5.3	<0.01	0.079	0.82	0.62	1.5	<0.01	0.17	0.032	0.021	0.22	<0.01	0.16	<0.01	<0.01	0.17	<0.01	<0.01	0.026	0.020	0.048
06/01/14 - 07/01/14	1,379	3,446	3,117	1,379	9,321	<0.01	7.9	1.2	0.81	9.9	<0.01	7.8	0.21	0.026	8.0	<0.01	0.12	1.0	0.79	1.9	<0.01	0.26	0.040	0.027	0.33	<0.01	0.26	<0.01	<0.01	0.27	<0.01	<0.01	0.033	0.026	0.063
Subtotal Apr - Jun 2014 [11]	3,813	9,082	9,018	3,813	25,726	0.020	21	3.5	2.2	27	0.020	21	0.61	0.071	21	<0.01	0.32	2.9	2.2	5.4	<0.01	0.23	0.039	0.025	0.30	<0.01	0.23	<0.01	<0.01	0.23	<0.01	<0.01	0.032	0.024	0.059
July 2014 through September 2014 Totals																																		
07/01/14 - 08/01/14	1,330	3,412	2,458	1,361	8,561	<0.01	4.8	0.40	0.50	5.7	<0.01	4.6	0.12	0.019	4.7	<0.01	0.16	0.28	0.48	0.92	<0.01	0.15	0.013	0.016	0.18	<0.01	0.15	<0.01	<0.01	0.15	<0.01	<0.01	<0.01	0.015	0.030
08/01/14 - 09/01/14	1,258	3,070	2,608	1,228	8,164	<0.01	4.3	0.42	0.45	5.2	<0.01	4.2	0.12	0.017	4.3	<0.01	0.15	0.30	0.43	0.88	<0.01	0.14	0.014	0.015	0.17	<0.01	0.14	<0.01	<0.01	0.14	<0.01	<0.01	0.010	0.014	0.028
09/01/14 - 10/01/14	1,315	3,287	162	1,315	6,079	<0.01	4.6	0.026	0.48	5.1	<0.01	4.5	<0.01	0.019	4.5	<0.01	0.16	0.019	0.46	0.64	<0.01	0.15	<0.01	0.016	0.17	<0.01	0.15	<0.01	<0.01	0.15	<0.01	<0.01	<0.01	0.015	0.021
Subtotal Jul - Sep 2014 [12]	3,903	9,769	5,228	3,904	22,804	0.011	14	0.85	1.4	16	0.011	13	0.24	0.055	14	<0.01	0.47	0.60	1.4	2.4	<0.01	0.15	<0.01	0.016	0.17	<0.01	0.14	<0.01	<0.01	0.15	<0.01	<0.01	<0.01	0.015	0.026
October 2014 through December 2014 Totals																																		
10/01/14 - 11/01/14	1,411	2,171	3,229	1,411	8,222	<0.01	3.6	0.68	0.59	4.8	<0.01	3.4	0.15	0.020	3.6	<0.01	0.10	0.51	0.57	1.2	<0.01	0.11	0.022	0.019	0.16	<0.01	0.11	<0.01	<0.01	0.12	<0.01	<0.01	0.016	0.018	0.038
11/01/14 - 12/01/14	1,366	2,539	3,101	1,366	8,372	<0.01	4.2	0.65	0.58	5.4	<0.01	4.0	0.15	0.019	4.2	<0.01	0.12	0.49	0.56	1.2	<0.01	0.14	0.022	0.019	0.18	<0.01	0.13	<0.01	<0.01	0.14	<0.01	<0.01	0.016	0.019	0.039
12/01/14 - 01/01/15	1,416	2,758	3,186	1,416	8,776	<0.01	4.5	0.67	0.60	5.8	<0.01	4.4	0.15	0.020	4.6	<0.01	0.13	0.50	0.58	1.2	<0.01	0.15	0.022	0.019	0.19	<0.01	0.14	<0.01	<0.01	0.15	<0.01	<0.01	0.016	0.019	0.039
Subtotal Oct - Dec 2014 [13]	4,193	7,468	9,516	4,193	25,370	0.011	12	2.0	1.8	16	0.011	12	0.45	0.059	12	<0.01	0.35	1.5	1.7	3.6	<0.01	0.13	<0.01	0.019	0.17	<0.01	0.13	<0.01	<0.01	0.13	<0.01	<0.01	0.016	0.018	0.039
2014 Totals [14]	15,690	33,222	31,199	15,691	95,802	0.063	67	9.9	8.1	85	0.063	65	1.8	0.26	67	<0.01	1.5	8.1	7.9	17	<0.01	0.19	0.028	0.023	0.24	<0.01	0.18	<0.01	<0.01	0.19	<0.01	<0.01	0.023	0.022	0.047
Total [15] [15]	84,591	191,719	196,470	84,672	557,452	1.6	906	900	247	2,054	1.5	899	100	1.4	1,003	<0.01	6.4	800	246	1,046	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

See notes on next page.

Table 7. Summary of Groundwater Recovered, VOC Mass Recovered, and VOC Mass Recovery Rates, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Notes:

(1) Represents operating period between consecutive monitoring events.
(2) Volume of groundwater recovered is based on individual local well totalized flow readings. Listed value is the difference between totalized flow values recorded between consecutive monitoring events. The total groundwater recovered during a given operating period is the sum of the individual well flow totals. Values shown are rounded to the nearest gallon, but should only be considered accurate to two significant figures to account for error associated with field measurements.
(3) Mass recovered per well was calculated by multiplying the Total VOC concentration from the most recent sampling event by the number of gallons extracted during the reporting period. The total amount recovered during a given operating period is the sum of masses recovered from each of the individual wells. Values less than ten pounds are presented using two significant figures and values greater than ten pounds have been rounded to the nearest whole number; however, these values should only be considered accurate to two significant figures to account for error associated with field measurements and analytical data.
(4) Mass recovery rates were calculated by dividing the total mass recovered for each well and for the system by the number of days in the respective operating period. Values are presented using two significant figures.
(5) "Total VOCs" represents the sum of individual concentrations of the VOCs detected.
(6) "Project VOCs" represents the sum of individual compound concentrations of 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethelyene; vinyl chloride; cis-1,2-dichloroethene; trans-1,2-dichloroethene; benzene; toluene; and xylenes-o,m, p.
(7) "Non-Project VOCs" represents the difference between Total VOCs and Project VOCs.
(8) Values based on operational data recorded prior to system startup on July 21, 2009.
(9) Starting with the January 2013 site visit the totalized water flow readings are recorded from the SCADA HMI.
(10) The volume of groundwater recovered and mass recovered calculations represent the operational period between January 6, 2014 and April 1, 2014.
(11) The volume of groundwater recovered and mass recovered calculations represent the operational period between April 1, 2014 and July 1, 2014.
(12) The volume of groundwater recovered and mass recovered calculations represent the operational period between July 1, 2014 and October 1, 2014.
(13) The volume of groundwater recovered and mass recovered calculations represent the operational period between October 1, 2014 and January 1, 2015.
(14) The volume of groundwater recovered and mass recovered calculations represent the operational period between January 6, 2014 and January 1, 2015.
(15) "Total" refers to the amounts removed by the Operable Unit 3 Bethpage Park Groundwater Containment System.

Acronyms\Key:

IRM	Interim Remedial Measure.
gal	Gallons.
HMI	Human-machine interface.
lbs	Pounds.
lbs/day	Pounds per day.
--	Not applicable.
SCADA	Supervisory Control and Data Acquistion
VOC	Volatile organic compound.
<	Less than.

Table 8. Summary of Air Emissions Model Output, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Compound	AGC (µg/m3) [1]	Percent of MASC Per Event [2]				Percent AGC [3]
		3/10/14[5]	5/5/14	10/1/14[6]	11/17/14	
1,1,1 - Trichloroethane	5,000	0.00%	0.00%	0.00%	0.00%	0.00%
1,1 - Dichloroethane	0.63	0.14%	0.10%	0.14%	0.21%	0.14%
1,2 - Dichloroethane	0.038	0.00%	0.00%	0.00%	0.00%	0.00%
1,1 - Dichloroethene	200	0.00%	0.00%	0.00%	0.00%	0.00%
Acetone	30,000	0.00%	0.00%	0.00%	0.00%	0.00%
Chloroform	14.7	0.02%	0.02%	0.02%	0.03%	0.02%
Ethylbenzene	1,000	0.00%	0.00%	0.00%	0.00%	0.00%
Xylenes (o)	100	0.00%	0.00%	0.00%	0.00%	0.00%
Xylenes (m,p)	100	0.00%	0.00%	0.00%	0.00%	0.00%
Methylene Chloride	60	0.00%	0.00%	0.00%	0.00%	0.00%
Tetrachloroethene	4.0	0.00%	0.00%	0.00%	0.04%	0.00%
Trichloroethene	0.2	0.00%	0.08%	0.18%	0.20%	0.11%
Vinyl Chloride	0.068	3.2%	1.1%	12%	9.5%	7.4%
cis 1,2 Dichloroethene	63	0.01%	0.00%	0.03%	0.04%	0.02%
trans 1,2 Dichloroethene	63	0.00%	0.00%	0.00%	0.00%	0.00%
Benzene	0.13	0.00%	0.00%	0.00%	0.00%	0.00%
Toluene	5,000	0.00%	0.00%	0.00%	0.00%	0.00%
Trichlorofluoromethane (Freon 11)	5,000	0.00%	0.00%	0.00%	0.00%	0.00%
Dichlorodifluoromethane (Freon 12)	12,000	0.00%	0.00%	0.00%	0.00%	0.00%
Chlorodifluoromethane (Freon 22)	50,000	0.00%	0.00%	0.00%	0.00%	0.00%
Trichlorotrifluoroethane (Freon 113)	180,000	0.00%	0.00%	0.00%	0.00%	0.00%

See notes on next page

Table 8. Summary of Air Emissions Model Output, Bethpage Park Groundwater Containment System, Operable Unit 3
(Former Grumman Settling Ponds), Bethpage, New York.

Notes:

(1) Compound-specific AGC values per the NYSDEC DAR-1 AGC/SGC tables, revised February 28, 2014. NYSDEC DAR-1 AGCs were scaled using the results of a site-specific annual USEPA SCREEN 3 model to calculate the annual MASC per monitoring event.

(2) Percent of AGC (or Percent MASC) was calculated by dividing the actual effluent concentration by the site-specific annual MASC. Detailed calculations are included in Appendix D.

(3) Percent AGC is the 12-month average at the end of the reporting period. The Percent AGC was calculated by time-weighting the "Percent MASCs" for the individual sampling events over the past year. MASCs are typically calculated once per quarter, thus the MASCs for each month within a quarter are assumed to be the same.

(4) Sample VSP-5 was retaken on March 10, 2014 due to operator error on February 18, 2014.

(5) Sample VSP-5 was taken on October 1, 2014 due to system maintenance during the third quarter of 2014.

Acronyms\Key:

AGC	Annual Guideline Concentration.
DAR-1	Division of Air Resources Air Guidance-1.
MASC	Maximum allowable stack concentration.
NYSDEC	New York State Department of Environmental Conservation.
SGC	Short-term Guideline Concentration.
USEPA	U.S. Environmental Protection Agency
VOC	Volatile organic compound
$\mu g/m^3$	micrograms per cubic meter

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-1 4/21/2009	RW-1 7/29/2009	RW-1 8/12/2009	RW-1 9/10/2009	RW-1 11/10/2009	RW-1 12/2/2009	RW-1 2/2/2010	RW-1 4/12/2010	RW-1 7/20/2010	RW-1 10/4/2010	RW-1 1/10/2011	RW-1 4/8/2011	RW-1 7/8/2011	RW-1 10/3/2011	RW-1 1/9/2012	RW-1 4/3/2012	RW-1 7/2/2012	RW-1 10/1/2012
	NYSDEC SCGs																		
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Butanone	NE	< 50	**6.5 J**	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone	NE	< 50	**3.5 J**	< 50	**2.9 J**	**1.5 J**	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane	5	< 5	< 5	< 5	< 5	< 5	< 5 R	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorodibromomethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)	NE	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroform	7	**4.7 J**	**3.0 J**	**2.4 J**	**1.9 J**	**1.4 J**	**1.3 J**	**0.80 J**	**0.42 J**	**0.36 J**	**0.31 J**	< 5	< 5	< 5	< 5	**0.22 J**	**0.21 J**	**0.23 J**	< 5
Chloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5 R	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene	5	< 5 B	**1.5 J**	**1.5 J**	**1.4 J**	**1.5 J**	**1.7 J**	**1.5 J**	**1.5 J**	**2.0 J**	**1.3 J**	**1.3 J**	**0.81 J**	**0.78 J**	**0.94 J**	**0.95 J**	**0.65 J**	**0.58 J**	**0.37 J**
cis-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl N-Butyl Ketone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Methyl tert-Butyl Ether	5	--	--	--	--	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Toluene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene	0.4	< 5 J	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloroethylene	5	**1.1 J**	**1.3 J**	**1.7 J**	**1.5 J**	**1.8 J**	**2.0 J**	**2.0 J**	**2.4 J**	**3.4 J**	**3.0 J**	**2.4 J**	**1.9 J**	**1.8 J**	**1.8 J**	**1.8 J**	**1.7 J**	**1.4 J**	**0.95 J**
Trichlorofluoromethane (Freon 11)	5	--	--	--	--	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene-o	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Total VOCs [2]		**5.8**	**16**	**5.6**	**7.7**	**6.2**	**5.0**	**4.3**	**4.3**	**5.8**	**4.6**	**3.7**	**2.7**	**2.6**	**2.7**	**3.0**	**2.6**	**2.2**	**1.3**
Project VOCs [3]		**0.0**	**2.8**	**3.2**	**2.9**	**3.3**	**3.7**	**3.5**	**3.9**	**5.4**	**4.3**	**3.7**	**2.7**	**2.6**	**2.7**	**2.8**	**2.4**	**2.0**	**1.3**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-1 1/7/2013	RW-1 4/1/2013	RW-1 6/6/2013	RW-1 7/1/2013	RW-1 11/14/2013	RW-1 2/18/2014	RW-1 5/5/2014	RW-1[4] 10/1/2014	RW-1 11/17/2014
	NYSDEC SCGs									
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1-Dichloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10
4-methyl-2-pentanone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 5
Acetone	NE	< 50	< 50	**2.0 J**	< 50	< 50	< 50	< 50	< 50	< 10
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 1
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Bromoform	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 4.0
Bromomethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2.0
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2.0
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorodibromomethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorodifluoromethane (Freon 22)	NE	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chloroform	7	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
cis-1,2-dichloroethene	5	**0.34 J**	**0.40 J**	**0.40 J**	**0.24 J**	**0.25 J**	< 5	**0.21 J**	< 5	< 1
cis-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2.0
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Methyl N-Butyl Ketone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 5
Methyl tert-Butyl Ether	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Styrene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Toluene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
trans-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
trans-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Trichloroethylene	5	**0.86 J**	**0.70 J**	**0.81 J**	**0.77 J**	**0.77 J**	**0.67 J**	**0.41 J**	**0.34 J**	**0.31 J**
Trichlorofluoromethane (Freon 11)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 1
Xylene-o	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Xylenes - m,p	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Total VOCs [2]		**1.2**	**1.1**	**3.2**	**1.0**	**1.0**	**0.67**	**0.62**	**0.34**	**0.31**
Project VOCs [3]		**1.2**	**1.1**	**1.2**	**1.0**	**1.0**	**0.67**	**0.62**	**0.34**	**0.31**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-2 4/9/2008	RW-2 4/9/2008	RW-2 4/10/2008	RW-2 4/10/2008	RW-2 4/21/2009	RW-2 7/29/2009	RW-2 8/12/2009	RW-2 9/10/2009	RW-2 11/10/2009	RW-2 12/2/2009	RW-2 2/2/2010	RW-2 (dup.) 2/2/2010	RW-2 4/12/2010	RW-2 (dup) 4/12/2010	RW-2 5/14/2010	RW-2 7/20/2010	RW-2 10/4/2010
	NYSDEC SCGs																	
1,1,1-Trichloroethane	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
1,1,2,2-Tetrachloroethane	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
1,1,2-Trichloroethane	1	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
1,1-Dichloroethane	5	< 0.5	< 10	< 0.5	< 25	< 5	**9.2 J**	**8.8 J**	**6.4 J**	**5.2 J**	**5.3 J**	**3.5 J**	**3.9 J**	**3.2 J**	**3.6 J**	< 5	**2.3 J**	**2.2 J**
1,1-Dichloroethene	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	**2.9 J**	**3.1 J**	< 25	< 25	**3.0 J**	**3.0 J**	< 5	**2.1 J**	**2.2 J**
1,2-Dichloroethane	0.6	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
1,2-Dichloropropane	1	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
2-Butanone	NE	--	< 20	--	< 50	< 50	< 1000	< 1000	< 500	< 250	< 250	< 250	< 250	< 130	< 130	< 50	< 130	< 130
4-methyl-2-pentanone	50	--	< 20	--	< 50	< 50	< 1000	< 1000	< 500	< 250	< 250	< 250	< 250	< 130	< 130	< 50	< 130	< 130
Acetone	NE	--	< 40	--	< 100	< 50 B	< 1000	< 1000	< 500	< 250	< 250	< 250	< 250	< 130	< 130	< 50 B	< 130	< 130 B
Benzene	1	< 0.5	< 10	< 0.5	< 25	< 0.7	< 14	< 14	< 7	< 3.5	< 3.5	< 3.5	< 3.5	< 1.8	< 1.8	< 0.7	< 1.8	< 1.8
Bromodichloromethane	50	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Bromoform	50	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Bromomethane	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25 R	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Carbon Disulfide	60	--	< 20	--	< 50	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Carbon tetrachloride	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Chlorobenzene	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Chlorodibromomethane	50	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Chlorodifluoromethane (Freon 22)	NE	--	--	--	--	**0.46 J**	< 100	< 100	**4.0 J**	**3.5 J**	**3.3 J**	< 25	**2.6 J**	**1.7 J**	**1.7 J**	< 5	**1.1 J**	**1 J**
Chloroethane	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Chloroform	7	< 0.5	< 10	< 0.5	< 25	**9.3**	< 100	< 100	**3.4 J**	**3.0 J**	**2.3 J**	**2 J**	**1.7 J**	**1.5 J**	**1.6 J**	**2.2 J**	**1.4 J**	**1.9 J**
Chloromethane	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25 R	< 25	< 25	< 13	< 13	< 5	< 13	< 13
cis-1,2-dichloroethene	5	< 0.5	**310**	< 0.5	**720**	< 5 B	**2,600**	**2,300**	**1,300**	**930**	**880**	**590**	**590**	**480**	**440 D**	**4.2 J**	**310**	**270**
cis-1,3-dichloropropene	0.4	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Dichlorodifluoromethane (Freon 12)	5	< 0.5	--	< 0.5	--	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Dichloromethane	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	**1.2 J**	< 13	< 13	< 5	< 13	< 13
Ethylbenzene	5	< 0.5	< 10	< 0.5	< 25	< 5	**13 J**	**7.2 J**	**4.8 J**	**6.4 J**	**5.1 J**	**1.8 J**	**1.5 J**	**2.2 J**	**2.1 J**	< 5	**1.7 J**	**1.5 J**
Methyl N-Butyl Ketone	50	--	< 20	--	< 50	< 50	< 1000	< 1000	< 500	< 250	< 250	< 250	< 250	< 130	< 130	< 50	< 130	< 130
Methyl tert-Butyl Ether	5	< 0.5	--	< 0.5	--	--	--	--	--	--	--	< 25	< 25	< 13	< 13	--	< 13	< 13
Styrene	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Tetrachloroethene	5	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Toluene	5	< 0.5	< 10	< 0.5	< 25	< 5	**520**	**170**	**190**	**200**	**150**	**49**	**52**	**71**	**73**	< 5	**35**	**25**
trans-1,2-dichloroethene	5	< 0.5	< 10	< 0.5	< 25	< 5	**12 J**	**21 J**	**32 J**	**6.2 J**	**2.1 J**	**49**	**31**	< 13	**3.4 J**	< 5	**0.95 J**	< 13
trans-1,3-dichloropropene	0.4	< 0.5	< 10	< 0.5	< 25	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Trichloroethylene	5	< 0.5	**40**	< 0.5	**49**	**1.4 J**	**46 J**	**30 J**	**52**	**59**	**63**	**46**	**44**	**43**	**45**	**0.82 J**	**35**	**36**
Trichlorofluoromethane (Freon 11)	5	< 5	--	< 5	--	--	--	--	--	--	--	< 25		< 13		--	< 13	< 13
Trichlorotrifluoroethane (Freon 113)	5	--	--	--	--	< 5	< 100	< 100	< 50	< 25	< 25	< 25	< 25	< 13	< 13	< 5	< 13	< 13
Vinyl Chloride	2	< 0.5	**17**	< 0.5	**130**	< 2	**630**	**670**	**370**	**210**	**210**	**83**	**93**	**94**	**96**	< 2	**54**	**45**
Xylene-o	5	< 0.5	< 10	< 0.5	< 25	< 5	**14 J**	**9.4 J**	**5.4 J**	**6 J**	**4.9 J**	< 25	**1.3 J**	**2.2 J**	**2.3 J**	< 5	**1.3 J**	**0.9 J**
Xylenes - m,p	5	< 0.5	< 10	< 0.5	< 25	< 5	**27 J**	**9.2 J**	**7.9 J**	**11 J**	**9 J**	< 25	**1.9 J**	**3.5 J**	**3.4 J**	< 5	**2.4 J**	**1.9 J**
Total VOCs [2]		**0.0**	**367**	**0.0**	**899**	**11**	**3,871**	**3,226**	**1,976**	**1,443**	**1,338**	**824**	**824**	**705**	**675**	**7.2**	**447**	**388**
Project VOCs [3]		**0.0**	**327**	**0.0**	**850**	**0.0**	**3,849**	**3,210**	**1,957**	**1,430**	**1,327**	**821**	**817**	**699**	**670**	**5.0**	**443**	**383**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	NYSDEC SCGs	RW-2 1/10/2011	RW-2 4/8/2011	RW-2 6/8/2011	RW-2 7/8/2011	RW-2 10/3/2011	RW-2 1/9/2012	RW-2 2/29/2012	RW-2 4/3/2012	RW-2 (dup.) 4/3/2012	RW-2 7/2/2012	RW-2 10/1/2012	RW-2 (dup.) 10/1/2012	RW-2 1/7/2013	RW-2 4/1/2013	RW-2 (dup.) 4/1/2013	RW-2 6/6/2013	RW-2 7/1/2013	RW-2 11/14/2013	RW-2 2/18/2014
1,1,1-Trichloroethane		5	**0.78 J**	**0.93 J**	**1.1 J**	**0.93 J**	**0.73 J**	< 13	< 1.0	**0.52 J**	< 10	**0.46 J**	**0.51 J**	**0.50 J**	**0.41 J**	**0.39 J**	**0.37 J**	**0.36 J**	**0.27 J**	< 5	< 5
1,1,2,2-Tetrachloroethane		5	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		1	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		5	**3.5 J**	**2.9 J**	**3.1 J**	**2.4 J**	**2.0 J**	**1.7 J**	**2.1**	**1.4 J**	**1.6 J**	**1.5 J**	**1.6 J**	**1.7 J**	**1.6 J**	**1.8 J**	**2.0 J**	**1.7 J**	**1.5 J**	**1.0 J**	**1.1 J**
1,1-Dichloroethene		5	**4.9 J**	**2.6 J**	**2.8 J**	**2.7 J**	**1.7 J**	**0.98 J**	< 1.0	**0.92 J**	**0.84 J**	**1.2 J**	**1.0 J**	**1.0 J**	**0.82 J**	**0.85 J**	**0.83 J**	**0.89 J**	**0.77 J**	**0.54 J**	**0.79 J**
1,2-Dichloroethane		0.6	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		1	< 13	< 13	**0.38 J**	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	**0.28 J**	< 5	< 5	< 5	**0.47 J**	< 5	< 5	< 5	< 5
2-Butanone		NE	< 130	< 130	< 50	< 130	< 130	< 130	--	< 100	< 100	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		50	< 130	< 130	< 50	< 130	< 130	< 130	--	< 100	< 100	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone		NE	< 130 B	< 130	< 50	< 130	< 130B	**3.4 J**	--	< 100	**1.5 J**	< 50	< 50	< 50	< 50	< 50	< 50	**1.7 J**	< 50	< 50	< 50
Benzene		1	< 1.8	< 1.8	< 0.7	< 1.8	< 1.8	< 1.8	< 1.0	< 1.4	< 1.4	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		50	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform		50	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane		5	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide		60	< 13	< 13	< 5	< 13	< 13	< 13	--	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		5	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		5	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	**0.22 J**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorodibromomethane		50	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		NE	**1.4 J**	< 13	**0.98 J**	**1.3 J**	**0.60 J**	**0.95 J**	--	**0.64 J**	**0.48 J**	**0.44 J**	**0.40 J**	**0.40 J**	**0.33 J**	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane		5	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroform		7	**1.9 J**	**1.7 J**	**1.3 J**	**1.3 J**	**1.1 J**	**1.4 J**	**1.2**	**1 J**	**1.1 J**	**1.4 J**	**1.9 J**	**1.9 J**	**2.1 J**	**2.2 J**	**2.3 J**	**2.0 J**	**2.2 J**	**2.0 J**	**2.2 J**
Chloromethane		5	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		5	**460**	**330**	**300 D**	**320**	**280**	**260**	**360 D**	**220**	**220**	**200**	**200**	**190 D**	**160**	**170 D**	**180 D**	**180**	**140**	**100**	**130**
cis-1,3-dichloropropene		0.4	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		5	< 13	< 13	< 5	< 13	< 13	< 13	--	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichloromethane		5	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		5	**2.6 J**	**3.2 J**	**1.7 J**	**2.4 J**	**2.5 J**	**2.4 J**	**3.0**	**1.5 J**	**1.6 J**	**2.8 J**	**3.3 J**	**3.4 J**	**2.3 J**	**3.6 J**	**3.7 J**	**5.2**	**3.1 J**	**2.9 J**	**4.0 J**
Methyl N-Butyl Ketone		50	< 130	< 130	< 50	< 130	< 130	< 130	--	< 100	< 100	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Methyl tert-Butyl Ether		5	< 13	< 13	< 5	< 13	< 13	< 13	--	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene		5	< 13	< 13	< 5	< 13	< 13	< 13	--	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		5	< 13	< 13	**0.43 J**	< 13	**0.58 J**	< 13	< 1.0	< 10	< 10	0.4 J	**0.36 J**	**0.30 J**	**0.38 J**	**0.34 J**	**0.36 J**	**0.28 J**	**0.33 J**	**0.25 J**	**0.25 J**
Toluene		5	**62**	**96**	**62**	**81**	**72**	**81**	**100**	**60**	**61**	**73**	**96**	**94**	**82**	**110**	**110**	**160**	**95**	**84**	**85**
trans-1,2-dichloroethene		5	< 13	< 13	**0.42 J**	< 13	**0.63 J**	< 13	**20**	**0.46 J**	< 10	**0.87 J**	**0.26 J**	< 5	< 5	**0.26 J**	< 5	**0.36 J**	< 5	< 5	< 5
trans-1,3-dichloropropene		0.4	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		5	**51**	**30**	**30**	**25**	**25**	**23**	**18**	**18**	**18**	**20**	**20**	**19**	**18**	**16**	**16**	**16**	**17**	**13**	**11**
Trichlorofluoromethane (Freon 11)		5	< 13	< 13	< 5	< 13	< 13	< 13	< 1.0	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)		5	< 13	< 13	< 5	< 13	< 13	< 13	--	< 10	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride		2	**87**	**72**	**88**	**67**	**55**	**59**	**54**	**54**	**54**	**44**	**61**	**59**	**75**	**110**	**110**	**110**	**100**	**88**	**99**
Xylene-o		5	**2.6 J**	**3.1 J**	**2.6 J**	**2.6 J**	**2.6 J**	**2.6 J**	--	**2.2 J**	**2.3 J**	**2.6 J**	**2.7 J**	**2.9 J**	**3.2 J**	**4.1 J**	**4.5 J**	**4.8 J**	**3.1 J**	**3.1 J**	**4.0 J**
Xylenes - m,p		5	**3.8 J**	**6.0 J**	**4.5 J**	**4.6 J**	**4.2 J**	**4.7 J**	--	**3.6 J**	**4.1 J**	**4.5 J**	**5.8**	**5.8**	**5.3**	**8.6**	**8.9**	**9.3**	**5.6**	**6.8**	**6.8**
Total VOCs [2]			**681**	**548**	**499**	**511**	**449**	**441**	**558**	**364**	**367**	**353**	**395**	**380**	**351**	**428**	**439**	**493**	**369**	**302**	**344**
Project VOCs [3]			**676**	**543**	**495**	**506**	**444**	**433**	**554**	**361**	**362**	**349**	**374**	**374**	**347**	**422**	**433**	**484**	**364**	**297**	**338**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-2 5/5/2014	RW-2 10/1/2014	RW-2 11/17/2014
	NYSDEC SCGs			
1,1,1-Trichloroethane	5	< 5	< 5	< 1
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 1
1,1,2-Trichloroethane	1	< 5	< 5	< 1
1,1-Dichloroethane	5	**1.1 J**	**0.85 J**	**0.94 J**
1,1-Dichloroethene	5	**0.78 J**	< 5	< 1
1,2-Dichloroethane	0.6	< 5	< 5	< 1
1,2-Dichloropropane	1	< 5	< 5	< 1
2-Butanone	NE	< 50	< 50	< 10
4-methyl-2-pentanone	50	< 50	< 50	< 5
Acetone	NE	< 50	< 50	< 10
Benzene	1	< 0.7	< 0.7	< 1
Bromodichloromethane	50	< 5	< 5	< 1
Bromoform	50	< 5	< 5	< 4.0
Bromomethane	5	< 5	< 5	< 2.0
Carbon Disulfide	60	< 5	< 5	< 2.0
Carbon tetrachloride	5	< 5	< 5	< 1
Chlorobenzene	5	< 5	< 5	< 1
Chlorodibromomethane	50	< 5	< 5	< 1
Chlorodifluoromethane (Freon 22)	NE	< 5	< 5	< 5
Chloroethane	5	< 5	< 5	< 1
Chloroform	7	**1.7 J**	**2.8 J**	**2.3**
Chloromethane	5	< 5	< 5	< 1
cis-1,2-dichloroethene	5	**100**	**51**	**44**
cis-1,3-dichloropropene	0.4	< 5	< 5	< 1
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5
Dichloromethane	5	< 5	< 5	< 2.0
Ethylbenzene	5	**2.5 J**	**2.9 J**	**3.5**
Methyl N-Butyl Ketone	50	< 50	< 50	< 5
Methyl tert-Butyl Ether	5	< 5	< 5	< 1
Styrene	5	< 5	< 5	< 5
Tetrachloroethene	5	< 5	< 5	< 1
Toluene	5	**63**	**46**	**55**
trans-1,2-dichloroethene	5	< 5	< 5	< 1
trans-1,3-dichloropropene	0.4	< 5	< 5	< 1
Trichloroethylene	5	**12**	**12**	**11**
Trichlorofluoromethane (Freon 11)	5	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5
Vinyl Chloride	2	**87**	**48**	**74**
Xylene-o	5	**3.2 J**	**2.0 J**	**2.4**
Xylenes - m,p	5	**5.4**	**3.1 J**	**3.2**
Total VOCs [2]		**277**	**169**	**196**
Project VOCs [3]		**272**	**163**	**190**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	NYSDEC SCGs	RW-3 4/22/2009	RW-3 7/29/2009	RW-3 8/12/2009	RW-3 9/10/2009	RW-3 11/10/2009	RW-3 12/2/2009	RW-3 2/2/2010	RW-3 4/12/2010	RW-3 7/20/2010	RW-3 10/4/2010	RW-3 1/10/2011	RW-3 4/8/2011	RW-3 7/8/2011	RW-3 10/3/2011	RW-3 1/9/2012	RW-3 2/29/2012	RW-3 4/3/2012	RW-3 7/2/2012	RW-3 10/1/2012	RW-3 1/7/2013
1,1,1-Trichloroethane		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
1,1,2,2-Tetrachloroethane		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
1,1,2-Trichloroethane		1	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
1,1-Dichloroethane		5	**3.0 J**	**2.4 J**	**2.1 J**	**1.9 J**	**1.4 J**	**1.3 J**	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	**0.21 J**
1,1-Dichloroethene		5	**0.39 J**	< 5	**0.35 J**	**0.41 J**	**0.53 J**	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
1,2-Dichloroethane		0.6	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
1,2-Dichloropropane		1	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
2-Butanone		NE	< 50	< 50	< 50	< 50	< 50	< 130	< 250	< 250	< 500	< 250	< 250	< 250	< 250	< 250	< 130	--	< 130	< 100	< 100	< 50
4-methyl-2-pentanone		50	< 50	< 50	< 50	< 50	< 50	< 130	< 250	< 250	< 500	< 250	< 250	< 250	< 250	< 250	< 130	--	< 130	< 100	< 100	< 50
Acetone		NE	< 50 B	< 50	< 50	**2 J**	**3.1 J**	< 130	< 250	< 250	< 500	< 250	< 250 B	< 250	< 250	< 250	< 130	--	< 130	< 100B	< 100	< 50
Benzene		1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 1.8	< 3.5	< 3.5	< 7	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 1.8	< 1	< 1.8	< 1.4	< 1.4	< 0.7
Bromodichloromethane		50	< 5	**0.35 J**	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Bromoform		50	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Bromomethane		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Carbon Disulfide		60	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	--	< 13	< 10	< 10	< 5
Carbon tetrachloride		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Chlorobenzene		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Chlorodibromomethane		50	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Chlorodifluoromethane (Freon 22)		NE	**0.43 J**	**2.1 J**	**8.5**	**93**	**490 D**	**660 D**	**1,300 D**	**1,300 D**	**1400**	**880**	**890**	**900**	**670**	**540**	**390**	--	**460**	**270**	**230**	**190**
Chloroethane		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Chloroform		7	**0.87 J**	**2.1 J**	**2.3 J**	**2.9 J**	**5.9**	**6.0 J**	**4.3 J**	**3.2 J**	< 50	**6.6 J**	**5.8 J**	**4.0 J**	**2.5 J**	**5.5 J**	**6.9 J**	**4.5**	**3.4 J**	**2.9 J**	**5.3 J**	**4.9 J**
Chloromethane		5	< 5	< 5	< 5	< 5	< 5	< 13 R	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
cis-1,2-dichloroethene		5	**350 D**	**130**	**120**	**130**	**85**	**72**	**68**	**70**	**64**	**64**	**74**	**93**	**110**	**92**	**55**	**50**	**33**	**22**	**17**	**12**
cis-1,3-dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Dichlorodifluoromethane (Freon 12)		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	--	< 13	< 10	< 10	< 5
Dichloromethane		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Ethylbenzene		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Methyl N-Butyl Ketone		50	< 50	< 50	< 50	< 50	< 50	< 130	< 250	< 250	< 500	< 250	< 250	< 250	< 250	< 250	< 130	--	< 130	< 100	< 100	< 50
Methyl tert-Butyl Ether		5	--	--	--	--	--	--	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	--	< 13	< 10	< 10	< 5
Styrene		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	--	< 13	< 10	< 10	< 5
Tetrachloroethene		5	**0.85 J**	**0.81 J**	**0.56 J**	**0.83 J**	**0.54 J**	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	**0.33 J**
Toluene		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
trans-1,2-dichloroethene		5	**1.2 J**	**0.68 J**	**0.54 J**	**0.59 J**	**0.52 J**	< 13	**7.2 J**	< 25	**4.8 J**	**6.7 J**	**3.9 J**	**6.5 J**	< 25	**1.8 J**	< 13	< 1	< 13	< 10	< 10	< 5
trans-1,3-dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Trichloroethylene		5	**43**	**37**	**34**	**29**	**24**	**22**	**19 J**	**17 J**	**14 J**	**12 J**	**10 J**	**6.8 J**	**7.7 J**	**7.5 J**	**6.7 J**	**7.3**	**6 J**	**6.5 J**	**5.3 J**	**5.1**
Trichlorofluoromethane (Freon 11)		5		--	--	--	--	--	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	< 1	< 13	< 10	< 10	< 5
Trichlorotrifluoroethane (Freon 113)		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	--	< 13	< 10	< 10	< 5
Vinyl Chloride		2	< 2	< 2	< 2	**0.47 J**	**0.42 J**	< 5	< 10	< 10	< 20	**2.6 J**	**5.1 J**	**11**	**9.9 J**	**7.1 J**	**2.8 J**	**2.5**	**1.2 J**	**0.80 J**	**0.48 J**	**0.25 J**
Xylene-o		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	--	< 13	< 10	< 10	< 5
Xylenes - m,p		5	< 5	< 5	< 5	< 5	< 5	< 13	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 13	--	< 13	< 10	< 10	< 5
Total VOCs [2]			**400**	**175**	**168**	**261**	**611**	**761**	**1,399**	**1,390**	**1,483**	**972**	**989**	**1,021**	**800**	**654**	**461**	**64**	**504**	**302**	**258**	**213**
Project VOCs [3]			**355**	**171**	**158**	**163**	**112**	**95**	**94**	**87**	**83**	**85**	**93**	**117**	**128**	**108**	**65**	**60**	**40**	**29**	**23**	**18**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-3 4/1/2013	RW-3 6/6/2013	RW-3 7/1/2013	RW-3 11/14/2013	RW-3 2/18/2014	RW-3 5/5/2014	RW-3 10/1/2014	RW-3 11/17/2014
	NYSDEC SCGs								
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1-Dichloroethane	5	< 5	**0.23 J**	**0.21 J**	**0.23 J**	< 5	< 5	< 5	< 1
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10
4-methyl-2-pentanone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 5
Acetone	NE	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 1
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Bromoform	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 4.0
Bromomethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2.0
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2.0
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorodibromomethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorodifluoromethane (Freon 22)	NE	**130**	**100**	**98**	**61**	**45**	**34**	**9.0**	**15**
Chloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chloroform	7	**3.5 J**	**3.9 J**	**3.6 J**	**2.5 J**	**3.8 J**	**4.9 J**	**4.8 J**	**4.0**
Chloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
cis-1,2-dichloroethene	5	**9.4**	**8.0**	**7.7**	**6.1**	**4.9 J**	**4.3 J**	**2.8 J**	**2.9**
cis-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	**0.33 J**	< 5	< 5	< 5	< 5
Dichloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2.0
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Methyl N-Butyl Ketone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 5
Methyl tert-Butyl Ether	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Styrene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	**0.29 J**	**0.34 J**	**0.38 J**	**0.28 J**	**0.30 J**	**0.36 J**	< 5	< 1
Toluene	5	< 5	< 5	< 5	**0.31 J**	< 5	< 5	**0.35 J**	< 1
trans-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
trans-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Trichloroethylene	5	**4.3 J**	**4.3 J**	**4.5 J**	**3.9 J**	**3.6 J**	**3.6 J**	**2.6 J**	**3.4**
Trichlorofluoromethane (Freon 11)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	**0.30 J**	< 5	**0.34 J**	< 5	< 5	< 5
Vinyl Chloride	2	**0.24 J**	< 2	< 2	< 2	< 2	< 2	< 2	< 1
Xylene-o	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Xylenes - m,p	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Total VOCs [2]		**148**	**117**	**115**	**75**	**58**	**47**	**20**	**25**
Project VOCs [3]		**14**	**13**	**13**	**11**	**8.8**	**8.3**	**5.8**	**6.3**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	WSP-04 RW-04 4/22/2009	WSP-04 (dup.) RW-04 4/22/2009	RW-4 7/29/2009	RW-4 8/12/2009	RW-4 9/10/2009	RW-4 11/10/2009	RW-4 12/2/2009	RW-4 2/2/2010	RW-4 4/12/2010	RW-4 7/20/2010	RW-4 10/4/2010	RW-4 1/10/2011	RW-4 4/8/2011	RW-4 7/8/2011	RW-4 10/3/2011	RW-4 1/9/2012	RW-4 4/3/2012	RW-4 7/2/2012	RW-4 10/1/2012
	NYSDEC SCGs																			
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
1,1-Dichloroethane	5	**0.38 J**	**0.43 J**	**0.42 J**	**0.38 J**	**0.47 J**	**0.52 J**	< 10	**0.60 J**	< 13	< 25	< 25	< 25	< 25	< 25	**0.55 J**	**0.73 J**	**0.63 J**	**0.6 J**	**0.54 J**
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 100	< 130	< 250	< 250	< 250	< 250	< 250	< 130	< 130	< 130	< 100	< 100
4-methyl-2-pentanone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 100	< 130	< 250	< 250	< 250	< 250	< 250	< 130	< 130	< 130	< 100	< 100
Acetone	NE	< 50	< 50	< 50	< 50	< 50	**3.5 J**	< 100	< 100	< 130	< 250	< 250	< 250	< 250	< 250	< 130	< 130	< 130	< 100B	< 100
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 1.4	< 1.4	< 1.8	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 1.8	< 1.8	< 1.8	< 1.4	< 1.4
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Bromoform	50	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Bromomethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10 R	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Chlorodibromomethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Chlorodifluoromethane (Freon 22)	NE	**10**	**11**	**140**	**200**	**330 D**	**230 D**	**290**	**440 D**	**560 D**	**840**	**850**	**820**	**650**	**520**	**430**	**390**	**360**	**250**	**230**
Chloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Chloroform	7	**0.98 J**	**1.1 J**	**1 J**	**0.88 J**	**0.78 J**	**0.95 J**	**0.88 J**	**0.72 J**	**0.8 J**	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Chloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10 R	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
cis-1,2-dichloroethene	5	< 5 B	**0.32 J**	**1.5 J**	**1.7 J**	**1.9 J**	**1.9 J**	**2.2 J**	**1.8 J**	**1.5 J**	< 25	< 25	< 25	< 25	< 25	**0.63 J**	**0.63 J**	< 13	**0.40 J**	< 10
cis-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Dichloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Methyl N-Butyl Ketone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 100	< 130	< 250	< 250	< 250	< 250	< 250	< 130	< 130	< 130	< 100	< 100
Methyl tert-Butyl Ether	5	--	--	--	--	--	--	--	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Styrene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Tetrachloroethene	5	**0.37 J**	**0.38 J**	**0.44 J**	**0.44 J**	**0.44 J**	**0.48 J**	< 10	**0.64 J**	**0.90 J**	< 25	< 25	< 25	< 25	< 25	**1.2 J**	**1.3 J**	**1.1 J**	**1.1 J**	**1 J**
Toluene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
trans-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
trans-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Trichloroethylene	5	**0.73 J**	**0.80 J**	**1.1 J**	**1.2 J**	**1.6 J**	**1.9 J**	**1.8 J**	**1.4 J**	**1.4 J**	< 25	< 25	< 25	< 25	< 25	< 13	**1.1 J**	**0.85 J**	**0.9 J**	**0.76 J**
Trichlorofluoromethane (Freon 11)	5	--	--	--	--	--	--	--	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2	< 2	< 4	< 4	< 5	< 10	< 10	< 10	< 10	< 10	< 5	< 5	< 5	< 4 U	< 4 U
Xylene-o	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Xylenes - m,p	5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 13	< 25	< 25	< 25	< 25	< 25	< 13	< 13	< 13	< 10	< 10
Total VOCs [2]		**12**	**14**	**144**	**205**	**335**	**239**	**295**	**445**	**565**	**840**	**850**	**820**	**650**	**520**	**432**	**394**	**363**	**253**	**232**
Project VOCs [3]		**1.5**	**1.9**	**3.5**	**3.7**	**4.4**	**4.8**	**4.0**	**4.4**	**3.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.4**	**3.8**	**2.6**	**2.6**	**2.3**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-4 1/7/2013	RW-4 4/1/2013	RW-4 6/6/2013	RW-4 7/1/2013	RW-4 11/14/2013	RW-4 2/18/2014	RW-4 5/5/2014	RW-4 10/1/2014	RW-4 11/17/2014
	NYSDEC SCGs									
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	**0.23 J**	< 5	< 5	< 5	< 1
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,1-Dichloroethane	5	**0.46 J**	**0.52 J**	**0.49 J**	**0.45 J**	**0.38 J**	**0.38 J**	**0.40 J**	**0.36 J**	< 1
1,1-Dichloroethene	5	**0.24 J**	**0.22 J**	< 5	< 5	**0.25 J**	**0.23 J**	< 5	< 5	< 1
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10
4-methyl-2-pentanone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 5
Acetone	NE	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 10
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 1
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Bromoform	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 4
Bromomethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorodibromomethane	50	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chlorodifluoromethane (Freon 22)	NE	**190 D**	**140**	**110**	**110**	**100**	**82**	**68**	**42**	**49**
Chloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Chloroform	7	**0.28 J**	**0.25 J**	**0.35 J**	**0.36 J**	**0.37 J**	**0.39 J**	**0.41 J**	**0.37 J**	**0.30 J**
Chloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
cis-1,2-dichloroethene	5	**0.24 J**	**0.29 J**	< 5	< 5	**0.22 J**	**0.20 J**	**0.24 J**	< 5	< 1
cis-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichloromethane	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Methyl N-Butyl Ketone	50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 5
Methyl tert-Butyl Ether	5	**0.28 J**	< 5	**0.28 J**	**0.30 J**	**0.24 J**	**0.24 J**	**0.30 J**	< 5	**0.30 J**
Styrene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	**0.95 J**	**1.3 J**	**0.98 J**	**1.1 J**	**1.1 J**	**0.79 J**	**0.82 J**	**0.74 J**	**0.70 J**
Toluene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
trans-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
trans-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Trichloroethylene	5	**0.82 J**	**0.75 J**	**0.72 J**	**0.67 J**	**0.76 J**	**0.67 J**	**0.79 J**	**0.61 J**	**0.66 J**
Trichlorofluoromethane (Freon 11)	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)	5	**0.38 J**	**0.33 J**	**0.30 J**	**0.39 J**	**0.29 J**	< 5	< 5	< 5	< 5
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 1
Xylene-o	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Xylenes - m,p	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 1
Total VOCs [2]		**194**	**144**	**113**	**113**	**104**	**85**	**71**	**44**	**51**
Project VOCs [3]		**2.7**	**3.1**	**2.2**	**2.2**	**2.9**	**2.3**	**2.3**	**1.7**	**1.4**

See notes on last page.

Table 9. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1)

Notes:

(1) Water samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per NYSDEC ASP 2005, Method OLM 4.3 (prior to September 1, 2014) and per USEPA Method 8260C (after September 1, 2014). Results validated following protocols specified in Sampling and Analysis Plan in the December 2009 DRAFT OM&M Manual (ARCADIS 2009).

(2) "Total VOCs" represents the sum of individual concentrations of the VOCs detected.

(3) "Project VOCs" represents the sum of individual compound concentrations of 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethene; vinyl chloride; cis-1,2-dichloroethene; trans-1,2-dichloroethene; benzene; toluene; and xylenes-o,m, and p.

(4) Samples were collected on October 1, 2014 due to system maintenance during the third quarter of 2014.

Acronyms\Key:

Indicates an exceedance of an SCG.

Bold value indicates a detection.

ASP	Analytical services protocol.
B	Compound found in an associated blank sample, presence may be suspect
D	Compound identified from secondary dilution.
dup.	Duplicate
ELAP	Environmental Laboratory Approval Program
J	Compound detected but below its reporting limit; the value is estimated.
NYSDEC	New York State Department of Environmental Conservation.
NYSDOH	New York State Department of Health
OM&M	Operation, maintenance and monitoring.
SCGs	Standards, criteria, and guidance values.
VOC	Volatile organic compound.
µg/L	Micrograms per liter.
--	Not analyzed.
NE	Not established.
< 5	Compound not detected above its laboratory quantification limit.
<5 B	Compound considered non-detect due to associated blank contamination.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-1 4/21/2009	RW-1 7/29/2009	RW-1 8/12/2009	RW-1 9/10/2009	RW-1 11/10/2009	RW-1 12/2/2009	RW-1 10/4/2010	RW-1 2/10/2011	RW-1 10/3/2011	RW-1 11/11/2011	RW-1 [2] 10/1/2012	RW-1 11/14/2013	RW-1 11/17/2014
	NYSDEC SCGs													
Total Cadmium	5	< 5	--	--	--	--	--	< 5	--	--	< 5	< 5	< 5.0	< 3.0
Dissolved Cadmium	5	< 5	--	--	--	--	--	< 5	--	--	< 5	< 5	< 5.0	< 3.0
Total Chromium	50	24.3	--	**--**	**--**	**--**	**--**	27	--	--	**23**	**23**	**28**	**30**
Dissolved Chromium	50	20.2	--	**--**	**--**	**--**	**--**	27	--	--	**24**	**23**	**32**	**32**
Total Iron	300	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	--	< 100	< 100	< 100
Dissolved Iron	300	< 100	--	--	--	--	--	< 100	< 100	< 100	--	< 100	< 100	< 100
Total Manganese	300	23.6	--	--	--	--	--	12	--	--	--	--	--	--
Dissolved Manganese	300	22.4	--	--	--	--	--	11	--	--	--	--	--	--
Total Mercury	0.7	< 0.2	--	--	--	--	--	--	--	--	--	--	< 0.20	--
Dissolved Mercury	0.7	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1)

COMPOUND (µg/L)	Sample Location: / Sample Date:	NYSDEC SCGs	RW-2 4/9/2008	RW-2 4/10/2008	RW-2 4/21/2009	RW-2 7/29/2009	RW-2 8/12/2009	RW-2 9/10/2009	RW-2 10/9/2009	RW-2 11/10/2009	RW-2 12/2/2009	RW-2 1/11/2010	RW-2 2/2/2010	RW-2 3/10/2010	RW-2 4/12/2010	RW-2 7/20/2010
Total Cadmium		5	< 5	< 5	< 5	--	--	--	--	--	--	--	--	--	--	--
Dissolved Cadmium		5	--	--	< 5	--	--	--	--	--	--	--	--	--	--	--
Total Chromium		50	< 10	< 10	< 10	--	--	--	--	--	--	--	--	--	--	--
Dissolved Chromium		50	--	--	< 10	--	--	--	--	--	--	--	--	--	--	--
Total Iron		300	**1,830**	**3,400**	**2,330**	**5,950**	**4,870**	**3,550**	**3,800**	**2,040**	**1,260**	**1,140**	**1,000**	**2,550**	**880**	**1,180**
Dissolved Iron		300	**1,500**	**2,520**	**781**	--	--	--	--	--	--	--	--	--	--	--
Total Manganese		300	**349**	**370**	**241**	--	--	--	--	--	--	--	--	--	--	--
Dissolved Manganese		300	**322**	**336**	**248**	--	--	--	--	--	--	--	--	--	--	--
Total Mercury		0.7	< 0.3	< 0.3	< 0.2	--	--	--	--	--	--	--	--	--	--	--
Dissolved Mercury		0.7	--	--	< 0.2	--	--	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	NYSDEC SCGs	RW-2 10/4/2010	RW-2 12/6/2010	RW-2 2/10/2011	RW-2 2/10/2011	RW-2 3/7/2011	RW-2 4/8/2011	RW-2 5/2/2011	RW-2 6/8/2011	RW-2 7/8/2011	RW-2 8/1/2011	RW-2 9/6/2011	RW-2 10/3/2011	RW-2 11/11/2011	RW-2 12/19/2011	RW-2 1/9/2012
Total Cadmium		5	< 5	--	--	--	--	--	--	--	--	--	--	--	< 5	--	--
Dissolved Cadmium		5	< 5	--	--	--	--	--	--	--	--	--	--	--	< 5	--	--
Total Chromium		50	< 10	--	--	--	--	--	--	--	--	--	--	--	< 10	--	--
Dissolved Chromium		50	< 10	--	--	--	--	--	--	--	--	--	--	--	< 10	--	--
Total Iron		300	**710**	**590**	**970**	**970**	**850**	**1,000**	**890**	**830**	**3,110**	**840**	**830**	**1,640**	**750**	**930**	**870**
Dissolved Iron		300	**380**	**270**	**550**	**550**	**530**	**740**	**710**	**670**	**670**	**670**	**650**	**640**	**540**	**750**	**700**
Total Manganese		300	**187**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Manganese		300	**192**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Mercury		0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Mercury		0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	NYSDEC SCGs	RW-2 2/6/2012	RW-2 3/8/2012	RW-2 4/3/2012	RW-2 5/7/2012	RW-2 6/5/2012	RW-2 7/2/2012	RW-2 8/7/2012	RW-2 9/4/2012	RW-2 10/1/2012	RW-2 11/12/2012	RW-2 12/3/2012	RW-2 1/7/2013	RW-2 2/4/2013	RW-2[3] 3/4/2013	RW-2 4/1/2013
Total Cadmium		5	--	--	--	< 5	--	--	--	--	< 5	--	--	--	--	--	--
Dissolved Cadmium		5	--	--	--	< 5	--	--	--	--	< 5	--	--	--	--	--	--
Total Chromium		50	--	--	--	< 10	--	--	--	--	< 10	--	--	--	--	--	--
Dissolved Chromium		50	--	--	--	< 10	--	--	--	--	< 10	--	--	--	--	--	--
Total Iron		300	**960**	**990**	**930**	**970**	**800**	**940**	**1,850**	**950**	**1,020**	**750**	**670**	**600**	**640**	**1,950**	**1,070**
Dissolved Iron		300	**640**	**640**	**830**	**730**	**690**	**840**	**780**	**810**	**780**	**610**	**540**	**560**	**520**	**1,920**	**720**
Total Manganese		300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Manganese		300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Mercury		0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Mercury		0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-2 5/6/2013	RW-2 6/6/2013	RW-2 7/1/2013	RW-2 11/14/2013	RW-2 2/18/2014	RW-2 5/5/2014	RW-2[4] 10/1/2014	RW-2 11/17/2014	RW-3 4/22/2009	RW-3 7/29/2009	RW-3 9/10/2009	RW-3 11/10/2009	RW-3 12/2/2009	RW-3 3/10/2010	RW-3 4/12/2010
	NYSDEC SCGs															
Total Cadmium	5	--	--	--	< 5.0	--	--	--	< 3.0	< 5	--	--	--	--	--	--
Dissolved Cadmium	5	--	--	--	< 5.0	--	--	--	< 3.0	< 5	--	--	--	--	--	--
Total Chromium	50	--	--	--	< 10	--	--	--	< 10	**22.6**	--	--	--	--	--	--
Dissolved Chromium	50	--	--	--	< 10	--	--	--	< 10	< 10	--	--	--	--	--	--
Total Iron	300	**700**	**990**	**1,200**	**1,540**	**890**	**660**	**2,060**	**1,160**	**246**	< 100	< 100	< 100	< 100	**200**	**470**
Dissolved Iron	300	**600**	**740**	**650**	**850**	**680**	**760**	**1,200**	**1,100**	< 100	--	--	--	--	--	--
Total Manganese	300	--	--	--	--	--	--	--	--	< 10	--	--	--	--	--	--
Dissolved Manganese	300	--	--	--	--	--	--	--	--	< 10	--	--	--	--	--	--
Total Mercury	0.7	--	--	--	< 0.20	--	--	--	--	< 0.2	--	--	--	--	--	--
Dissolved Mercury	0.7	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	NYSDEC SCGs	RW-3 7/20/2010	RW-3 10/4/2010	RW-3 12/6/2010	RW-3 3/7/2011	RW-3 4/8/2011	RW-3 5/2/2011	RW-3 6/8/2011	RW-3 7/8/2011	RW-3 8/1/2011	RW-3 9/6/2011	RW-3 10/3/2011	RW-3 11/11/2011	RW-3 12/19/2011	RW-3 1/9/2012	RW-3 2/6/2012
Total Cadmium		5	--	< 5	--	--	--	--	--	--	--	--	--	< 5	--	--	--
Dissolved Cadmium		5	--	< 5	--	--	--	--	--	--	--	--	--	< 5	--	--	--
Total Chromium		50	--	< 10	--	--	--	--	--	--	--	--	--	< 10	--	--	--
Dissolved Chromium		50	--	< 10	--	--	--	--	--	--	--	--	--	< 10	--	--	--
Total Iron		300	**890**	**350**	**340**	**530**	**480**	**480**	**570**	**450**	**450**	**370**	**460**	**460**	**280**	**500**	**410**
Dissolved Iron		300	--	< 100	**150**	**200**	**200**	**130**	**140**	**120**	**120**	< 100	**110**	< 100	**200**	**110**	100
Total Manganese		300	--	**35**	--	--	--		--	--	--	--	--	--	--	--	--
Dissolved Manganese		300	--	**34**	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Mercury		0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Mercury		0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-3 3/8/2012	RW-3 4/3/2012	RW-3 5/7/2012	RW-3 6/5/2012	RW-3 7/2/2012	RW-3 10/1/2012	RW-3 11/12/2012	RW-3 12/3/2012	RW-3 1/7/2013	RW-3 2/4/2013	RW-3 3/4/2013	RW-3 4/1/2013	RW-3 5/6/2013	RW-3 6/6/2013	RW-3 7/1/2013
	NYSDEC SCGs															
Total Cadmium	5	--	--	< 5	--	--	< 5	--	--	--	--	--	--	--	--	--
Dissolved Cadmium	5	--	--	< 5	--	--	< 5	--	--	--	--	--	--	--	--	--
Total Chromium	50	--	--	< 10	--	--	< 10	--	--	--	--	--	--	--	--	--
Dissolved Chromium	50	--	--	< 10	--	--	< 10	--	--	--	--	--	--	--	--	--
Total Iron	300	**980**	**310**	**400**	**140**	**250**	**280**	**220**	**210**	< 100	**290**	**130**	**230**	**330**	**280**	**180**
Dissolved Iron	300	**130**	**110**	< 100	**120**	**110**	< 100	**100**	< 100	< 100	**110**	**130**	**110**	< 100	**140**	<100
Total Manganese	300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Manganese	300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Mercury	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Mercury	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-3 11/14/2013	RW-3 2/18/2014	RW-3 5/5/2014	RW-3[4] 10/1/2014	RW-3 11/17/2014
	NYSDEC SCGs					
Total Cadmium	5	< 5.0	--	--	--	< 3.0
Dissolved Cadmium	5	< 5.0	--	--	--	< 3.0
Total Chromium	50	< 10	--	--	--	< 10
Dissolved Chromium	50	< 10	--	--	--	< 10
Total Iron	300	**280**	**170**	**190**	**350**	< 100
Dissolved Iron	300	**150**	<100	<100	<100	< 100
Total Manganese	300	--	--	--	--	--
Dissolved Manganese	300	--	--	--	--	--
Total Mercury	0.7	< 0.20	--	--	--	--
Dissolved Mercury	0.7	--	--	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1]

COMPOUND (µg/L)	Sample Location: / Sample Date:	RW-4 (Rep) 4/22/2009	RW-4 4/22/2009	RW-4 7/29/2009	RW-4 8/12/2009	RW-4 9/10/2009	RW-4 11/10/2009	RW-4 12/2/2009	RW-4 10/4/2010	RW-4 10/3/2011	RW-4 11/11/2011	mple Location: / Sample Date:	RW-4 [2] 10/1/2012	RW-4 11/14/2013	RW-4 11/17/2014
	NYSDEC SCGs											NYSDEC SCGs			
Total Cadmium	5	< 5	< 5	--	--	--	--	--	< 5	--	< 5	5	< 5	< 5.0	< 3.0
Dissolved Cadmium	5	< 5	< 5	--	--	--	--	--	< 5	--	< 5	5	< 5	< 5.0	< 3.0
Total Chromium	50	< 10	< 10	--	--	--	--	--	< 10	--	< 10	50	< 10	< 10	< 10
Dissolved Chromium	50	< 10	< 10	--	--	--	--	--	< 10	--	< 10	50	< 10	< 10	< 10
Total Iron	300	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	300	< 100	< 100	< 100
Dissolved Iron	300	< 100	< 100	--	--	--	--	--	< 100	< 100	< 100	300	< 100	< 100	< 100
Total Manganese	300	**10.4**	**10.4**	--	--	--	--	--	**28**	--	--	300	--	--	--
Dissolved Manganese	300	< 10	< 10	--	--	--	--	--	**29**	--	--	300	--	--	--
Total Mercury	0.7	< 0.2	< 0.2	--	--	--	--	--	--	--	--	0.7	--	< 0.20	--
Dissolved Mercury	0.7	< 0.2	< 0.2	--	--	--	--	--	--	--	--	0.7	--	--	--

See notes on last page.

Table 10. Concentrations of Metals in Groundwater Samples Collected from Remedial Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1)

Notes:

(1) Water samples collected by ARCADIS on the dates shown and submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory for metals analysis using USEPA Method 6010 and for mercury analyses using USEPA Method 7470. Results validated following protocols specified in Sampling and Analysis Plan in the December 2009 DRAFT OM&M Manual (ARCADIS 2009).

(2) Beginning January 2012 metals analyses for recovery wells RW-1 and RW-4 are included with annual recovery well sampling performed in the fourth quarter of each year.

(3) Elevated RW-2 iron concentrations are believed attributed to multiple system shutdowns and re-starts due to a fouled pressure switch on March 2 and March 3, 2013. Turbulence dislodged accumulated iron deposits at the remedial well piping.

(4) Samples were collected on October 1, 2014 due to system maintenance during the third quarter of 2014.

Acronyms/Key:

	Indicates an exceedance of an SCG.
700	Bold data indicates that the analyte was detected at or above its reporting limit.
ASP	Analytical services protocol.
ELAP	Environmental Laboratory Approval Program
NYSDEC	New York State Department of Environmental Conservation.
NYSDOH	New York State Department of Health
USEPA	U.S. Environmental Protection Agency
SCGs	Standards, criteria, and guidance values.
µg/L	Micrograms per liter.
--	Not analyzed.
< 5	Compound not detected above its laboratory quantification limit.

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Table 11. Summary of Water-Level Elevations, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Well Identification	Well Casing Elevation (ft msl)	Event Date	Baseline (1) 5/8/2009 (ft msl)	Start Up Round 7/10/2009 (ft msl)	Week 1, Day 2 07/22/09 (ft msl)	Week 1, Day5 07/25/09 (ft msl)	Week 2 7/27/09 (ft msl)	Week 3 08/05/09 (ft msl)	Week 6 08/27/09 (ft msl)	Week 7 09/01/09 (ft msl)	Week 8 09/11/09 (ft msl)	Week 9 09/17/09 (ft msl)	Week 10 09/23/09 (ft msl)	Week 20 11/30/09 (ft msl)	1Q2010 02/04/10 (ft msl)	2Q2010 04/23/10 (ft msl)	3Q2010 08/26/10 (ft msl)	4Q2010 12/10/10 (ft msl)	1Q2011 02/04/11 (ft msl)	2Q2011 05/20/11 (ft msl)	3Q2011 08/09/11 (ft msl)	4Q2011 10/26/11 (ft msl)	1Q2012 01/25/12 (ft msl)	2Q2012 05/02/12 (ft msl)
Recovery Wells																								
RW-1	125.18		69.75	72.98	71.53	NM	NM	NM	70.88	69.85	70.21	70.93	70.74	70.32	70.67	74.38	72.52	71.11	70.96	72.13	70.44	72.72	73.15	72.12
RW-2	124.48		72.27	72.76	65.94	65.66	67.57	65.60	63.42	63.16	63.27	61.51	61.30	63.07	61.80	64.88	63.44	61.35	67.99	66.31	64.18	65.11	69.05	69.81
RW-3	122.84		69.40	72.58	68.61	68.52	68.55	68.49	67.89	68.05	68.04	67.88	67.68	67.29	67.64	71.4	69.44*	68.13	67.74	68.88	67.64	69.70	70.75	71.74
RW-4	121.25		69.25	72.39	71.11	71.21	71.21	71.23	70.55	69.40	70.12	70.77	70.37	70.01	70.35	74.02	71.93	70.56	67.06	71.37	69.95	72.13	72.71	71.61
Monitoring Wells																								
B24MW-2	126.96		74.31	74.79	74.71	74.75	74.92	75.04	74.48	74.58	74.56	74.69	74.35	73.54	74.13	76.16	75.86	75.65	74.96	76.06	74.35	76.00	76.28	75.57
B24MW-3	127.11		72.63	73.2	72.86	73.03	73.04	73.07	72.37	71.46	69.71	72.33	72.23	71.71	72.16	75.87	74.10	72.89	72.40	74.04	72.27	74.44	74.63	73.67
B30MW-1	128.33		73.55	74.02	73.78	73.92	73.97	73.92	73.27	73.43	73.35	73.29	73.19	72.68	73.00	76.54	74.96	73.86	73.38	74.75	73.25	75.41	75.54	74.66
BCPMW-1	125.73		73.16	73.7	73.37	73.69	73.57	73.56	72.83	73.16	73.00	72.98	72.79	72.43	72.67	76.26	74.66	73.43	72.94	74.75	72.94	75.05	75.23	74.29
BCPMW-2	126.39		72.55	73.05	71.37	72.75	72.69	72.71	72.01	72.26	72.16	72.04	71.93	71.38	71.83	75.52	73.69	72.55	72.03	73.64	71.94	74.16	74.33	73.29
BCPMW-3	124.94		72.46	72.94	64.59	72.44	72.44	72.39	71.74	71.94	71.82	71.75	71.60	71.12	71.59	75.24	73.40	72.27	71.74	73.25	71.64	73.94	74.05	73.06
BCPMW-4-1	128.76		72.30	72.81	72.26	72.18	72.12	72.13	71.51	70.36	71.55	71.51	71.40	70.96	71.33	75.05	73.13	72.02	71.56	73.08	71.46	73.70	73.78	72.81
BCPMW-4-2	129.15		72.58	72.82	72.25	72.21	72.24	72.16	71.53	70.43	71.59	71.55	71.44	70.95	71.36	75.07	73.16	72.08	71.56	73.06	71.51	73.74	73.83	72.83
BCPMW-4-3	129.19		72.32	72.8	72.34	72.37	72.31	72.31	71.67	70.59	71.81	71.65	71.55	71.07	71.46	75.16	73.26	72.14	71.73	73.19	71.55	73.84	73.96	72.94
BCPMW-5-1	129.37		72.79	73.26	72.88	73.05	73.52	73.42	72.22	72.55	72.36	72.24	72.15	71.77	72.14	75.66	73.94	72.72	72.74	73.81	72.14	74.46	74.77	73.67
BCPMW-6-1	126.01		72.12	72.55	72.21	72.15	72.09	72.09	71.47	71.61	71.58	71.43	71.31	70.85	71.26	74.91	72.96	71.91	71.49	72.77	71.45	73.58	73.67	72.66
BCPMW-6-2	125.16		71.74	72.13	71.77	71.83	71.73	71.73	71.11	71.29	70.53	71.11	70.87	70.58	70.96	74.64	72.60	71.59	71.17	72.49	71.01	73.26	73.37	72.30
BCPMW-7-1	124.81		72.00	72.39	72.22	72.23	72.14	72.14	71.55	71.68	71.62	71.50	71.41	70.94	71.33	74.99	72.99	71.97	71.51	72.78	71.53	73.62	73.71	72.71
MW-200-1	123.49		72.16	72.64	72.30	72.22	72.25	72.22	71.58	70.52	71.74	71.66	72.64	70.95	71.37	75.07	73.14	72.08	71.72	72.98	71.52	73.69	73.83	72.76
MW-201-1	121.69		72.04	72.49	72.10	72.03	71.99	71.96	71.38	71.50	71.40	71.37	72.45	70.69	71.10	74.84	72.87	71.79	71.33	72.69	71.25	73.48	73.55	72.53
MW-202-1	119.27		71.90	72.36	71.98	72.07	72.02	72.94	71.35	71.48	71.46	71.40	72.26	70.72	71.13	74.83	72.82	71.77	71.32	72.66	71.21	73.46	73.57	73.51
MW-203-1	118.25		71.83	72.22	71.99	71.96	72.01	71.93	71.32	71.45	71.40	71.40	72.24	70.69	71.10	74.75	72.77	71.75	71.30	72.61	70.20	73.43	73.52	72.49
Piezometers																								
PZ-1a	128.82		72.56	72.8	72.03	71.95	71.90	71.90	71.30	71.40	71.50	71.31	71.20	70.75	71.15	74.87	72.94	71.85	71.33	72.76	71.31	73.54	73.62	72.63
PZ-1b	128.92		72.47	72.79	71.74	71.84	71.76	71.78	71.18	71.35	71.37	71.21	71.11	70.67	71.09	74.78	72.88	71.82	71.28	72.70	71.24	73.47	73.55	72.56
PZ-1c	128.96		72.47	72.81	72.32	72.36	72.26	72.34	71.65	71.21	71.75	71.62	71.48	71.11	71.48	75.15	73.23	72.13	71.74	73.16	71.56	73.83	73.9	72.90
PZ-2a	128.36		72.47	72.75	72.02	71.95	71.88	71.87	71.27	71.41	71.38	71.27	71.15	70.73	71.09	74.82	72.87	71.81	71.34	72.74	71.30	73.45	73.57	72.57
PZ-2b	128.37		72.43	72.75	70.32	71.90	71.87	71.86	71.26	71.40	71.37	71.24	71.13	70.70	71.08	74.77	72.86	71.78	71.30	72.68	71.27	73.45	73.55	72.54
PZ-2c	128.55		72.41	72.67	70.60	72.28	72.21	72.21	71.57	71.75	71.66	71.57	71.44	71.02	71.40	75.05	73.15	72.05	71.68	73.05	71.52	73.74	73.87	72.82
PZ-3	124.99		72.52	72.66	47.10	71.77	71.68	71.72	71.10	71.27	71.18	71.10	71.03	70.52	70.94	74.69	72.71	71.65	70.93	72.55	71.08	73.28	73.4	72.35
PZ-4	125.31		72.50	72.73	53.89	71.75	71.77	71.84	71.20	71.38	71.29	71.21	71.11	70.64	71.07	74.81	72.83	71.78	71.45	72.64	71.32	73.42	73.52	72.54
PZ-5a	129.07		72.50	73.04	75.43	72.81	72.75	72.79	72.12	72.33	72.17	72.12	71.99	71.53	71.94	75.61	73.79	72.59	72.17	73.70	71.98	74.27	74.39	73.40
PZ-5b	129.06		72.50	73.02	75.43	72.67	72.66	72.72	72.01	72.24	72.07	71.98	71.90	71.45	71.84	75.53	73.69	72.51	72.08	73.67	71.88	74.16	74.29	73.29
PZ-6a	125.67		72.50	72.6	72.85	71.94	71.85	71.84	71.24	71.35	71.31	71.21	71.09	70.65	71.03	74.73	72.84	71.70	71.24	72.56	71.24	73.37	73.46	72.43
PZ-6b	125.74		72.50	72.58	72.63	71.84	71.76	71.76	71.16	71.29	71.22	71.12	71.00	72.54	70.93	74.7	72.65	71.58	71.11	72.46	71.14	73.28	73.37	72.34
PZ-7a	125.10		72.50	72.52	68.82	72.24	72.16	72.16	71.57	71.69	71.61	71.52	71.41	70.96	71.32	75.02	73.00	72.00	71.54	72.80	71.58	73.67	73.7	72.72
PZ-7b	125.06		72.50	72.39	68.66	72.01	71.46	71.94	71.31	71.49	71.15	71.29	71.18	70.81	71.21	74.85	72.83	71.83	71.37	72.68	71.26	73.45	73.53	72.51

Notes:
(1) Baseline readings were taken prior to system startup, which occurred on July 21, 2009.
(2) Measurement collected is believed to be anomalous.
(3) Well casing is broken and blockage exists at around 2 feet below top of casing.
*: RW-3 water level measurement collected on September 9, 2010.

Acronyms/Key:
ft msl feet relative to mean sea level
NM not measured

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Table 11. Summary of Water-Level

Well Identification	Well Casing Elevation (ft msl)	3Q2012 08/17/12 (ft msl)	4Q2012 10/05/12 (ft msl)	1Q2013 02/13/13 (ft msl)	2Q2013 05/13/13 (ft msl)	3Q2013 08/13/13 (ft msl)	4Q2013 11/01/13 (ft msl)	1Q2014 03/07/14 (ft msl)	2Q2014 06/03/14 (ft msl)	3Q2014 08/15/14 (ft msl)	4Q2014 12/23/2014 (ft. msl)
Recovery Wells											
RW-1	125.18	71.71	71.21	70.35	70.89	71.62	69.31	68.08	69.97	69.83	69.40
RW-2	124.48	65.3	63.7	62.66	63.33	61.35	60.23	58.2	64.45	64.22	61.63
RW-3	122.84	74.35[2]	68.06	68.01	68.73	72.29	67.11	64.49	66.97	67.09	66.11
RW-4	121.25	70.88	70.67	69.7	70.37	71.2	68.7	67.38	69.40	68.81	68.64
Monitoring Wells											
B24MW-2	126.96	75.76	74.63	74.85	74.32	73.81	72.88	72.65	73.48	73.93	73.49
B24MW-3	127.11	73.62	72.69	72.2	72.41	73.14	68.24	69.82	71.67	71.77	71.17
B30MW-1	128.33	NM	73.66	73.11	73.28	73.97	72.26	70.73	72.61	72.21	72.02
BCPMW-1	125.73	74.22	73.27	NM	73.09	73.51	71.66	70.27	72.86	72.40	71.77
BCPMW-2	126.39	73.17	72.39	71.82	72.09	72.66	70.77	69.51	71.41	71.19	70.85
BCPMW-3	124.94	72.85	72.14	71.56	71.79	72.44	70.57	69.25	71.12	70.78	70.65
BCPMW-4-1	128.76	72.59	71.89	71.41	71.56	72.32	70.3	69.01	70.96	70.55	70.35
BCPMW-4-2	129.15	72.61	71.92	71.42	71.58	72.31	70.32	69.03	70.98	70.60	70.33
BCPMW-4-3	129.19	72.71	71.97	71.53	71.67	72.43	70.4	69.16	71.06	70.74	70.46
BCPMW-5-1	129.37	73.34	72.62	72.06	72.19	72.87	71.01	69.78	71.56	71.22	70.94
BCPMW-6-1	126.01	72.32	71.73	71.12	71.32	72.15	70.15	68.79	70.85	70.21	70.07
BCPMW-6-2	125.16	71.97	71.39	70.84	71.01	71.84	69.83	68.49	70.48	69.94	69.80
BCPMW-7-1	124.81	72.31	71.77	71.2	71.33	72.26	70.21	68.82	70.86	70.19	70.01
MW-200-1	123.49	72.59	71.91	71.34	71.53	72.31	70.37	69.06	71.03	70.55	70.29
MW-201-1	121.69	72.28	71.65	71.09	71.28	72.05	70.08	68.75	70.75	70.07	69.98
MW-202-1	119.27	72.23	71.6	70.98	71.23	--	70.06	68.75	70.70	70.13	69.97
MW-203-1	118.25	72.13	71.56	71.02	71.17	72.01	70.01	68.7	70.64	70.03	69.84
Piezometers											
PZ-1a	128.82	72.42	71.72	71.23	71.39	NM[3]	NM[3]	NM[3]	NM[3]	NM[3]	NM[3]
PZ-1b	128.92	72.36	71.64	71.16	71.35	72.06	70.34	68.77	70.69	70.27	70.41
PZ-1c	128.96	72.68	71.94	71.46	71.63	72.39	70.39	69.12	71.01	70.67	70.46
PZ-2a	128.36	72.32	71.64	71.14	71.32	72.06	70.08	68.73	70.74	70.23	70.03
PZ-2b	128.37	72.28	71.61	71.13	71.29	72.05	70.08	68.71	70.74	70.23	70.03
PZ-2c	128.55	72.55	71.88	71.38	71.55	72.34	70.33	69.02	70.93	70.58	70.31
PZ-3	124.99	72.16	71.44	71.06	71.18	71.92	69.95	68.61	70.60	70.07	70.86
PZ-4	125.31	72.32	71.63	71.18	71.33	72.05	70.09	68.76	70.70	70.25	70.01
PZ-5a	129.07	73.25	72.45	71.94	72.16	72.84	70.85	69.62	71.47	71.34	70.95
PZ-5b	129.06	73.15	72.35	71.85	72.08	72.73	70.72	69.51	71.35	71.31	70.86
PZ-6a	125.67	72.13	71.5	70.95	71.17	71.91	69.94	68.53	70.63	69.99	69.83
PZ-6b	125.74	72.05	71.43	70.88	71.11	71.81	69.86	68.44	70.52	69.93	69.74
PZ-7a	125.10	72.36	71.78	71.2	71.35	72.26	70.26	68.84	70.90	70.19	70.02
PZ-7b	125.06	72.13	71.54	71.05	71.16	71.54	70.07	68.68	70.64	70.06	69.94

Notes:
(1) Baseline readings were taken pri
(2) Measurement collected is believe
(3) Well casing is broken and blocka
*: RW-3 water level measurement cc

Acronyms/Key:
ft msl feet relative to mean sea leve
NM not measured

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	B24MW-2	B24MW-2	B24MW-2	B24MW-2	B24MW-2	*B24MW-2*
Constituent in ug/L	Sample Date:	4/23/2009	10/4/2010	10/27/2011	10/3/2012	6/13/2013	*11/13/2014*
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,1-Dichloroethane	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50 J	*< 10*
2-Hexanone	50	< 50	< 50	< 50	< 50	< 50 J	*< 5.0*
4-Methyl-2-Pentanone	50	< 50	< 50	< 50	< 50	< 50 J	*< 5.0*
Acetone	NE	< 50 B	< 50	< 50 B	< 50	< 50 J	*< 10*
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.70 J	*< 1.0*
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Bromoform	50	< 5	< 5	< 5	< 5	< 5.0 J	*< 4.0*
Bromomethane	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 2.0*
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5.0 J	*< 2.0*
Carbon Tetrachloride	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	< 5	< 5	< 5	**0.41 J**	< 5.0 J	*< 5.0*
Chloroethane	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Chloroform	7	< 5	**0.3 J**	< 5	**1.3 J**	**0.21 J**	*< 1.0*
Chloromethane	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
cis-1,2-Dichloroethene	5	< 5	< 5	< 5	**1.9 J**	**0.23 J**	*< 1.0*
cis-1,3-Dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Chlorodibromomethane	50	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 5.0*
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Methyl-Tert-Butylether	5	--	< 5	--	**0.45 J**	**0.21 J**	*< 1.0*
Methylene Chloride	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 2.0*
Styrene (Monomer)	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 5.0*
Tetrachloroethene	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Toluene	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
trans-1,2-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
trans-1,3-Dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Trichloroethene	5	**3.7 J**	**4.4 J**	**3.2 J**	**25**	**4.3 J**	***2.7***
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 5.0*
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2.0 J	*< 1.0*
o-Xylene	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
m,p-Xylene	5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Total VOCs [3]		**3.7**	**4.7**	**3.2**	**29**	**5.0**	***2.7***
Project VOCs [4]		**3.7**	**4.4**	**3.2**	**27**	**4.5**	***2.7***

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	B24MW-3 4/20/2009	B24MW-3 10/6/2010	B24MW-3 10/27/2011	B24MW-3 10/4/2012	B24MW-3 6/13/2013	*B24MW-3 11/13/2014*
1,1,1-Trichloroethane		5	**0.62 J**	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,1,2,2-Tetrachloroethane		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,1,2-Trichloroethane		1	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,1-Dichloroethane		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,1-Dichloroethene		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,2-Dichloroethane		0.6	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
1,2-Dichloropropane		1	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
2-Butanone		NE	< 50	< 50	< 50	< 50	< 50 J	*< 10*
2-Hexanone		50	< 50 J	< 50	< 50	< 50	< 50 J	*< 5.0*
4-methyl-2-pentanone		50	< 50 J	< 50	< 50	< 50	< 50 J	*< 5.0*
Acetone		NE	< 50	< 50	< 50	< 50	< 50 J	*< 10 J*
Benzene		1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.70 J	*< 1.0*
Bromodichloromethane		50	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Bromoform		50	< 5	< 5	< 5	< 5	< 5.0 J	*< 4.0*
Bromomethane		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 2.0*
Carbon Disulfide		60	< 5	< 5	< 5	< 5	< 5.0 J	*< 2.0*
Carbon tetrachloride		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Chlorobenzene		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Chlorodifluoromethane (Freon 22)		NE	< 5	< 5	< 5	< 5	< 5.0 J	*< 5.0*
Chloroethane		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Chloroform		7	< 5	< 5	**0.32 J**	**0.38 J**	**1.3 J**	***0.28 J***
Chloromethane		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
cis-1,2-dichloroethene		5	**10**	**1.2 J**	**0.4 J**	**0.62 J**	< 5.0 J	*< 1.0*
cis-1,3-dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Dibromochloromethane		50	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Dichlorodifluoromethane (Freon 12)		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 5.0*
Ethylbenzene		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Methyl tert-Butyl Ether		5	--	< 5	--	< 5	< 5.0 J	*< 1.0*
Methylene Chloride		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 2.0*
Styrene		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 5.0*
Tetrachloroethene		5	**0.51 J**	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Toluene		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
trans-1,2-dichloroethene		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
trans-1,3-dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Trichloroethene		5	**45**	**5.9**	**1.4 J**	**1 J**	**0.44 J**	*< 1.0*
Trichlorotrifluoroethane (Freon 113)		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 5.0*
Vinyl Chloride		2	< 2	< 2	< 2	< 2	< 2.0 J	*< 1.0*
Xylene-o		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Xylenes - m,p		5	< 5	< 5	< 5	< 5	< 5.0 J	*< 1.0*
Total VOCs [3]			**56**	**7.1**	**2.1**	**2.0**	**1.7**	***0.28***
Project VOCs [4]			**56**	**7.1**	**1.8**	**1.6**	**0.4**	*0*

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	B30MW-1	B30MW-1	B30MW-1	B30MW-1	B30MW-1	*B30MW-1*
Constituent in ug/L	Sample Date:	4/23/2009	10/4/2010	10/27/2011	10/3/2012	6/14/2013	*11/13/2014*
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
1,1-Dichloroethane	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50	*< 10*
2-Hexanone	50	< 50	< 50	< 50	< 50	< 50	*< 5.0*
4-methyl-2-pentanone	50	< 50	< 50	< 50	< 50	< 50	*< 5.0*
Acetone	NE	< 50 B	< 50 B	< 50	< 50	< 50	*< 10*
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.70	*< 1.0*
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Bromoform	50	< 5	< 5	< 5	< 5	< 5.0	*< 4.0*
Bromomethane	5	< 5	< 5	< 5	< 5	< 5.0	*< 2.0*
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5.0	*< 2.0*
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	< 5	< 5	< 5	< 5	< 5.0	*< 5.0*
Chloroethane	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Chloroform	7	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Chloromethane	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
cis-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
cis-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Dibromochloromethane	50	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	< 5	< 5.0	*< 5.0*
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Methyl tert-Butyl Ether	5	--	< 5	--	< 5	< 5.0	*< 1.0*
Methylene Chloride	5	< 5	< 5	< 5	< 5	< 5.0	*< 2.0*
Styrene	5	< 5	< 5	< 5	< 5	< 5.0	*< 5.0*
Tetrachloroethene	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Toluene	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
trans-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
trans-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Trichloroethene	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5	< 5	< 5.0	*< 5.0*
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2.0	*< 1.0*
Xylene-o	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Xylenes - m,p	5	< 5	< 5	< 5	< 5	< 5.0	*< 1.0*
Total VOCs [3]		0	0	0	0	0	*0*
Project VOCs [4]		0	0	0	0	0	*0*

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	BCPMW-1	BCPMW-2	BCPMW-3
Constituent in ug/L	Sample Date:	4/28/2009	4/28/2009	4/29/2009
	NYSDEC SCGs			
1,1,1-Trichloroethane	5	< 5	< 10	< 25
1,1,2,2-Tetrachloroethane	5	< 5	< 10	< 25
1,1,2-Trichloroethane	1	< 5	< 10	< 25
1,1-Dichloroethane	5	**0.37 J**	**8 J**	**9.6 J**
1,1-Dichloroethene	5	< 5	**3.8 J**	**43**
1,2-Dichloroethane	0.6	< 5	**0.68 J**	< 25
1,2-Dichloropropane	1	< 5	< 10	< 25
2-Butanone	NE	< 50	< 100	< 250
2-Hexanone	50	< 50	< 100	< 250
4-methyl-2-pentanone	50	< 50	< 100	< 250
Acetone	NE	< 50 B	< 100	< 250
Benzene	1	< 0.7	< 1.4	< 3.5
Bromodichloromethane	50	< 5	< 10	< 25
Bromoform	50	< 5	< 10	< 25
Bromomethane	5	< 5	< 10	< 25
Carbon Disulfide	60	< 5	< 10	< 25
Carbon tetrachloride	5	< 5	< 10	< 25
Chlorobenzene	5	< 5	< 10	< 25
Chlorodifluoromethane (Freon 22)	NE	< 5	< 10	< 25
Chloroethane	5	< 5	< 10	< 25
Chloroform	7	**0.88 J**	< 10	< 25
Chloromethane	5	< 5	< 10	< 25
cis-1,2-dichloroethene	5	**22**	**310**	**900**
cis-1,3-dichloropropene	0.4	< 5	< 10	< 25
Dibromochloromethane	50	< 5	< 10	< 25
Dichlorodifluoromethane (Freon 12)	5	< 5	< 10	< 25
Ethylbenzene	5	< 5	< 10	< 25 B
Methyl tert-Butyl Ether	5	--	--	--
Methylene Chloride	5	**0.52 J**	< 10	< 25
Styrene	5	< 5	< 10	< 25
Tetrachloroethene	5	< 5	**1.5 J**	< 25
Toluene	5	**0.33 J**	< 10	< 25 B
trans-1,2-dichloroethene	5	**0.44 J**	**2.4 J**	**8.9 J**
trans-1,3-dichloropropene	0.4	< 5	< 10	< 25
Trichloroethene	5	**190**	**180**	**470**
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 10	< 25
Vinyl Chloride	2	< 2	**4.1**	**300**
Xylene-o	5	< 5	< 10	< 25 B
Xylenes - m,p	5	< 5	< 10	< 25 B
Total VOCs [3]		**220**	**510**	**1,700**
Project VOCs [4]		**210**	**510**	**1,700**

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	BCPMW-4-1 4/17/2009	BCPMW-4-1 12/1/2009	BCPMW-4-1 10/4/2010	BCPMW-4-1 10/28/2011	BCPMW-4-1 10/3/2012
1,1,1-Trichloroethane		5	< 25	**2.4 J**	**14 J**	**10 J**	**29**
1,1,2,2-Tetrachloroethane		5	< 25	< 5	< 25	< 25	< 25
1,1,2-Trichloroethane		1	< 25	**0.38 J**	< 25	< 25	**1.7 J**
1,1-Dichloroethane		5	**6.5 J**	**46**	**38**	**18 J**	**39**
1,1-Dichloroethene		5	**1.8 J**	**14**	**21 J**	**13 J**	**24 J**
1,2-Dichloroethane		0.6	< 25	**0.65 J**	< 25	**2.1 J**	**4.8 J**
1,2-Dichloropropane		1	< 25	**4.7 J**	**3.8 J**	**1.9 J**	**5.1 J**
2-Butanone		NE	< 250	< 50	< 250	< 250	< 250
2-Hexanone		50	< 250 J	< 50	< 250	< 250	< 250
4-Methyl-2-Pentanone		50	< 250 J	< 50	< 250	< 250	< 250
Acetone		NE	< 250 J	< 50	< 250	< 250B	< 250
Benzene		1	< 3.5	**0.44 J**	< 3.5	< 3.5	< 3.5
Bromodichloromethane		50	< 25	< 5	< 25	< 25	< 25
Bromoform		50	< 25	< 5	< 25	< 25	< 25
Bromomethane		5	< 25	R	< 25	< 25	< 25
Carbon Disulfide		60	< 25	< 5	< 25	< 25	< 25
Carbon Tetrachloride		5	< 25	< 5	< 25	< 25	< 25
Chlorobenzene		5	< 25	< 5	< 25	< 25	< 25
Chlorodifluoromethane (Freon 22)		NE	**17 J**	**6.2**	**4.3 J**	**2.5 J**	< 25
Chloroethane		5	< 25	**2.4 J**	**4.1 J**	< 25	**1.6 J**
Chloroform		7	< 25	< 5	< 25	< 25	< 25
Chloromethane		5	< 25	R	< 25	< 25	< 25
cis-1,2-Dichloroethene		5	**1800 D**	**750 D**	**510**	**500**	**840**
cis-1,3-Dichloropropene		0.4	< 25	< 5	< 25	< 25	< 25
Chlorodibromomethane		50	< 25	< 5	< 25	< 25	< 25
CFC-12		5	< 25	< 5	< 25	< 25	< 25
Ethylbenzene		5	< 25	< 5	< 25	< 25	< 25
Methyl-Tert-Butylether		5	--	--	< 25	< 25	< 25
Methylene Chloride		5	< 25	< 5	< 25	< 25 B	< 25
Styrene (Monomer)		5	< 25	< 5	< 25	< 25	< 25
Tetrachloroethene		5	< 25	**0.64 J**	< 25	< 25	< 25
Toluene		5	< 25	< 5	< 25	< 25	< 25
trans-1,2-Dichloroethene		5	**110**	**2.5 J**	**3.9 J**	**1.3 J**	**2.2 J**
trans-1,3-Dichloropropene		0.4	< 25	< 5	< 25	< 25	< 25
Trichloroethene		5	**22 J**	**170**	**45**	**43**	**110**
Trichlorotrifluoroethane (Freon 113)		5	< 25	< 5	< 25	< 25	< 25
Vinyl Chloride		2	**180**	**540 D**	**220**	**32**	**420**
o-Xylene		5	< 25	**8**	< 25	< 25	< 25
m,p-Xylene		5	< 25	< 5	< 25	< 25	< 25
Total VOCs [3]			**2,100**	**1,500**	**860**	**620**	**1,500**
Project VOCs [4]			**2,100**	**1,500**	**850**	**620**	**1,500**

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	BCPMW-4-1	*BCPMW-4-1*
Constituent in ug/L	Sample Date:	6/5/2013	*11/17/2014*
	NYSDEC SCGs		
1,1,1-Trichloroethane	5	**5.1**	***2.4***
1,1,2,2-Tetrachloroethane	5	< 5.0	*< 1.0*
1,1,2-Trichloroethane	1	**0.24 J**	***0.42 J***
1,1-Dichloroethane	5	**7.4**	***7.3***
1,1-Dichloroethene	5	**4.1 J**	***1.1***
1,2-Dichloroethane	0.6	**0.95 J**	***0.70 J***
1,2-Dichloropropane	1	**0.95 J**	***0.61 J***
2-Butanone	NE	< 50	*< 10*
2-Hexanone	50	< 50	*< 5.0*
4-Methyl-2-Pentanone	50	< 50	*< 5.0*
Acetone	NE	< 50	*< 10*
Benzene	1	< 0.70	*< 1.0*
Bromodichloromethane	50	< 5.0	*< 1.0*
Bromoform	50	< 5.0	*< 4.0*
Bromomethane	5	< 5.0	*< 2.0*
Carbon Disulfide	60	< 5.0	*< 2.0*
Carbon Tetrachloride	5	< 5.0	*< 1.0*
Chlorobenzene	5	< 5.0	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	**1.1 J**	*< 5.0*
Chloroethane	5	**0.46 J**	*< 1.0*
Chloroform	7	< 5.0	***0.61 J***
Chloromethane	5	< 5.0	*< 1.0*
cis-1,2-Dichloroethene	5	**310 D**	***207 D***
cis-1,3-Dichloropropene	0.4	< 5.0	*< 1.0*
Chlorodibromomethane	50	< 5.0	*< 1.0*
CFC-12	5	< 5.0	*< 5.0*
Ethylbenzene	5	< 5.0	*< 1.0*
Methyl-Tert-Butylether	5	< 5.0	*< 1.0*
Methylene Chloride	5	< 5.0	*< 2.0*
Styrene (Monomer)	5	< 5.0	*< 5.0*
Tetrachloroethene	5	**0.37 J**	***0.80 J***
Toluene	5	< 5.0	*< 1.0*
trans-1,2-Dichloroethene	5	**0.78 J**	***0.59 J***
trans-1,3-Dichloropropene	0.4	< 5.0	*< 1.0*
Trichloroethene	5	**16**	***34.7***
Trichlorotrifluoroethane (Freon 113)	5	< 5.0	*< 5.0*
Vinyl Chloride	2	**47**	***21***
o-Xylene	5	< 5.0	*< 1.0*
m,p-Xylene	5	< 5.0	*< 1.0*
Total VOCs [3]		**390**	***280***
Project VOCs [4]		**390**	***280***

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	BCPMW-4-2	BCPMW-4-2	BCPMW-4-2	BCPMW-4-2	BCPMW-4-2
Constituent in ug/L	Sample Date:	4/17/2009	12/4/2009	10/7/2010	10/28/2011	10/3/2012
	NYSDEC SCGs					
1,1,1-Trichloroethane	5	< 250	< 10	< 5	**0.33 J**	**0.23 J**
1,1,2,2-Tetrachloroethane	5	< 250	< 10	< 5	< 5	< 5
1,1,2-Trichloroethane	1	< 250	< 10	< 5	< 5	< 5
1,1-Dichloroethane	5	**57 J**	**8.7 J**	**7.3**	**2.6 J**	**1.4 J**
1,1-Dichloroethene	5	**34 J**	**2.7 J**	**1.9 J**	**1.1 J**	**0.8 J**
1,2-Dichloroethane	0.6	< 250	< 10	**0.91 J**	**0.85 J**	**0.45 J**
1,2-Dichloropropane	1	< 250	< 10	**0.9 J**	**0.39 J**	< 5
2-Butanone	NE	< 2500	< 100	< 50	< 50	< 50
2-Hexanone	50	< 2500 J	< 100	< 50	< 50	< 50
4-methyl-2-pentanone	50	< 2500 J	< 100	< 50	< 50	< 50
Acetone	NE	< 2500 J	< 100	< 50 B	< 50	< 50
Benzene	1	< 35	< 1.4	< 0.7	< 0.7 U	< 0.7
Bromodichloromethane	50	< 250	< 10	< 5	< 5	< 5
Bromoform	50	< 250	< 10	< 5	< 5	< 5
Bromomethane	5	< 250	< 10	< 5	< 5	< 5
Carbon Disulfide	60	< 250	< 10	< 5	< 5	< 5
Carbon tetrachloride	5	< 250	< 10	< 5	< 5	< 5
Chlorobenzene	5	< 250	< 10	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)	NE	< 250	**0.8 J**	< 5	< 5	< 5
Chloroethane	5	< 250	**1.1 J**	**0.79 J**	< 5	< 5
Chloroform	7	< 250	< 10	**0.96 J**	**0.62 J**	**0.54 J**
Chloromethane	5	< 250	R	< 5	< 5	< 5
cis-1,2-dichloroethene	5	**18000 D**	**270**	**99**	**59**	**70**
cis-1,3-dichloropropene	0.4	< 250	< 10	< 5	< 5	< 5
Dibromochloromethane	50	< 250	< 10	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)	5	< 250	< 10	< 5	< 5	< 5
Ethylbenzene	5	**62 J**	**0.78 J**	< 5	< 5	< 5
Methyl tert-Butyl Ether	5	**--**	**--**	**0.35 J**	**0.28 J**	**0.29 J**
Methylene Chloride	5	< 250	< 10	< 5	< 5	< 5
Styrene	5	< 250	< 10	< 5	< 5	< 5
Tetrachloroethene	5	< 250	**0.82 J**	**0.73 J**	**0.59 J**	**0.91 J**
Toluene	5	**2400**	< 10 B	< 5	< 5	< 5
trans-1,2-dichloroethene	5	< 250	**1.3 J**	**0.65 J**	**0.41 J**	**0.5 J**
trans-1,3-dichloropropene	0.4	< 250	< 10	< 5	< 5	< 5
Trichloroethene	5	< 250	**310**	**66**	**50**	**68**
Trichlorotrifluoroethane (Freon 113)	5	< 250	< 10	< 5	< 5	< 5
Vinyl Chloride	2	**6300**	**58**	**54**	**20**	**9.5**
Xylene-o	5	**110 J**	< 10 B	< 5	< 5	< 5
Xylenes - m,p	5	**190 J**	< 10 B	< 5	< 5	< 5
Total VOCs [3]		**27,000**	**660**	**230**	**140**	**150**
Project VOCs [4]		**27,000**	**650**	**230**	**130**	**150**

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	BCPMW-4-2	*BCPMW-4-2*
Constituent in ug/L	Sample Date:	6/5/2013	*11/18/2014*
	NYSDEC SCGs		
1,1,1-Trichloroethane	5	**0.22 J**	*< 1.0*
1,1,2,2-Tetrachloroethane	5	< 5.0	*< 1.0*
1,1,2-Trichloroethane	1	< 5.0	*< 1.0*
1,1-Dichloroethane	5	**1.5 J**	*< 1.0*
1,1-Dichloroethene	5	**0.49 J**	*< 1.0*
1,2-Dichloroethane	0.6	**0.52 J**	*< 1.0*
1,2-Dichloropropane	1	< 5.0	*< 1.0*
2-Butanone	NE	< 50	*< 10*
2-Hexanone	50	< 50	*< 5.0*
4-methyl-2-pentanone	50	< 50	*< 5.0*
Acetone	NE	**1.8 J**	*< 10*
Benzene	1	< 0.70	*< 1.0*
Bromodichloromethane	50	< 5.0	*< 1.0*
Bromoform	50	< 5.0	*< 4.0*
Bromomethane	5	< 5.0	*< 2.0*
Carbon Disulfide	60	< 5.0	*< 2.0*
Carbon tetrachloride	5	< 5.0	*< 1.0*
Chlorobenzene	5	< 5.0	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	< 5.0	*< 5.0*
Chloroethane	5	< 5.0	*< 1.0*
Chloroform	7	**3.3 J**	***3.2***
Chloromethane	5	< 5.0	*< 1.0*
cis-1,2-dichloroethene	5	**47**	***8.6***
cis-1,3-dichloropropene	0.4	< 5.0	*< 1.0*
Dibromochloromethane	50	< 5.0	*< 1.0*
Dichlorodifluoromethane (Freon 12)	5	< 5.0	*< 5.0*
Ethylbenzene	5	< 5.0	*< 1.0*
Methyl tert-Butyl Ether	5	**0.26 J**	*< 1.0*
Methylene Chloride	5	< 5.0	*< 2.0*
Styrene	5	< 5.0	*< 5.0*
Tetrachloroethene	5	**0.63 J**	*< 1.0*
Toluene	5	< 5.0	*< 1.0*
trans-1,2-dichloroethene	5	**0.40 J**	*< 1.0*
trans-1,3-dichloropropene	0.4	< 5.0	*< 1.0*
Trichloroethene	5	**56**	***9.1***
Trichlorotrifluoroethane (Freon 113)	5	< 5.0	*< 5.0*
Vinyl Chloride	2	**9.7**	***1.6***
Xylene-o	5	< 5.0	*< 1.0*
Xylenes - m,p	5	< 5.0	*< 1.0*
Total VOCs [3]		**120**	***23***
Project VOCs [4]		**120**	***19***

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	BCPMW-4-3	BCPMW-4-3	BCPMW-4-3	BCPMW-4-3	BCPMW-4-3
Constituent in ug/L	Sample Date:	4/17/2009	12/1/2009	10/7/2010	10/28/2011	10/3/2012
	NYSDEC SCGs					
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50
2-Hexanone	50	< 50 J	< 50	< 50	< 50	< 50
4-methyl-2-pentanone	50	< 50 J	< 50	< 50	< 50	< 50
Acetone	NE	< 50 J	< 50	< 50	< 50	< 50
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5
Bromoform	50	< 5	< 5	< 5	< 5	< 5
Bromomethane	5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)	NE	< 5	< 5	< 5	< 5	< 5
Chloroethane	5	< 5	< 5	< 5	< 5	< 5
Chloroform	7	**0.53 J**	**0.32 J**	< 5	< 5	**0.2 J**
Chloromethane	5	< 5	R	< 5	< 5	< 5
cis-1,2-dichloroethene	5	**0.37 J**	< 5	< 5	< 5	< 5
cis-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane	50	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5
Methyl tert-Butyl Ether	5	--	--	< 5	< 5	< 5
Methylene Chloride	5	< 5	< 5	< 5	< 5	< 5
Styrene	5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	< 5	< 5	< 5	**0.27 J**	**0.3 J**
Toluene	5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5
Trichloroethene	5	**0.56 J**	**0.51 J**	**0.41 J**	**0.74 J**	**0.84 J**
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5	**0.38 J**	< 5
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2
Xylene-o	5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p	5	< 5	< 5	< 5	< 5	< 5
Total VOCs [3]		**1.5**	**0.83**	**0.41**	**1.4**	**1.3**
Project VOCs [4]		**0.93**	**0.51**	**0.41**	**1.0**	**1.1**

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	BCPMW-4-3 (REP) 6/5/2013	BCPMW-4-3 6/5/2013	*BCPMW-4-3 11/17/2014*
	NYSDEC SCGs			
1,1,1-Trichloroethane	5	< 5.0	< 5.0	*< 1.0*
1,1,2,2-Tetrachloroethane	5	< 5.0	< 5.0	*< 1.0*
1,1,2-Trichloroethane	1	< 5.0	< 5.0	*< 1.0*
1,1-Dichloroethane	5	< 5.0	< 5.0	*< 1.0*
1,1-Dichloroethene	5	< 5.0	< 5.0	*< 1.0*
1,2-Dichloroethane	0.6	< 5.0	< 5.0	*< 1.0*
1,2-Dichloropropane	1	< 5.0	< 5.0	*< 1.0*
2-Butanone	NE	< 50	< 50	*< 10*
2-Hexanone	50	< 50	< 50	*< 5.0*
4-Methyl-2-Pentanone	50	< 50	< 50	*< 5.0*
Acetone	NE	< 50	< 50	*< 10*
Benzene	1	< 0.70	< 0.70	*< 1.0*
Bromodichloromethane	50	< 5.0	< 5.0	*< 1.0*
Bromoform	50	< 5.0	< 5.0	*< 4.0*
Bromomethane	5	< 5.0	< 5.0	*< 2.0*
Carbon Disulfide	60	< 5.0	< 5.0	*< 2.0*
Carbon Tetrachloride	5	< 5.0	< 5.0	*< 1.0*
Chlorobenzene	5	< 5.0	< 5.0	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	< 5.0	< 5.0	*< 5.0*
Chloroethane	5	< 5.0	< 5.0	*< 1.0*
Chloroform	7	**0.97 J**	**1.1 J**	***0.58 J***
Chloromethane	5	< 5.0	< 5.0	*< 1.0*
cis-1,2-Dichloroethene	5	< 5.0	< 5.0	*< 1.0*
cis-1,3-Dichloropropene	0.4	< 5.0	< 5.0	*< 1.0*
Chlorodibromomethane	50	< 5.0	< 5.0	*< 1.0*
CFC-12	5	< 5.0	< 5.0	*< 5.0*
Ethylbenzene	5	< 5.0	< 5.0	*< 1.0*
Methyl-Tert-Butylether	5	< 5.0	< 5.0	*< 1.0*
Methylene Chloride	5	< 5.0	< 5.0	*< 2.0*
Styrene (Monomer)	5	< 5.0	< 5.0	*< 5.0*
Tetrachloroethene	5	< 5.0	< 5.0	*< 1.0*
Toluene	5	< 5.0	< 5.0	*< 1.0*
trans-1,2-Dichloroethene	5	< 5.0	< 5.0	*< 1.0*
trans-1,3-Dichloropropene	0.4	< 5.0	< 5.0	*< 1.0*
Trichloroethene	5	**0.34 J**	**0.39 J**	*< 1.0*
Trichlorotrifluoroethane (Freon 113)	5	< 5.0	< 5.0	*< 5.0*
Vinyl Chloride	2	< 2.0	< 2.0	*< 1.0*
o-Xylene	5	< 5.0	< 5.0	*< 1.0*
m,p-Xylene	5	< 5.0	< 5.0	*< 1.0*
Total VOCs [3]		**1.3**	**1.5**	***0.58***
Project VOCs [4]		**0.34**	**0.39**	*0*

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	BCPMW-5-1 4/23/2009	BCPMW-6-1 4/20/2009	BCPMW-6-1 12/4/2009	BCPMW-6-1 10/6/2010	BCPMW-6-1 10/31/2011	BCPMW-6-1 10/3/2012
1,1,1-Trichloroethane		5	< 100	< 5	< 5	< 100	< 250	< 100
1,1,2,2-Tetrachloroethane		5	< 100	< 5	< 5	< 100	< 250	< 100
1,1,2-Trichloroethane		1	< 100	< 5	< 5	< 100	< 250	< 100
1,1-Dichloroethane		5	< 100	**0.3 J**	< 5	< 100	< 250	< 100
1,1-Dichloroethene		5	**21 J**	< 5	< 5	< 100	< 250	< 100
1,2-Dichloroethane		0.6	< 100	< 5	< 5	< 100	< 250	< 100
1,2-Dichloropropane		1	< 100	< 5	< 5	< 100	< 250	< 100
2-Butanone		NE	< 1000	< 50	< 50	< 1000	< 2500	< 1000
2-Hexanone		50	< 1000	< 50 J	< 50	< 1000	< 2500	< 1000
4-Methyl-2-Pentanone		50	< 1000	< 50 J	< 50	< 1000	< 2500	< 1000
Acetone		NE	< 1000	< 50 J	< 50	< 1000	< 2500	< 1000
Benzene		1	< 14	< 0.7	< 0.7	< 14	< 35	< 14
Bromodichloromethane		50	< 100	< 5	< 5	< 100	< 250	< 100
Bromoform		50	< 100	< 5	< 5	< 100	< 250	< 100
Bromomethane		5	< 100	< 5	R	< 100	< 250	< 100
Carbon Disulfide		60	< 100	< 5	< 5	< 100	< 250	< 100
Carbon Tetrachloride		5	< 100	< 5	< 5	< 100	< 250	< 100
Chlorobenzene		5	< 100	< 5	< 5	< 100	< 250	< 100
Chlorodifluoromethane (Freon 22)		NE	< 100	**4500 D**	**1700 EJ**	**10000 D**	**7100**	**2100**
Chloroethane		5	< 100	< 5	< 5	< 100	< 250	< 100
Chloroform		7	< 100	**1.7 J**	**0.32 J**	< 100	< 250	< 100
Chloromethane		5	< 100	< 5	R	< 100	< 250	< 100
cis-1,2-Dichloroethene		5	**960**	**21**	**1.7 J**	< 100	< 250	< 100
cis-1,3-Dichloropropene		0.4	< 100	< 5	< 5	< 100	< 250	< 100
Chlorodibromomethane		50	< 100	< 5	< 5	< 100	< 250	< 100
CFC-12		5	< 100	< 5	< 5	< 100	< 250	< 100
Ethylbenzene		5	**48 J**	< 5	< 5	< 100	< 250	< 100
Methyl-Tert-Butylether		5	**--**	--	--	<100	< 250	< 100
Methylene Chloride		5	< 100	< 5	< 5	< 100	< 250	< 100
Styrene (Monomer)		5	< 100	< 5	< 5	< 100	< 250	< 100
Tetrachloroethene		5	< 100	**0.34 J**	< 5	< 100	< 250	< 100
Toluene		5	**2700**	< 5	< 5	< 100	< 250	< 100
trans-1,2-Dichloroethene		5	< 100	< 5	< 5	< 100	< 250	< 100
trans-1,3-Dichloropropene		0.4	< 100	< 5	< 5	< 100	< 250	< 100
Trichloroethene		5	**220**	**4.9 J**	**1.6 J**	< 100	< 250	< 100
Trichlorotrifluoroethane (Freon 113)		5	< 100	< 5	< 5	< 100	< 250	< 100
Vinyl Chloride		2	**330**	< 2	< 2	< 40	< 100	< 40
o-Xylene		5	**40 J**	< 5	< 5	< 100	< 250	< 100
m,p-Xylene		5	**110**	< 5	< 5	< 100	< 250	< 100
Total VOCs [3]			**4,400**	**4,500**	**1,700**	**10,000**	**7,100**	**2,100**
Project VOCs [4]			**4,400**	**27**	**2.3**	0	0	0

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	BCPMW-6-1 6/7/2013	*BCPMW-6-1 11/11/2014*
	NYSDEC SCGs		
1,1,1-Trichloroethane	5	< 13	*< 1.0*
1,1,2,2-Tetrachloroethane	5	< 13	*< 1.0*
1,1,2-Trichloroethane	1	< 13	*< 1.0*
1,1-Dichloroethane	5	< 13	*< 1.0*
1,1-Dichloroethene	5	< 13	*< 1.0*
1,2-Dichloroethane	0.6	< 13	*< 1.0*
1,2-Dichloropropane	1	< 13	*< 1.0*
2-Butanone	NE	< 130	*< 10*
2-Hexanone	50	< 130	*< 5.0*
4-Methyl-2-Pentanone	50	< 130	*< 5.0*
Acetone	NE	< 130	*< 10*
Benzene	1	< 1.8	*< 1.0*
Bromodichloromethane	50	< 13	*< 1.0*
Bromoform	50	< 13	*< 4.0*
Bromomethane	5	< 13	*< 2.0*
Carbon Disulfide	60	< 13	*< 2.0*
Carbon Tetrachloride	5	< 13	*< 1.0*
Chlorobenzene	5	< 13	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	**400**	*< 5.0*
Chloroethane	5	< 13	*< 1.0*
Chloroform	7	< 13	*< 1.0*
Chloromethane	5	< 13	*< 1.0*
cis-1,2-Dichloroethene	5	< 13	*< 1.0*
cis-1,3-Dichloropropene	0.4	< 13	*< 1.0*
Chlorodibromomethane	50	< 13	*< 1.0*
CFC-12	5	< 13	*< 5.0*
Ethylbenzene	5	< 13	*< 1.0*
Methyl-Tert-Butylether	5	< 13	*< 1.0*
Methylene Chloride	5	< 13	*< 2.0*
Styrene (Monomer)	5	< 13	*< 5.0*
Tetrachloroethene	5	< 13	*< 1.0*
Toluene	5	< 13	*< 1.0*
trans-1,2-Dichloroethene	5	< 13	*< 1.0*
trans-1,3-Dichloropropene	0.4	< 13	*< 1.0*
Trichloroethene	5	< 13	*< 1.0*
Trichlorotrifluoroethane (Freon 113)	5	< 13	*< 5.0*
Vinyl Chloride	2	< 5.0	*< 1.0*
o-Xylene	5	< 13	*< 1.0*
m,p-Xylene	5	< 13	*< 1.0*
Total VOCs [3]		**400**	*0*
Project VOCs [4]		0	*0*

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	BCPMW-6-2 5/8/2009	BCPMW-6-2 12/4/2009	BCPMW-6-2 10/6/2010	BCPMW-6-2 10/31/2011	BCPMW-6-2 10/3/2012	BCPMW-6-2 6/5/2013
1,1,1-Trichloroethane		5	< 5	**0.78 J**	< 5	< 5	< 5	< 5.0
1,1,2,2-Tetrachloroethane		5	< 5	< 5	< 5	< 5	< 5	< 5.0
1,1,2-Trichloroethane		1	< 5	< 5	< 5	< 5	< 5	< 5.0
1,1-Dichloroethane		5	**0.37 J**	**0.65 J**	**0.47 J**	**0.41 J**	**0.23 J**	**0.31 J**
1,1-Dichloroethene		5	< 5	**0.44 J**	< 5	**0.3 J**	< 5	< 5.0 J
1,2-Dichloroethane		0.6	< 5	< 5	< 5	< 5	< 5	< 5.0
1,2-Dichloropropane		1	< 5	< 5	< 5	< 5	< 5	< 5.0
2-Butanone		NE	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone		50	< 50	< 50	< 50	< 50	< 50	< 50
4-Methyl-2-Pentanone		50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone		NE	< 50	< 50	< 50	< 50	< 50	< 50
Benzene		1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.70 J
Bromodichloromethane		50	< 5	< 5	< 5	< 5	< 5	< 5.0
Bromoform		50	< 5	< 5	< 5	< 5	< 5	< 5.0
Bromomethane		5	< 5	R	< 5	< 5	< 5	< 5.0
Carbon Disulfide		60	< 5	< 5	< 5	< 5	< 5	< 5.0
Carbon Tetrachloride		5	< 5	< 5	< 5	< 5	< 5	< 5.0
Chlorobenzene		5	< 5	< 5	< 5	< 5	< 5	< 5.0 J
Chlorodifluoromethane (Freon 22)		NE	< 5	< 5	< 5	< 5	**0.64 J**	< 5.0
Chloroethane		5	< 5	< 5	< 5	< 5	< 5	< 5.0
Chloroform		7	**0.53 J**	< 5	**0.41 J**	**0.3 J**	**0.38 J**	**0.93 J**
Chloromethane		5	< 5	R	< 5	< 5	< 5	< 5.0
cis-1,2-Dichloroethene		5	< 5	< 5	< 5	< 5	< 5	< 5.0
cis-1,3-Dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5	< 5.0
Chlorodibromomethane		50	< 5	< 5	< 5	< 5	< 5	< 5.0
CFC-12		5	< 5	< 5	< 5	< 5	< 5	< 5.0
Ethylbenzene		5	< 5	< 5	< 5	< 5	< 5	< 5.0
Methyl-Tert-Butylether		5	--	--	<5	**0.33 J**	**0.24 J**	**0.36 J**
Methylene Chloride		5	< 5	< 5	< 5	< 5	< 5	< 5.0
Styrene (Monomer)		5	< 5	< 5	< 5	< 5	< 5	< 5.0
Tetrachloroethene		5	< 5	**0.79 J**	**2.1 J**	**1.8 J**	**1.6 J**	**1.3 J**
Toluene		5	< 5	< 5	< 5	< 5	< 5	< 5.0 J
trans-1,2-Dichloroethene		5	< 5	< 5	< 5	< 5	< 5	< 5.0
trans-1,3-Dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5	< 5.0
Trichloroethene		5	< 5	**0.45 J**	< 5	< 5	< 5	< 5.0 J
Trichlorotrifluoroethane (Freon 113)		5	< 5	< 5	< 5	< 5	< 5	< 5.0
Vinyl Chloride		2	< 2	< 2	< 2	< 2	< 2	< 2.0
o-Xylene		5	< 5	< 5	< 5	< 5	< 5	< 5.0
m,p-Xylene		5	< 5	< 5	< 5	< 5	< 5	< 5.0
Total VOCs [3]			**0.90**	**3.1**	**3.0**	**3.1**	**3.1**	**2.9**
Project VOCs [4]			**0.37**	**3.1**	**2.6**	**2.5**	**1.8**	**1.6**

See notes on last page.

Table 13. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	BCPMW-6-2 11/11/2014
	NYSDEC SCGs	
1,1,1-Trichloroethane	5	*< 1.0*
1,1,2,2-Tetrachloroethane	5	*< 1.0*
1,1,2-Trichloroethane	1	*< 1.0*
1,1-Dichloroethane	5	***0.41 J***
1,1-Dichloroethene	5	*< 1.0*
1,2-Dichloroethane	0.6	*< 1.0*
1,2-Dichloropropane	1	*< 1.0*
2-Butanone	NE	*< 10*
2-Hexanone	50	*< 5.0*
4-Methyl-2-Pentanone	50	*< 5.0*
Acetone	NE	*< 10*
Benzene	1	*< 1.0*
Bromodichloromethane	50	*< 1.0*
Bromoform	50	*< 4.0*
Bromomethane	5	*< 2.0*
Carbon Disulfide	60	*< 2.0*
Carbon Tetrachloride	5	*< 1.0*
Chlorobenzene	5	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	*< 5.0*
Chloroethane	5	*< 1.0*
Chloroform	7	***0.30 J***
Chloromethane	5	*< 1.0*
cis-1,2-Dichloroethene	5	*< 1.0*
cis-1,3-Dichloropropene	0.4	*< 1.0*
Chlorodibromomethane	50	*< 1.0*
CFC-12	5	*< 5.0*
Ethylbenzene	5	*< 1.0*
Methyl-Tert-Butylether	5	***0.26 J***
Methylene Chloride	5	*< 2.0*
Styrene (Monomer)	5	*< 5.0*
Tetrachloroethene	5	***0.35 J***
Toluene	5	*< 1.0*
trans-1,2-Dichloroethene	5	*< 1.0*
trans-1,3-Dichloropropene	0.4	*< 1.0*
Trichloroethene	5	*< 1.0*
Trichlorotrifluoroethane (Freon 113)	5	*< 5.0*
Vinyl Chloride	2	*< 1.0*
o-Xylene	5	*< 1.0*
m,p-Xylene	5	*< 1.0*
Total VOCs [3]		***1.3***
Project VOCs [4]		***0.76***

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	BCPMW-7-1 4/20/2009	BCPMW-7-1 12/1/2009	BCPMW-7-1 10/7/2010	BCPMW-7-1 11/1/2011	BCPMW-7-1 10/4/2012
	NYSDEC SCGs					
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50
2-Hexanone	50	< 50 J	< 50	< 50	< 50	< 50
4-Methyl-2-Pentanone	50	< 50 J	< 50	< 50	< 50	< 50
Acetone	NE	< 50	< 50	< 50	< 50	< 50
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5
Bromoform	50	< 5	< 5	< 5	< 5	< 5
Bromomethane	5	< 5	R	< 5	< 5	< 5
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5
Carbon Tetrachloride	5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)	NE	**2.6 J**	**1.5 J**	**5.2**	**9.2**	**3.6 J**
Chloroethane	5	< 5	< 5	< 5	< 5	< 5
Chloroform	7	< 5	< 5	< 5	< 5	**0.37 J**
Chloromethane	5	< 5	R	< 5	< 5	< 5
cis-1,2-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5
Chlorodibromomethane	50	< 5	< 5	< 5	< 5	< 5
CFC-12	5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5
Methyl-Tert-Butylether	5	--	--	< 5	**0.22 J**	**0.26 J**
Methylene Chloride	5	< 5	< 5	< 5	< 5	< 5
Styrene (Monomer)	5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	< 5	< 5	< 5	< 5	< 5
Toluene	5	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	5	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5
Trichloroethene	5	< 5	< 5	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2
o-Xylene	5	< 5	< 5	< 5	< 5	< 5
m,p-Xylene	5	< 5	< 5	< 5	< 5	< 5
Total VOCs [3]		**2.6**	**1.5**	**5.2**	**9.4**	**4.2**
Project VOCs [4]		0.0	0.0	0.0	**0.2**	0.0

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	BCPMW-7-1	*BCPMW-7-1*
Constituent in ug/L	Sample Date:	6/7/2013	*11/18/2014*
	NYSDEC SCGs		
1,1,1-Trichloroethane	5	< 5.0	*< 1.0*
1,1,2,2-Tetrachloroethane	5	< 5.0	*< 1.0*
1,1,2-Trichloroethane	1	< 5.0	*< 1.0*
1,1-Dichloroethane	5	< 5.0	*< 1.0*
1,1-Dichloroethene	5	< 5.0	*< 1.0*
1,2-Dichloroethane	0.6	< 5.0	*< 1.0*
1,2-Dichloropropane	1	< 5.0	*< 1.0*
2-Butanone	NE	< 50	*< 10 J*
2-Hexanone	50	< 50	*< 5.0 J*
4-methyl-2-pentanone	50	< 50	*< 5.0*
Acetone	NE	< 50	*< 10 J*
Benzene	1	< 0.70	*< 1.0*
Bromodichloromethane	50	< 5.0	*< 1.0*
Bromoform	50	< 5.0	*< 4.0*
Bromomethane	5	< 5.0	*< 2.0*
Carbon Disulfide	60	< 5.0	*< 2.0*
Carbon tetrachloride	5	< 5.0	*< 1.0*
Chlorobenzene	5	< 5.0	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	**2.5 J**	*< 5.0*
Chloroethane	5	< 5.0	*< 1.0*
Chloroform	7	**0.29 J**	***0.25 J***
Chloromethane	5	< 5.0	*< 1.0*
cis-1,2-dichloroethene	5	< 5.0	*< 1.0*
cis-1,3-dichloropropene	0.4	< 5.0	*< 1.0*
Dibromochloromethane	50	< 5.0	*< 1.0*
Dichlorodifluoromethane (Freon 12)	5	< 5.0	*< 5.0*
Ethylbenzene	5	< 5.0	*< 1.0*
Methyl tert-Butyl Ether	5	**0.22 J**	*< 1.0*
Methylene Chloride	5	< 5.0	*< 2.0*
Styrene	5	< 5.0	*< 5.0*
Tetrachloroethene	5	< 5.0	*< 1.0*
Toluene	5	< 5.0	*< 1.0*
trans-1,2-dichloroethene	5	< 5.0	*< 1.0*
trans-1,3-dichloropropene	0.4	< 5.0	*< 1.0*
Trichloroethene	5	< 5.0	*< 1.0*
Trichlorotrifluoroethane (Freon 113)	5	< 5.0	*< 5.0*
Vinyl Chloride	2	< 2.0	*< 1.0*
Xylene-o	5	< 5.0	*< 1.0*
Xylenes - m,p	5	< 5.0	*< 1.0*
Total VOCs [3]		**3.0**	***0.25***
Project VOCs [4]		0	*0*

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	MW-200-1 4/29/2009	MW-200-1 12/2/2009	MW-200-1 10/5/2010	MW-200-1 11/3/2011	MW-200-1 10/4/2012
1,1,1-Trichloroethane		5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		1	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		5	**0.79 J**	< 5	< 5	< 5	< 5
1,1-Dichloroethene		5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane		0.6	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		1	< 5	< 5	< 5	< 5	< 5
2-Butanone		NE	< 50	< 50	< 50	< 50	< 50
2-Hexanone		50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		50	< 50	< 50	< 50	< 50	< 50
Acetone		NE	< 50 B	< 50	< 50	< 50	< 50
Benzene		1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		50	< 5	< 5	< 5	< 5	< 5
Bromoform		50	< 5	< 5	< 5	< 5	< 5
Bromomethane		5	< 5	R	< 5	< 5	< 5
Carbon Disulfide		60	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		NE	< 5	< 5	< 5	< 5	< 5
Chloroethane		5	< 5	< 5	< 5	< 5	< 5
Chloroform		7	**2.3 J**	**2.3 J**	**0.5 J**	**0.21 J**	< 5
Chloromethane		5	< 5	R	< 5	< 5	< 5
cis-1,2-dichloroethene		5	**38**	**5.7**	**3.5 J**	**11**	**1.5 J**
cis-1,3-dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		50	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		5	< 5	< 5	< 5	< 5	< 5
Methyl tert-Butyl Ether		5	--	--	< 5	< 5	< 5
Methylene Chloride		5	< 5	< 5	< 5	< 5	< 5
Styrene		5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		5	**0.54 J**	< 5	< 5	**0.43 J**	< 5
Toluene		5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		5	**0.3 J**	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5
Trichloroethene		5	**34**	**12**	**7**	**20**	**3.8 J**
Trichlorotrifluoroethane (Freon 113)		5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride		2	< 2	< 2	< 2	< 2	< 2
Xylene-o		5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		5	< 5	< 5	< 5	< 5	< 5
Total VOCs [3]			**76**	**20**	**11**	**32**	**5.3**
Project VOCs [4]			**74**	**18**	**11**	**31**	**5.3**

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	MW-200-1	*MW-200-1*
Constituent in ug/L	Sample Date:	5/31/2013	*11/18/2014*
	NYSDEC SCGs		
1,1,1-Trichloroethane	5	< 5.0	*< 1.0*
1,1,2,2-Tetrachloroethane	5	< 5.0	*< 1.0*
1,1,2-Trichloroethane	1	< 5.0	*< 1.0*
1,1-Dichloroethane	5	< 5.0	*< 1.0*
1,1-Dichloroethene	5	< 5.0	*< 1.0*
1,2-Dichloroethane	0.6	< 5.0	*< 1.0*
1,2-Dichloropropane	1	< 5.0	*< 1.0*
2-Butanone	NE	< 50	*< 10*
2-Hexanone	50	< 50	*< 5.0*
4-methyl-2-pentanone	50	< 50	*< 5.0*
Acetone	NE	< 50	*< 10*
Benzene	1	< 0.70	*< 1.0*
Bromodichloromethane	50	< 5.0	*< 1.0*
Bromoform	50	< 5.0	*< 4.0*
Bromomethane	5	< 5.0	*< 2.0*
Carbon Disulfide	60	< 5.0	*< 2.0*
Carbon tetrachloride	5	< 5.0	*< 1.0*
Chlorobenzene	5	< 5.0	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	< 5.0	*< 5.0*
Chloroethane	5	< 5.0	*< 1.0*
Chloroform	7	< 5.0	*< 1.0*
Chloromethane	5	< 5.0	*< 1.0*
cis-1,2-dichloroethene	5	**0.41 J**	*< 1.0*
cis-1,3-dichloropropene	0.4	< 5.0	*< 1.0*
Dibromochloromethane	50	< 5.0	*< 1.0*
Dichlorodifluoromethane (Freon 12)	5	< 5.0	*< 5.0*
Ethylbenzene	5	< 5.0	*< 1.0*
Methyl tert-Butyl Ether	5	< 5.0	*< 1.0*
Methylene Chloride	5	< 5.0	*< 2.0*
Styrene	5	< 5.0	*< 5.0*
Tetrachloroethene	5	< 5.0	*< 1.0*
Toluene	5	< 5.0	*< 1.0*
trans-1,2-dichloroethene	5	< 5.0	*< 1.0*
trans-1,3-dichloropropene	0.4	< 5.0	*< 1.0*
Trichloroethene	5	**1.3 J**	*< 1.0*
Trichlorotrifluoroethane (Freon 113)	5	< 5.0	*< 5.0*
Vinyl Chloride	2	< 2.0	*< 1.0*
Xylene-o	5	< 5.0	*< 1.0*
Xylenes - m,p	5	< 5.0	*< 1.0*
Total VOCs [3]		**1.7**	*0*
Project VOCs [4]		**1.7**	*0*

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	MW-201-1 5/1/2009	MW-201-1 12/2/2009	MW-201-1 10/5/2010	MW-201-1 11/3/2011	MW-201-1 10/4/2012
1,1,1-Trichloroethane		5	**5.5 J**	**3.3 J**	< 50	< 5	< 5
1,1,2,2-Tetrachloroethane		5	< 25	< 50	< 50	< 5	< 5
1,1,2-Trichloroethane		1	< 25	< 50	< 50	< 5	< 5
1,1-Dichloroethane		5	**10 J**	**9 J**	**14 J**	**0.51 J**	**1.2 J**
1,1-Dichloroethene		5	**7.9 J**	**8.1 J**	**6.9 J**	**0.21 J**	**0.65 J**
1,2-Dichloroethane		0.6	< 25	< 50	< 50	< 5	< 5
1,2-Dichloropropane		1	< 25	< 50	< 50	< 5	< 5
2-Butanone		NE	< 250	< 500	< 500	< 50	< 50
2-Hexanone		50	< 250	< 500	< 500	< 50	< 50
4-methyl-2-pentanone		50	< 250	< 500	< 500	< 50	< 50
Acetone		NE	< 250 B	< 500	< 500	< 50	< 50
Benzene		1	< 3.5	< 7	< 7	< 0.7	< 0.7
Bromodichloromethane		50	< 25	< 50	< 50	< 5	< 5
Bromoform		50	< 25	< 50	< 50	< 5	< 5
Bromomethane		5	< 25	< 50	< 50	< 5	< 5
Carbon Disulfide		60	< 25	< 50	< 50	< 5	< 5
Carbon tetrachloride		5	< 25	< 50	< 50	< 5	< 5
Chlorobenzene		5	< 25	< 50	< 50	< 5	< 5
Chlorodifluoromethane (Freon 22)		NE	< 25	< 50	< 50	< 5	< 5
Chloroethane		5	< 25	< 50	< 50	< 5	< 5
Chloroform		7	< 25	< 50	**4.2 J**	**3.2 J**	**2.9 J**
Chloromethane		5	< 25	R	< 50	< 5	< 5
cis-1,2-dichloroethene		5	**970 D**	**1300**	**3900 D**	**61**	**180 D**
cis-1,3-dichloropropene		0.4	< 25	< 50	< 50	< 5	< 5
Dibromochloromethane		50	< 25	< 50	< 50	< 5	< 5
Dichlorodifluoromethane (Freon 12)		5	< 25	< 50	< 50	< 5	< 5
Ethylbenzene		5	< 25	< 50	< 50	< 5	< 5
Methyl tert-Butyl Ether		5	--	--	<50	**0.75 J**	**0.22 J**
Methylene Chloride		5	< 25	< 50	< 50	< 5	< 5
Styrene		5	< 25	< 50	< 50	< 5	< 5
Tetrachloroethene		5	< 25	< 50	< 50	**0.24 J**	**0.24 J**
Toluene		5	< 25	< 50	< 50	< 5 J	< 5
trans-1,2-dichloroethene		5	**2.7 J**	**3.5 J**	**6.7 J**	< 5	**0.59 J**
trans-1,3-dichloropropene		0.4	< 25	< 50	< 50	< 5	< 5
Trichloroethene		5	**160**	**230**	**72**	**20**	**20**
Trichlorotrifluoroethane (Freon 113)		5	< 25	< 50	< 50 U	< 5	< 5
Vinyl Chloride		2	< 10	**38**	**820**	< 2 U	**13**
Xylene-o		5	< 25	< 50	**7.2 J**	< 5	< 5
Xylenes - m,p		5	< 25	< 50	< 50	< 5	< 5
Total VOCs [3]			**1,200**	**1,600**	**4,800**	**86**	**220**
Project VOCs [4]			**1,200**	**1,600**	**4,800**	**82**	**220**

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	MW-201-1 5/31/2013	*MW-201-1 11/20/2014*
1,1,1-Trichloroethane		5	< 5.0	*< 1.0*
1,1,2,2-Tetrachloroethane		5	< 5.0	*< 1.0*
1,1,2-Trichloroethane		1	< 5.0	*< 1.0*
1,1-Dichloroethane		5	< 5.0	*< 1.0*
1,1-Dichloroethene		5	< 5.0	*< 1.0*
1,2-Dichloroethane		0.6	< 5.0	*< 1.0*
1,2-Dichloropropane		1	< 5.0	*< 1.0*
2-Butanone		NE	< 50	*< 10*
2-Hexanone		50	< 50	*< 5.0*
4-methyl-2-pentanone		50	< 50	*< 5.0*
Acetone		NE	< 50	*< 10*
Benzene		1	< 0.70	*< 1.0*
Bromodichloromethane		50	< 5.0	*< 1.0*
Bromoform		50	< 5.0	*< 4.0*
Bromomethane		5	< 5.0	*< 2.0*
Carbon Disulfide		60	< 5.0	*< 2.0*
Carbon tetrachloride		5	< 5.0	*< 1.0*
Chlorobenzene		5	< 5.0	*< 1.0*
Chlorodifluoromethane (Freon 22)		NE	< 5.0	*< 5.0*
Chloroethane		5	< 5.0	*< 1.0*
Chloroform		7	**0.49 J**	*< 1.0*
Chloromethane		5	< 5.0	*< 1.0*
cis-1,2-dichloroethene		5	**7.9**	***3.9***
cis-1,3-dichloropropene		0.4	< 5.0	*< 1.0*
Dibromochloromethane		50	< 5.0	*< 1.0*
Dichlorodifluoromethane (Freon 12)		5	< 5.0	*< 5.0*
Ethylbenzene		5	< 5.0	*< 1.0*
Methyl tert-Butyl Ether		5	< 5.0	*< 1.0*
Methylene Chloride		5	< 5.0	*< 2.0*
Styrene		5	< 5.0	*< 5.0*
Tetrachloroethene		5	< 5.0	*< 1.0*
Toluene		5	< 5.0	*< 1.0*
trans-1,2-dichloroethene		5	< 5.0	*< 1.0*
trans-1,3-dichloropropene		0.4	< 5.0	*< 1.0*
Trichloroethene		5	**13**	***6.3***
Trichlorotrifluoroethane (Freon 113)		5	< 5.0	*< 5.0*
Vinyl Chloride		2	< 2.0	*< 1.0*
Xylene-o		5	< 5.0	*< 1.0*
Xylenes - m,p		5	< 5.0	*< 1.0*
Total VOCs [3]			**21**	***10***
Project VOCs [4]			**21**	***10***

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	MW-202-1 5/1/2009	MW-202-1 12/2/2009	MW-202-1 10/6/2010	MW-202-1 11/3/2011	MW-202-1 10/4/2012
1,1,1-Trichloroethane		5	< 5	< 5	< 5	**0.32 J**	**0.74 J**
1,1,2,2-Tetrachloroethane		5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		1	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		5	< 5	< 5	< 5	**0.86 J**	**2.1 J**
1,1-Dichloroethene		5	< 5	< 5	< 5	**0.72 J**	**1.9 J**
1,2-Dichloroethane		0.6	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		1	< 5	< 5	< 5	< 5	< 5
2-Butanone		NE	< 50	< 50	< 50	< 50	< 50
2-Hexanone		50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		50	< 50	< 50	< 50	< 50	< 50
Acetone		NE	< 50	< 50	< 50	< 50	< 50
Benzene		1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		50	< 5	< 5	< 5	< 5	< 5
Bromoform		50	< 5	< 5	< 5	< 5	< 5
Bromomethane		5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide		60	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		NE	< 5	< 5	**0.61 J**	**0.21 J**	< 5
Chloroethane		5	< 5	< 5	< 5	< 5	< 5
Chloroform		7	**6.2**	**6.7**	**0.93 J**	< 5	< 5
Chloromethane		5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		5	**0.64 J**	**0.58 J**	< 5	< 5	**0.4 J**
cis-1,3-dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		50	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		5	< 5	< 5	< 5	< 5	< 5
Methyl tert-Butyl Ether		5	--	--	< 5	**0.37 J**	< 5
Methylene Chloride		5	< 5	< 5	< 5	< 5	< 5
Styrene		5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		5	< 5	< 5	**0.48 J**	**0.92 J**	**1.7 J**
Toluene		5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		0.4	< 5	< 5	< 5	< 5	< 5
Trichloroethene		5	**7.5**	**9.3**	**2.4 J**	**0.78 J**	**1.2 J**
Trichlorotrifluoroethane (Freon 113)		5	< 5	< 5	**0.43 J**	**0.44 J**	**0.76 J**
Vinyl Chloride		2	< 2	< 2	< 2	< 2	< 2
Xylene-o		5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		5	< 5	< 5	< 5	< 5	< 5
Total VOCs [3]			**14**	**17**	**4.9**	**4.6**	**8.8**
Project VOCs [4]			**8.1**	**9.9**	**2.9**	**3.6**	**8.0**

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	MW-202-1 5/30/2013	*MW-202-1 11/19/2014*	*MW-202-1 (REP) 11/19/2014*
	NYSDEC SCGs			
1,1,1-Trichloroethane	5	**0.93 J**	***0.70 J***	***0.69 J***
1,1,2,2-Tetrachloroethane	5	< 5.0	*< 1.0*	*< 1.0*
1,1,2-Trichloroethane	1	< 5.0	*< 1.0*	*< 1.0*
1,1-Dichloroethane	5	**3.0 J**	***2.4***	***2.2***
1,1-Dichloroethene	5	**2.3 J**	***1.7***	***1.8***
1,2-Dichloroethane	0.6	< 5.0	*< 1.0*	*< 1.0*
1,2-Dichloropropane	1	< 5.0	*< 1.0*	*< 1.0*
2-Butanone	NE	< 50	*< 10*	*< 10*
2-Hexanone	50	< 50	*< 5.0*	*< 5.0*
4-methyl-2-pentanone	50	< 50	*< 5.0*	*< 5.0*
Acetone	NE	< 50	*< 10*	*< 10*
Benzene	1	< 0.70	*< 1.0*	*< 1.0*
Bromodichloromethane	50	< 5.0	*< 1.0*	*< 1.0*
Bromoform	50	< 5.0	*< 4.0*	*< 4.0*
Bromomethane	5	< 5.0	*< 2.0*	*< 2.0*
Carbon Disulfide	60	< 5.0	*< 2.0*	*< 2.0*
Carbon tetrachloride	5	< 5.0	*< 1.0*	*< 1.0*
Chlorobenzene	5	< 5.0	*< 1.0*	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	< 5.0	*< 5.0*	*< 5.0*
Chloroethane	5	< 5.0	*< 1.0*	*< 1.0*
Chloroform	7	< 5.0	*< 1.0*	*< 1.0*
Chloromethane	5	< 5.0	*< 1.0*	*< 1.0*
cis-1,2-dichloroethene	5	**0.63 J**	***1.1***	***1.0***
cis-1,3-dichloropropene	0.4	< 5.0	*< 1.0*	*< 1.0*
Dibromochloromethane	50	< 5.0	*< 1.0*	*< 1.0*
Dichlorodifluoromethane (Freon 12)	5	< 5.0	*< 5.0*	*< 5.0*
Ethylbenzene	5	< 5.0	*< 1.0*	*< 1.0*
Methyl tert-Butyl Ether	5	< 5.0	*< 1.0*	*< 1.0*
Methylene Chloride	5	< 5.0	*< 2.0*	*< 2.0*
Styrene	5	< 5.0	*< 5.0*	*< 5.0*
Tetrachloroethene	5	**2.8 J**	***2.3***	***2.4***
Toluene	5	< 5.0	*< 1.0*	*< 1.0*
trans-1,2-dichloroethene	5	< 5.0	*< 1.0*	*< 1.0*
trans-1,3-dichloropropene	0.4	< 5.0	*< 1.0*	*< 1.0*
Trichloroethene	5	**1.6 J**	***2.1***	***2.0***
Trichlorotrifluoroethane (Freon 113)	5	**1.4 J**	***1.8 J***	***1.8 J***
Vinyl Chloride	2	< 2.0	*< 1.0*	*< 1.0*
Xylene-o	5	< 5.0	*< 1.0*	*< 1.0*
Xylenes - m,p	5	< 5.0	*< 1.0*	*< 1.0*
Total VOCs [3]		**13**	***12***	***12***
Project VOCs [4]		**11**	***10***	***10***

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

Constituent in ug/L	Sample Location: / Sample Date:	MW-203-1 5/1/2009	MW-203-1 12/2/2009	MW-203-1 10/5/2010	MW-203-1 11/1/2011	MW-203-1 10/3/2012
	NYSDEC SCGs					
1,1,1-Trichloroethane	5	< 5	< 5	< 5	< 5	**0.26 J**
1,1,2,2-Tetrachloroethane	5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	1	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	5	< 5	< 5	< 5	**0.32 J**	**1 J**
1,1-Dichloroethene	5	< 5	< 5	< 5	< 5	**0.44 J**
1,2-Dichloroethane	0.6	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane	1	< 5	< 5	< 5	< 5	< 5
2-Butanone	NE	< 50	< 50	< 50	< 50	< 50
2-Hexanone	50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone	50	< 50	< 50	< 50	< 50	< 50
Acetone	NE	< 50 B	< 50	< 50 B	< 50	< 50
Benzene	1	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane	50	< 5	< 5	< 5	< 5	< 5
Bromoform	50	< 5	< 5	< 5	< 5	< 5
Bromomethane	5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide	60	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)	NE	**73**	**17**	**29**	**8.9**	**3.6 J**
Chloroethane	5	< 5	< 5	< 5	< 5	< 5
Chloroform	7	**7.9**	**2.6 J**	**1.5 J**	**0.68 J**	**0.36 J**
Chloromethane	5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene	5	**1.6 J**	**0.83 J**	**0.97 J**	**1.4 J**	**0.62 J**
cis-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane	50	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)	5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	5	< 5	< 5	< 5	< 5	< 5
Methyl tert-Butyl Ether	5	--	--	**0.88 J**	**0.41 J**	**0.21 J**
Methylene Chloride	5	< 5	< 5	< 5	< 5	< 5
Styrene	5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	< 5	< 5	< 5	**0.35 J**	**0.59 J**
Toluene	5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene	5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene	0.4	< 5	< 5	< 5	< 5	< 5
Trichloroethene	5	**1.3 J**	**0.7 J**	**1.6 J**	**2.9 J**	**1.8 J**
Trichlorotrifluoroethane (Freon 113)	5	< 5	< 5	< 5	< 5	**1.1 J**
Vinyl Chloride	2	< 2	< 2	< 2	< 2	< 2
Xylene-o	5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p	5	< 5	< 5	< 5	< 5	< 5
Total VOCs [3]		**84**	**21**	**34**	**15**	**10**
Project VOCs [4]		**2.9**	**1.5**	**2.6**	**5**	**4.7**

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

	Sample Location:	MW-203-1 (REP)	MW-203-1	*MW-203-1*
Constituent in ug/L	Sample Date:	5/31/2013	5/31/2013	*11/19/2014*
	NYSDEC SCGs			
1,1,1-Trichloroethane	5	< 5.0	**0.25 J**	*< 1.0*
1,1,2,2-Tetrachloroethane	5	< 5.0	< 5.0	*< 1.0*
1,1,2-Trichloroethane	1	< 5.0	< 5.0	*< 1.0*
1,1-Dichloroethane	5	**0.98 J**	**1.1 J**	***0.60 J***
1,1-Dichloroethene	5	**0.47 J**	**0.46 J**	*< 1.0*
1,2-Dichloroethane	0.6	< 5.0	< 5.0	*< 1.0*
1,2-Dichloropropane	1	< 5.0	< 5.0	*< 1.0*
2-Butanone	NE	< 50	< 50	*< 10*
2-Hexanone	50	< 50	< 50	*< 5.0*
4-methyl-2-pentanone	50	< 50	< 50	*< 5.0*
Acetone	NE	< 50	< 50	*< 10*
Benzene	1	< 0.70	< 0.70	*< 1.0*
Bromodichloromethane	50	< 5.0	< 5.0	*< 1.0*
Bromoform	50	< 5.0	< 5.0	*< 4.0*
Bromomethane	5	< 5.0	< 5.0	*< 2.0*
Carbon Disulfide	60	< 5.0	< 5.0	*< 2.0*
Carbon tetrachloride	5	< 5.0	< 5.0	*< 1.0*
Chlorobenzene	5	< 5.0	< 5.0	*< 1.0*
Chlorodifluoromethane (Freon 22)	NE	**3.5 J**	**3.2 J**	*< 5.0*
Chloroethane	5	< 5.0	< 5.0	*< 1.0*
Chloroform	7	**0.28 J**	**0.27 J**	***0.34 J***
Chloromethane	5	< 5.0	< 5.0	*< 1.0*
cis-1,2-dichloroethene	5	**0.39 J**	**0.24 J**	***0.39 J***
cis-1,3-dichloropropene	0.4	< 5.0	< 5.0	*< 1.0*
Dibromochloromethane	50	< 5.0	< 5.0	*< 1.0*
Dichlorodifluoromethane (Freon 12)	5	< 5.0	< 5.0	*< 5.0*
Ethylbenzene	5	< 5.0	< 5.0	*< 1.0*
Methyl tert-Butyl Ether	5	**0.24 J**	**0.24 J**	***1.1***
Methylene Chloride	5	< 5.0	< 5.0	*< 2.0*
Styrene	5	< 5.0	< 5.0	*< 5.0*
Tetrachloroethene	5	**0.93 J**	**1.1 J**	***1.1***
Toluene	5	< 5.0	< 5.0	*< 1.0*
trans-1,2-dichloroethene	5	< 5.0	< 5.0	*< 1.0*
trans-1,3-dichloropropene	0.4	< 5.0	< 5.0	*< 1.0*
Trichloroethene	5	**2.5 J**	**2.7 J**	***3.2***
Trichlorotrifluoroethane (Freon 113)	5	**1.1 J**	**1.4 J**	*< 5.0*
Vinyl Chloride	2	< 2.0	< 2.0	*< 1.0*
Xylene-o	5	< 5.0	< 5.0	*< 1.0*
Xylenes - m,p	5	< 5.0	< 5.0	*< 1.0*
Total VOCs [3]		**10**	**11**	***6.7***
Project VOCs [4]		**5.3**	**5.9**	***5.2***

See notes on last page.

Table 12. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

Notes and Abbreviations:

(1) Results validated following protocols specified in Sampling and Analysis Plan in the December 2009 DRAFT OM&M Manual (ARCADIS 2009).

(2) Samples analyzed for the TCL VOCs using NYSDEC ASP 2005 Method OLM4.3.

(3) "Total VOCs" represents the sum of individual concentrations of the VOCs detected.

(4) "Project VOCs" represents the sum of individual compound concentrations of 1,1,1-Trichloroethane; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethene; Tetrachloroethene; Trichloroethene; Vinyl Chloride; cis-1,2-Dichloroethene; trans-1,2-Dichloroethene; Benzene; Toluene; and Xylenes-o,m, and p.

TVOCs were rounded to two significant figures.

Indicates an exceedance of an SCG.

Bold value indicates a detection.

Italicized samples collected in 2013.

RI/FS	Remedial Investigation/Feasibility Study.
NYSDEC	New York State Department of Environmental Conservation.
TCL	Target compound list.
VOC	Volatile Organic Compound.
ASP	Analytical services protocol.
SCGs	Standards, criteria, and guidance values.
ug/L	Micrograms per liter.
NE	Not established.
E	Concentration for the constituent exceeded the calibration range.
J	Value is estimated.
D	Constituent identified from secondary dilution.
R	Concentration for the constituent was rejected.
B	Compound detected in associated blank sample.
< 5	Compound not detected above its laboratory quantification limit.
REP	Field replicate QA/QC sample

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

Constituent in ug/L	Sample Location: / Sample Date:	NYSDEC SCGs	B24MW-2 4/23/2009	B24MW-3 4/20/2009	BCPMW-1 4/28/2009	BCPMW-2 4/28/2009	BCPMW-3 4/29/2009	BCPMW-4-1 4/17/2009	BCPMW-4-1 10/4/2010	BCPMW-4-1 10/28/2011
Cadmium, Total		5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Cadmium, Dissolved		5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chromium, Total		50	**40.3**	**28.2**	**20.8**	< 10	< 10	**22.7**	**43**	**25**
Chromium, Dissolved		50	< 10	**10.6**	< 10	< 10	< 10	**12.8**	**41**	**22**
Iron (total)		300	--	**597**	--	< 100	**2,080**	**103**	--	--
Iron (dissolved)		300	--	< 100	--	< 100	**1,760**	< 100	--	--
Manganese (total)		300	--	**16.9**	--	**12.7**	**51.4**	**11.2**	--	--
Manganese (dissolved)		300	--	**13.7**	--	**11.3**	**49.2**	< 10	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

COMPOUND (ug/L)	Sample Location: / Sample Date:	BCPMW-4-1 10/3/2012	BCPMW-4-1 10/4/2012	BCPMW-4-1 6/5/2013	*BCPMW-4-1 11/17/2014*	BCPMW-4-2 4/17/2009	BCPMW-4-2 10/7/2010	BCPMW-4-2 10/28/2011	BCPMW-4-2 10/3/2012
	NYSDEC SCGs								
Cadmium (total)	5	< *5*	--	< 5.0	< *3.0*	< 5	< 5	< 5	< 5
Cadmium (dissolved)	5	--	< 5	< 5.0	< *3.0*	< 5	--	< 5	--
Chromium (total)	50	***32***	--	**16.1**	***24.7***	**10.6**	< 10	< 10	< 10
Chromium (dissolved)	50	--	**26**	**13.1**	***20.7***	< 10	--	< 10	--
Iron (total)	300	--	--	--	--	**4,630**	--	--	--
Iron (dissolved)	300	--	--	--	--	**4,080**	--	--	--
Manganese (total)	300	--	--	--	--	**228**	--	--	--
Manganese (dissolved)	300	--	--	--	--	**217**	--	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

COMPOUND (ug/L)	Sample Location: / Sample Date:	BCPMW-4-2 10/4/2012	BCPMW-4-2 6/5/2013	*BCPMW-4-2 11/18/2014*	BCPMW-4-3 4/17/2009	BCPMW-4-3 10/7/2010	BCPMW-4-3 10/28/2011	BCPMW-4-3 10/3/2012	BCPMW-4-3 10/4/2012
	NYSDEC SCGs								
Cadmium (total)	5	--	< 5.0	*< 3.0*	< 5	< 5	< 5	*< 5*	--
Cadmium (dissolved)	5	< 5	< 5.0	*< 3.0*	< 5	< 5	< 5	--	< 5
Chromium (total)	50	--	< 10	***4.1 B***	< 10	< 10	< 10	*< 10*	--
Chromium (dissolved)	50	< 10	< 10	*< 10*	< 10	< 10	< 10	--	< 10
Iron (total)	300	--	--	--	< 100	--	--	--	--
Iron (dissolved)	300	--	--	--	< 100	--	--	--	--
Manganese (total)	300	--	--	--	< 10	--	--	--	--
Manganese (dissolved)	300	--	--	--	< 10	--	--	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

COMPOUND (ug/L)	Sample Location: / Sample Date:	BCPMW-4-3 (REP) 6/5/2013	BCPMW-4-3 6/5/2013	*BCPMW-4-3 11/17/2014*	BCPMW-5-1 4/23/2009	BCPMW-6-1 4/20/2009	BCPMW-6-1 10/6/2010	BCPMW-6-1 10/31/2011
	NYSDEC SCGs							
Cadmium (total)	5	< 5.0	< 5.0	*< 3.0*	< 5	< 5	<5	< 5
Cadmium (dissolved)	5	< 5.0	< 5.0	*< 3.0*	< 5	< 5	<5	< 5
Chromium (total)	50	< 10	< 10	***6.8 B***	< 10	< 10	< 10	**14**
Chromium (dissolved)	50	< 10	< 10	***3.7 B***	< 10	< 10	<10	< 10
Iron (total)	300	--	--	--	**7,420**	< 100	--	--
Iron (dissolved)	300	--	--	--	**6,370**	< 100	--	--
Manganese (total)	300	--	--	--	**145**	< 10	--	--
Manganese (dissolved)	300	--	--	--	**131**	< 10	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

COMPOUND (ug/L)	Sample Location: / Sample Date:	BCPMW-6-1 10/3/2012	BCPMW-6-1 10/4/2012	BCPMW-6-1 6/7/2013	*BCPMW-6-1 11/11/2014*	BCPMW-6-2 5/8/2009	BCPMW-6-2 10/6/2010	BCPMW-6-2 10/31/2011	BCPMW-6-2 10/3/2012	BCPMW-6-2 10/4/2012
	NYSDEC SCGs									
Cadmium (total)	5	< 5	--	< 5.0	< 3.0	< 5	<5	<5	< 5	--
Cadmium (dissolved)	5	--	< 5	< 5.0	< 3.0	< 5	<5	<5		< 5
Chromium (total)	50	< 10	--	< 10	**11.6**	**10.3**	<10	<10	< 10	--
Chromium (dissolved)	50	--	< 10	< 10	< 10 B	< 10	<10	<10		< 10
Iron (total)	300	--	--	--	--	--	--	--	--	--
Iron (dissolved)	300	--	--	--	--	--	--	--	--	--
Manganese (total)	300	--	--	--	--	--	--	--	--	--
Manganese (dissolved)	300	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

COMPOUND (ug/L)	Sample Location: / Sample Date:	BCPMW-6-2 6/5/2013	*BCPMW-6-2 11/11/2014*	BCPMW-7-1 4/20/2009	BCPMW-7-1 10/7/2010	BCPMW-7-1 11/1/2011	BCPMW-7-1 10/4/2012	BCPMW-7-1 6/7/2013	*BCPMW-7-1 11/18/2014*
	NYSDEC SCGs								
Cadmium (total)	5	< 5.0	*< 3.0*	< 5	< 5	< 5	< 5	< 5.0	*< 3.0*
Cadmium (dissolved)	5	< 5.0	*< 3.0*	< 5	< 5	< 5	< 5	< 5.0	*< 3.0*
Chromium (total)	50	< 10	***13.9***	< 10	< 10	< 10	< 10	< 10	***5.1 B***
Chromium (dissolved)	50	< 10	*< 10 B*	< 10	< 10	< 10	< 10	< 10	***0.90 B***
Iron (total)	300	--	--	< 100	--	--	--	--	--
Iron (dissolved)	300	--	--	< 100	--	--	--	--	--
Manganese (total)	300	--	--	**106**	--	--	--	--	--
Manganese (dissolved)	300	--	--	**94.8**	--	--	--	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2]

COMPOUND (ug/L)	Sample Location: / Sample Date:	MW-200-1 4/29/2009	MW-200-1 10/5/2010	MW-200-1 11/3/2011	MW-200-1[3] 10/4/2012	MW-200-1 4/15/2013	MW-200-1 5/31/2013	*MW-200-1 11/18/2014*	MW-201-1 5/1/2009	MW-201-1 10/5/2010	MW-201-1 11/3/2011
	NYSDEC SCGs										
Cadmium (total)	5	< 5	< 5	< 5	< 5	--	< 5	*< 3.0*	< 5	< 5	< 5
Cadmium (dissolved)	5	< 5	< 5	< 5	< 5	--	< 5	*< 3.0*	< 5	< 5	< 5
Chromium (total)	50	< 10	**14**	**48**	**1,130**	**86**	**15.7**	***96.7***	< 10	< 10	< 10
Chromium (dissolved)	50	< 10	< 10	**13**	**320**	**21**	< 10	***19***	< 10	< 10	< 10
Iron (total)	300	--	--	--	--	--	--	--	--	--	--
Iron (dissolved)	300	--	--	--	--	--	--	--	--	--	--
Manganese (total)	300	--	--	--	--	--	--	--	--	--	--
Manganese (dissolved)	300	--	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

COMPOUND (ug/L)	Sample Location: / Sample Date:	MW-201-1(3) 10/4/2012	MW-201-1 4/16/2013	MW-201-1 5/31/2013	*MW-201-1 11/20/2014*	MW-202-1 5/1/2009	MW-202-1 10/6/2010	MW-202-1 11/3/2011	MW-202-1(3) 10/4/2012	MW-202-1 4/16/2013	MW-202-1 5/30/2013
	NYSDEC SCGs										
Cadmium (total)	5	< 5	--	< 5	*< 3.0*	< 5	< 5	< 5	< 5	--	< 5
Cadmium (dissolved)	5	< 5	--	< 5	*< 3.0*	< 5	< 5	< 5	< 5	--	< 5
Chromium (total)	50	**159**	**28**	< 10	***6.7 B***	**16.5**	**15**	**23**	**263 J**	**19**	**34.3**
Chromium (dissolved)	50	**42**	**17**	< 10	***1.7 B***	< 10	<10	< 10	**22**	<10	< 10
Iron (total)	300	--	--	--	--	--	--	--	--	--	--
Iron (dissolved)	300	--	--	--	--	--	--	--	--	--	--
Manganese (total)	300	--	--	--	--	--	--	--	--	--	--
Manganese (dissolved)	300	--	--	--	--	--	--	--	--	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

COMPOUND (ug/L)	Sample Location: / Sample Date:	NYSDEC SCGs	*MW-202-1(REP)* *11/19/2014*	*MW-202-1* *11/19/2014*	MW-203-1 5/1/2009	MW-203-1 10/5/2010	MW-203-1 11/1/2011	MW-203-1(3) 10/3/2012	MW-203-1 10/4/2012	MW-203-1 4/16/2013
Cadmium (total)		5	*< 3.0 U*	*< 3.0*	< 5	< 5	< 5	< 5	--	--
Cadmium (dissolved)		5	*< 3.0 U*	*< 3.0*	< 5	< 5	< 5	--	< 5	--
Chromium (total)		50	***83.8***	***74.3***	**31.5**	**31**	**37**	**1,600**	--	**155**
Chromium (dissolved)		50	***2.3 B***	***2.7 B***	< 10	< 10	< 10	--	**84**	<10
Iron (total)		300	--	--	--	--	--	--	--	--
Iron (dissolved)		300	--	--	--	--	--	--	--	--
Manganese (total)		300	--	--	--	--	--	--	--	--
Manganese (dissolved)		300	--	--	--	--	--	--	--	--

See notes on last page.

Table 13. Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2)

COMPOUND (ug/L)	Sample Location: / Sample Date:	MW-203-1(REP) 5/31/2013	MW-203-1 5/31/2013	*MW-203-1 11/19/2014*
	NYSDEC SCGs			
Cadmium (total)	5	< 5	< 5	*< 3.0*
Cadmium (dissolved)	5	< 5	< 5	*< 3.0*
Chromium (total)	50	**38.2**	**29.5**	***22.9***
Chromium (dissolved)	50	< 10	< 10	***3.3 B***
Iron (total)	300	--	--	--
Iron (dissolved)	300	--	--	--
Manganese (total)	300	--	--	--
Manganese (dissolved)	300	--	--	--

Notes:

(1) Results validated following protocols specified in Sampling and Analysis Plan in the December 2009 DRAFT OM&M Manual (ARCADIS 2009).

(2) Samples analyzed for the metals using EPA Method 6010.

(3) Samples collected with HydraSleeve™ no purge method, all other samples collected by purge (3-Volume) method.

Italicized samples collected in 2013.

Indicates an exceedance of an SCG.

Bold indicates a detection.

RI/FS Remedial Investigation/Feasibility Study.

NYSDEC New York State Department of Environmental Conservation.

EPA Environmental Protection Agency

SCGs Standards, criteria, and guidance values.

ug/L Micrograms per liter.

-- Not analyzed.

< 5 Compound not detected above its laboratory quantification limit.

B Compound detected in associated blank sample.

ARCADIS

Figures

SOURCE:
USGS 7.5 MIN. AMITYVILLE QUADRANGLE, AMITYVILLE, N.Y., 1994, FREEPORT QUADRANGLE, FREEPORT, N.Y., 1994, HICKSVILLE QUADRANGLE, HICKSVILLE, N.Y., 1967, PHOTOREVISED 1979, HUNTINGTON, N.Y., 1967, PHOTOREVISED 1979

0 2000' 4000'

SCALE IN FEET

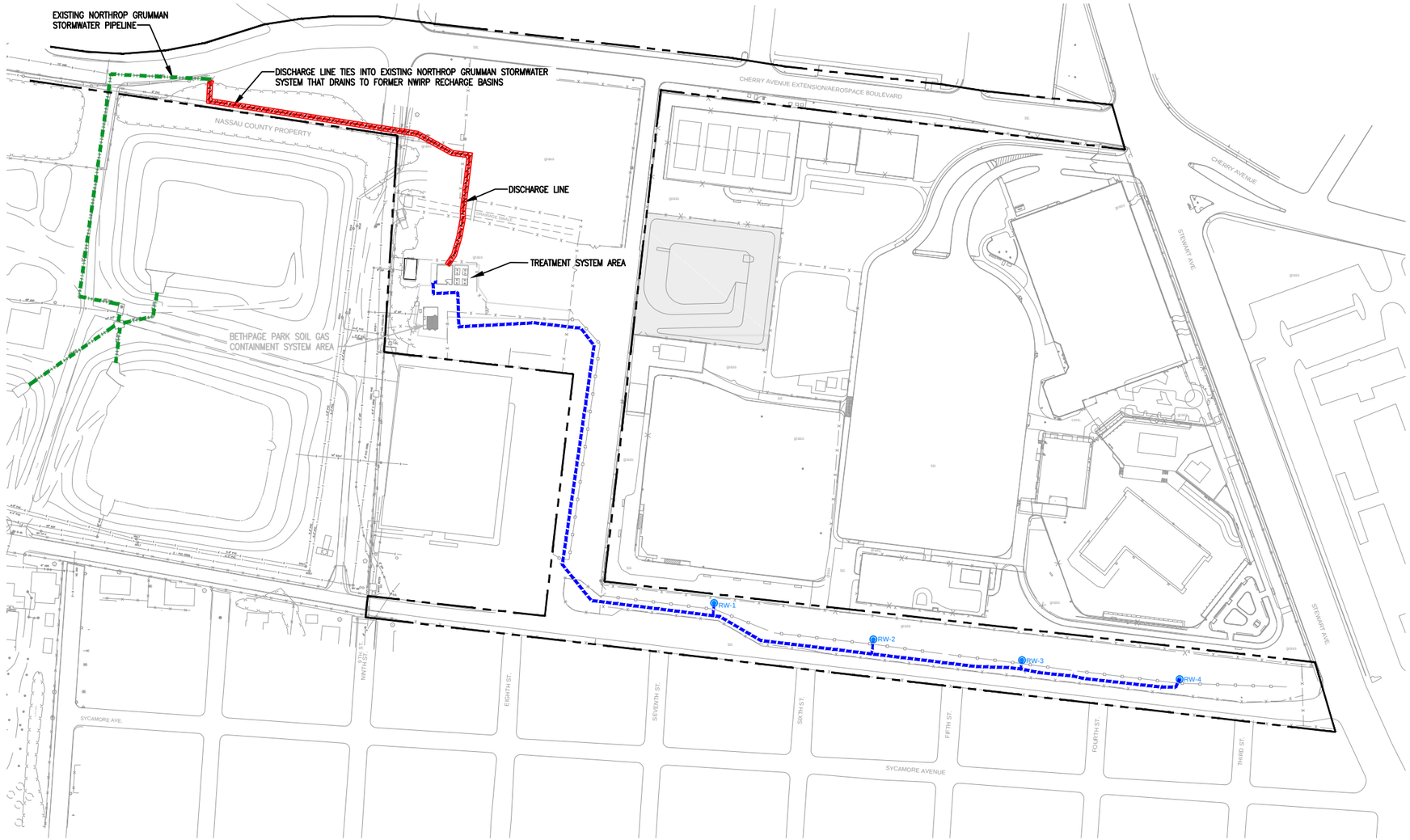
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

SITE LOCATION

ARCADIS

FIGURE
1

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD: PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVE\NY001496\0312\GWM4\OU3\NY1496_B01.dwg LAYOUT: BETHPAGE PARK SAVED: 3/27/2014 4:16 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 3/27/2014 4:31 PM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ----
AMITYVILLE.TIF
FREEPORT.TIF
HICKSVILLE.TIF
HUNTINGTON.TIF



LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- bit. BITUMINOUS PAVEMENT
- INFLUENT PIPELINE AND ELECTRICAL CONDUITS
- EFFLUENT PIPELINE
- EXISTING NORTHROP GRUMMAN STORMWATER PIPELINE
- RW-4 REMEDIAL WELL
- NWIRP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NOW OWNED BY NASSAU COUNTY)

0 200' 400'

SCALE IN FEET

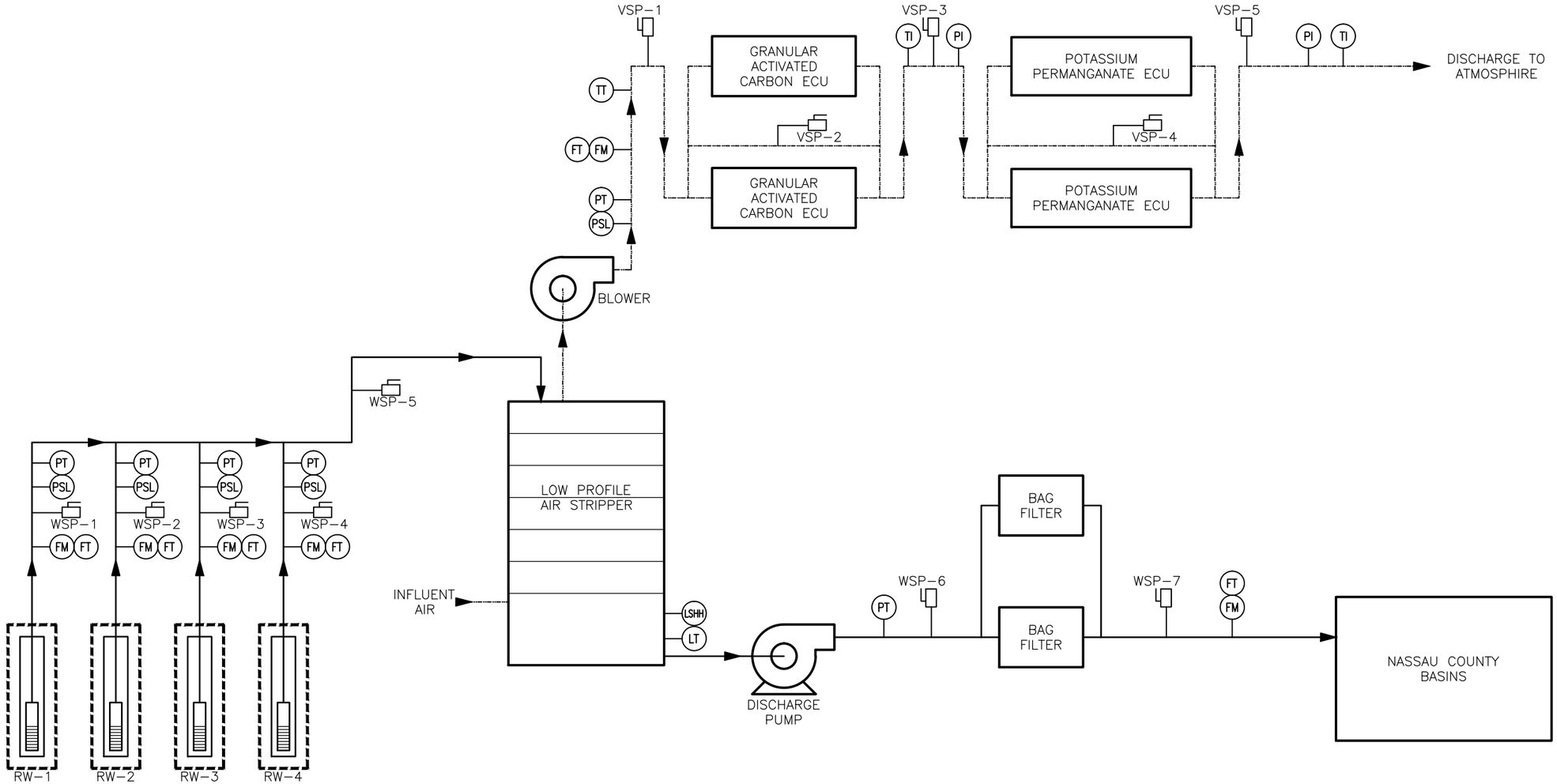
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

SITE AND GROUNDWATER CONTAINMENT SYSTEM

ARCADIS

FIGURE 2

CITY:SYRACUSE-NY DV/GROUP:ENV DB:A.SANCHEZ LD:AS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)On=*;OFF=*REF*
G:\ENV\CAD\SYRACUSE\ACTIVE\NY001496\11140MM4\NY1496B01.DWG LAYOUT: 2 SAVED: 11/4/2014 10:16 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 11/4/2014 10:21 AM BY: SANCHEZ, ADRIAN
XREFS:
X1496X00
X1496X01
IMAGES:
PROJECTNAME: ----



LEGEND:

- PROCESS WATER
- PROCESS AIR
- FM — INSTRUMENT
- SAMPLE PORT
- FLOW DIRECTION
- FM FLOW METER
- FT FLOW RATE TRANSMITTER
- PSL PRESSURE VACUUM LOW
- PT PRESSURE TRANSMITTER
- PI PRESSURE INDICATOR
- LSHH LEVEL SWITCH HIGH HIGH
- LT LEVEL TRANSMITTER
- TT TEMPERATURE TRANSMITTER
- TI TEMPERATURE INDICATOR
- WSP WATER SAMPLE PORT
- VSP VAPOR SAMPLE PORT
- ECU EMISSION CONTROL UNIT

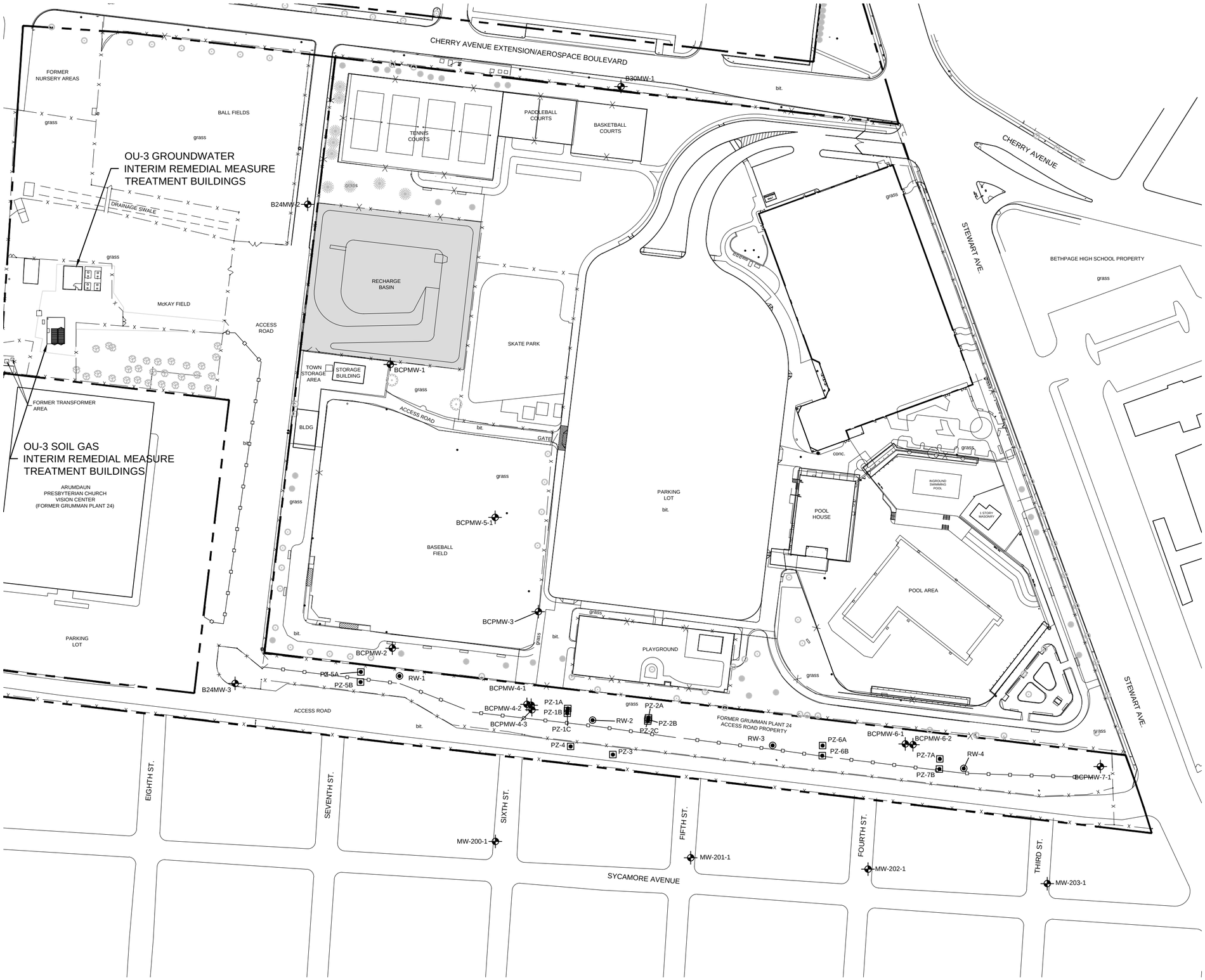
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

GROUNDWATER TREATMENT SYSTEM PROCESS SCHEMATIC AND MONITORING LOCATIONS

ARCADIS

FIGURE 3

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:AS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVITY\01496\11140MMI4\NY1496D02.dwg LAYOUT: 3 SAVED: 11/4/2014 8:47 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: PDF 11X17 PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 11/4/2014 10:19 AM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ----
X1496X00



EXPLANATION:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- BASIN
- bit. BITUMINOUS PAVEMENT
- MW-200-1 MONITORING WELL
- RW-2 REMEDIAL WELL
- PZ-2C PIEZOMETER

NOTES:

1. MONITORING WELLS, REMEDIAL WELLS, AND PIEZOMETERS SURVEYED TO NORTH AMERICAN DATUM (NAD) 83.
2. PARK FEATURES SHOWN WERE PRESENT PRIOR TO TOWN OF OYSTER BAY REDEVELOPMENT IN 2005.

0 100' 200'
SCALE IN FEET

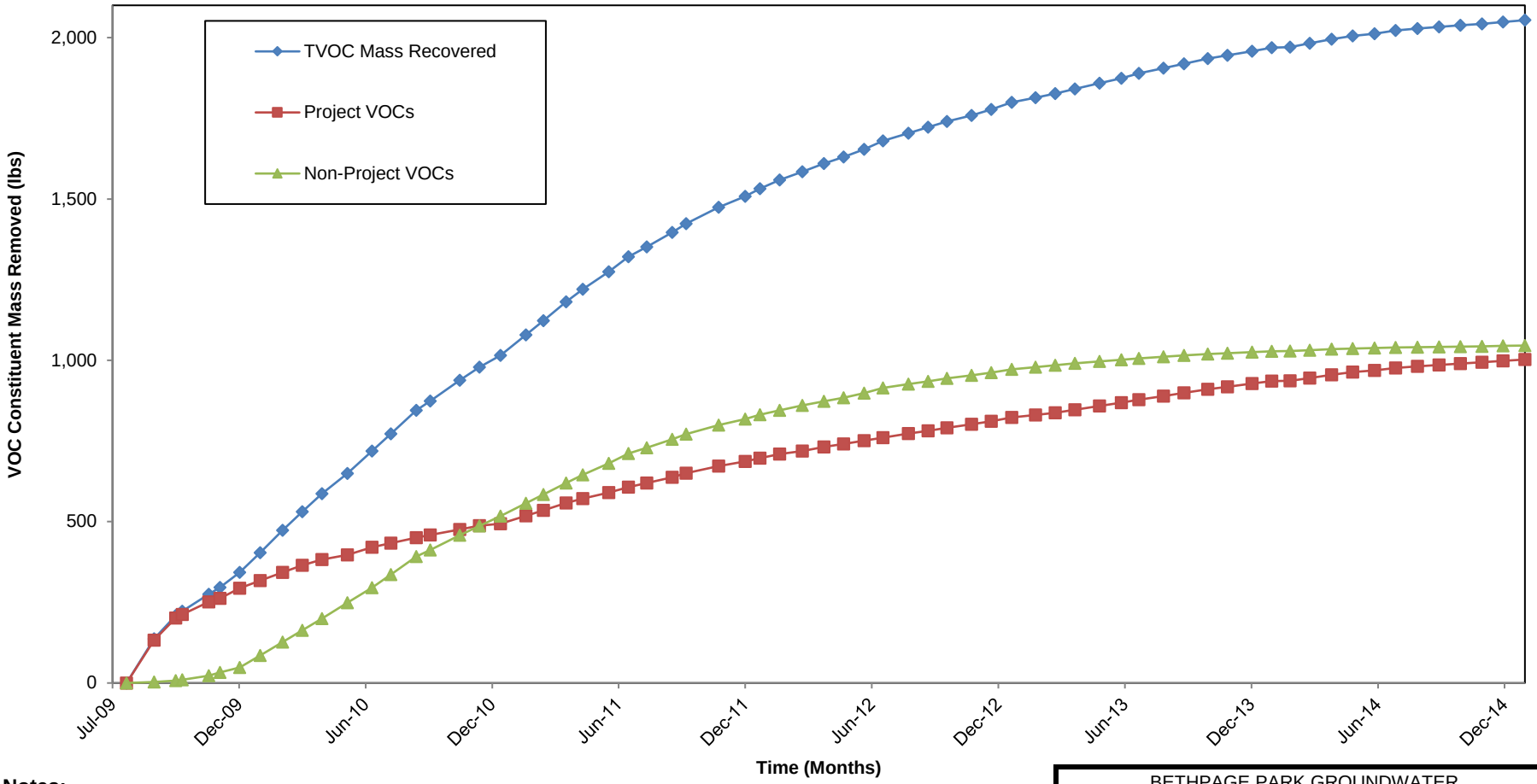
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

GROUNDWATER MONITORING NETWORK SITE PLAN

ARCADIS

FIGURE 4

CITY:(Req'd) DIV/GROUP:(Req'd) DB:(Req'd) LD:(Opt) PIC:(Opt) PM:(Req'd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\S*RAC1\SE\ACTNY001498\114\OM\M4\1498W02.dwg LAYOUT: 4 SAVED: 5/18/2015 4:32 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 5/18/2015 4:35 PM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ----
X1498X01



Notes:

VOC = Volatile organic compound.

lbs = Pounds.

TVOCs = Sum of VOCs detected.

Project VOCs = Sum of 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethene; vinyl chloride; cis-1,2-dichloroethene; trans-1,2-dichloroethene; benzene; toluene; and total xylenes.

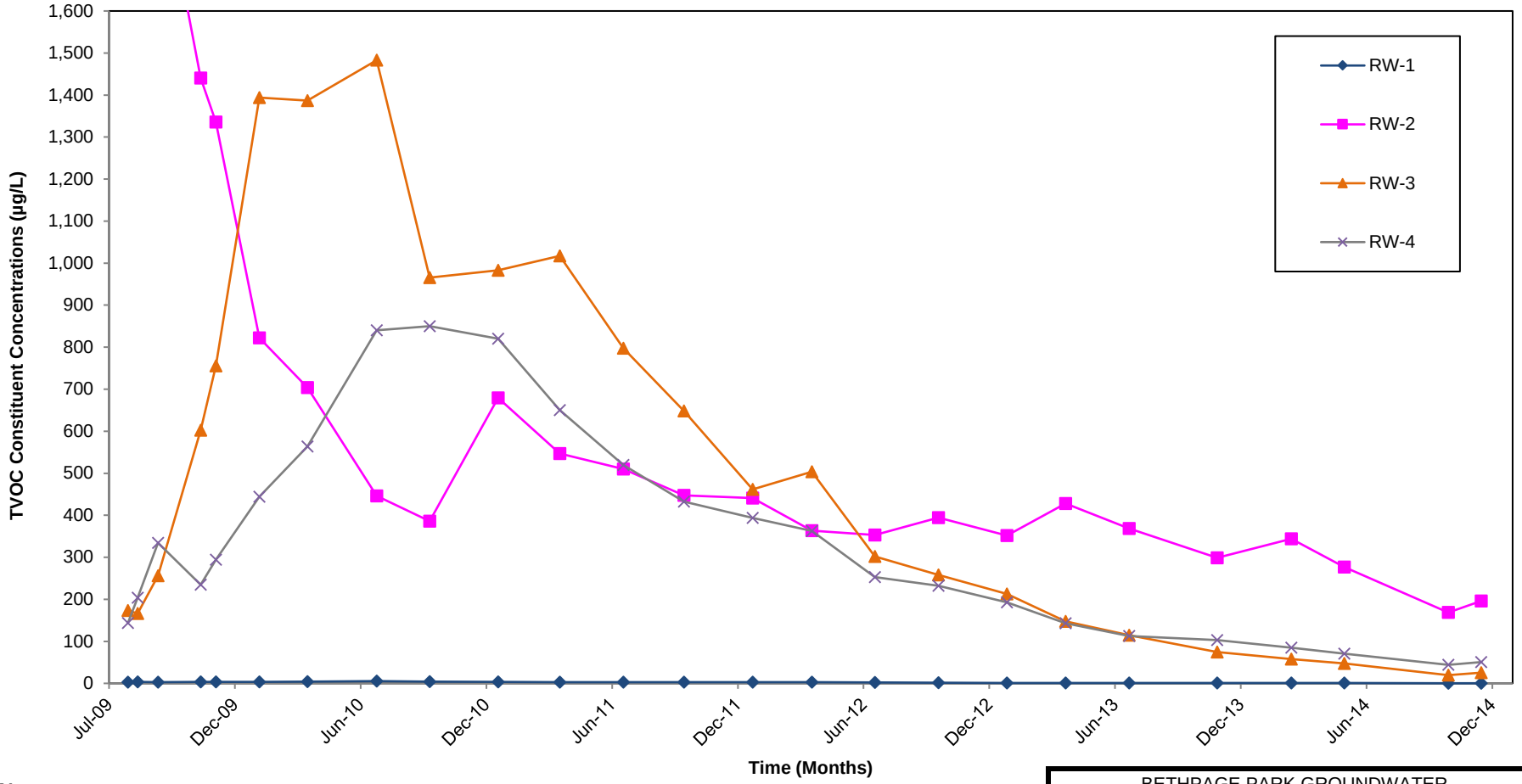
Non-Project VOCs = Sum of VOCs that are not Project VOCs.

BETHPAGE PARK GROUNDWATER
CONTAINMENT SYSTEM, OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

CUMULATIVE TOTAL, PROJECT, AND NON-PROJECT VOC MASS REMOVED THROUGH DECEMBER 2014

ARCADIS

FIGURE 5



Notes:

VOC = Volatile organic compound.

µg/L = Micrograms per liter.

TVOCs = Sum of VOCs detected.

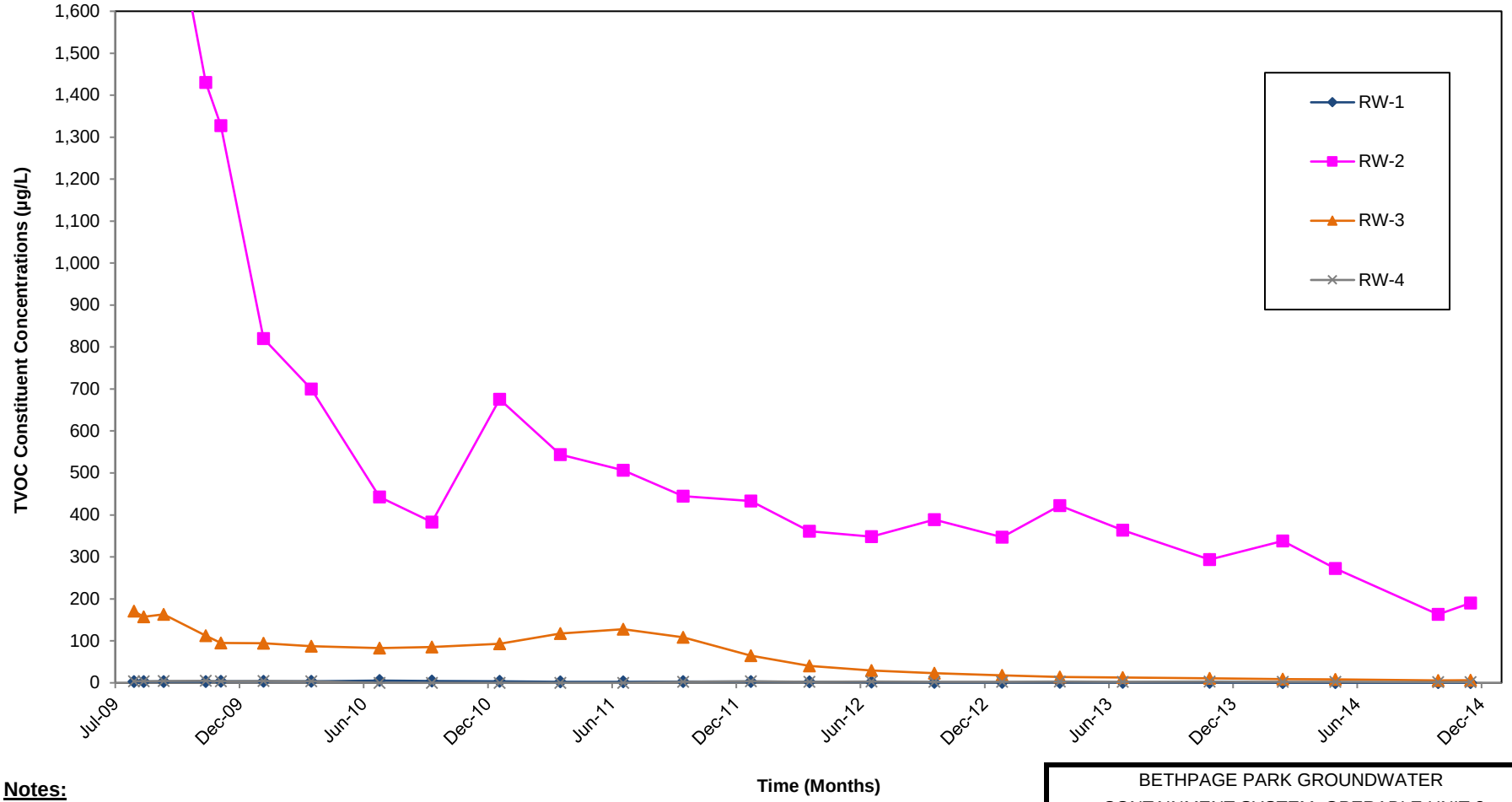
1. Results prior to November 10, 2009 for Remedial Well RW-2 are not shown to improve figure clarity. The TVOC concentrations and sample dates are as follows: July 29, 2009 - 3,871 µg/L, August 12, 2009 - 3,226 µg/L, and September 10, 2009 - 1,973 µg/L.

BETHPAGE PARK GROUNDWATER
CONTAINMENT SYSTEM, OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

REMEDIAL WELL TVOC CONCENTRATIONS THROUGH DECEMBER 2014

ARCADIS

FIGURE
6A



Notes:

VOC = Volatile organic compound.

µg/L = Micrograms per liter.

TVOCs = Sum of VOCs detected.

Project VOCs = Sum of 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethene; vinyl chloride; cis-1,2-dichloroethene; trans-1,2-dichloroethene; benzene; toluene and total xylenes.

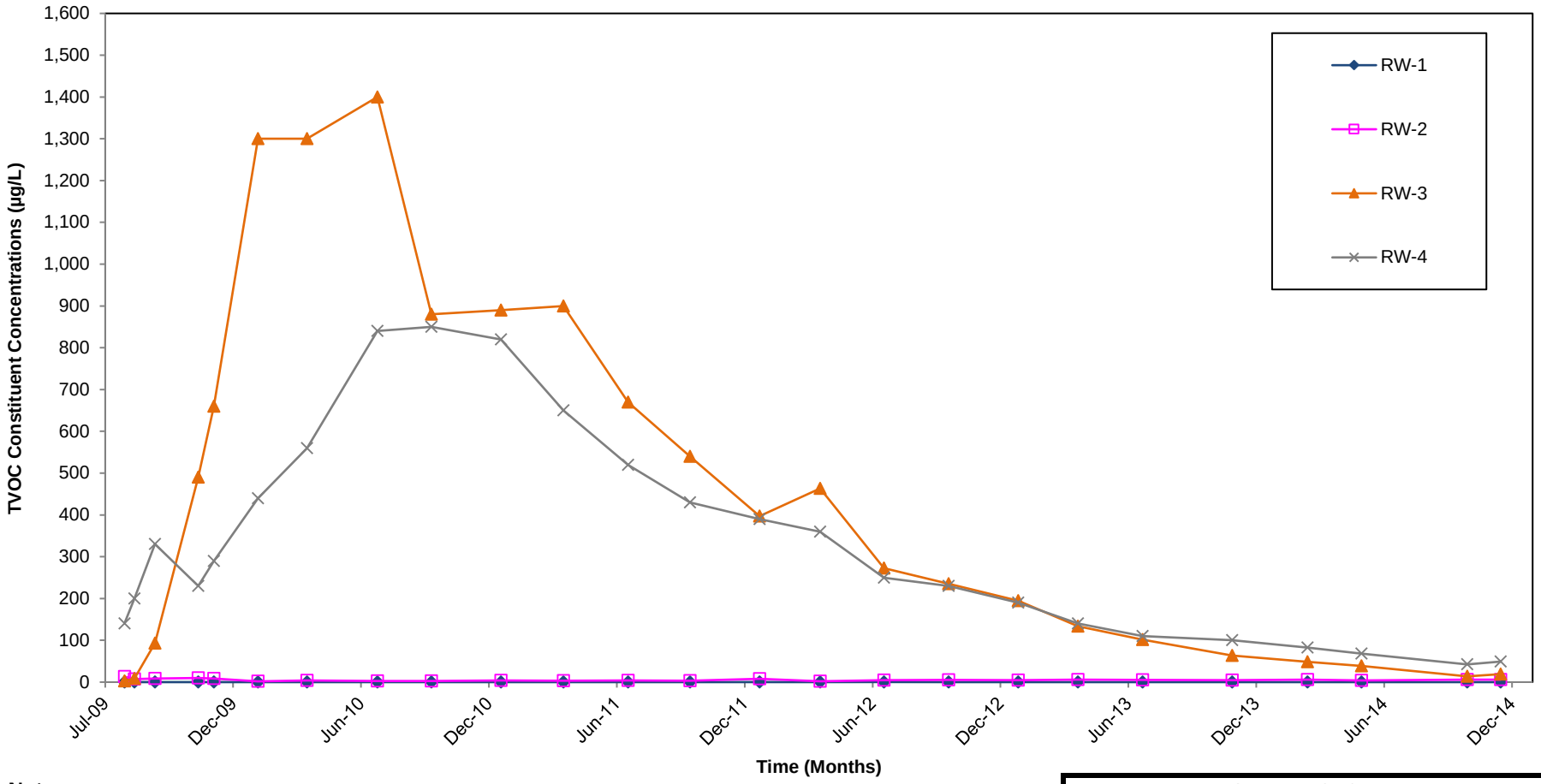
1.Results prior to November 10, 2009 for Remedial Well RW-2 are not shown to improve figure clarity. The TVOC concentrations and sample dates are as follows: July 29, 2009 - 3,858 µg/L, August 12, 2009 - 3,218 µg/L, and September 10, 2009 - 1,964 µg/L.

BETHPAGE PARK GROUNDWATER
CONTAINMENT SYSTEM, OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

REMEDIAL WELL PROJECT VOC CONCENTRATIONS THROUGH DECEMBER 2014

ARCADIS

FIGURE
6B



Notes:

VOC = Volatile organic compound.

µg/L = Micrograms per liter.

TVOCs = Sum of VOCs detected.

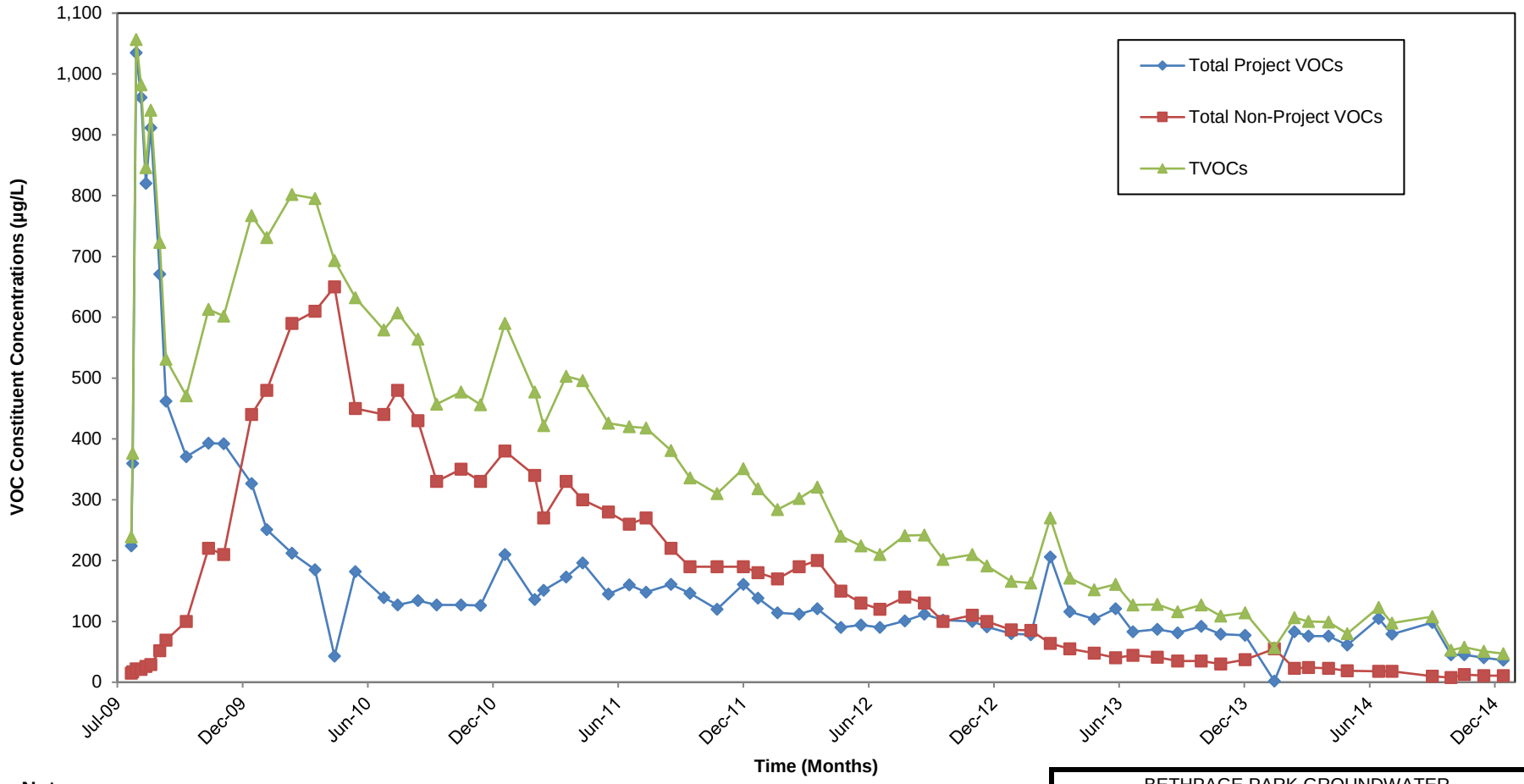
Non-Project VOCs = Sum of TVOCs that are not Project VOCs.

BETHPAGE PARK GROUNDWATER
CONTAINMENT SYSTEM, OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

REMEDIAL WELL NON-PROJECT VOC CONCENTRATIONS THROUGH DECEMBER 2014

ARCADIS

FIGURE
6C



Notes:

VOC = Volatile organic compound.

µg/L = Micrograms per liter.

TVOCs = Sum of VOCs detected.

Project VOCs = Sum of 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethene; vinyl chloride; cis-1,2-dichloroethene; trans-1,2-dichloroethene; benzene; toluene; and total xylenes.

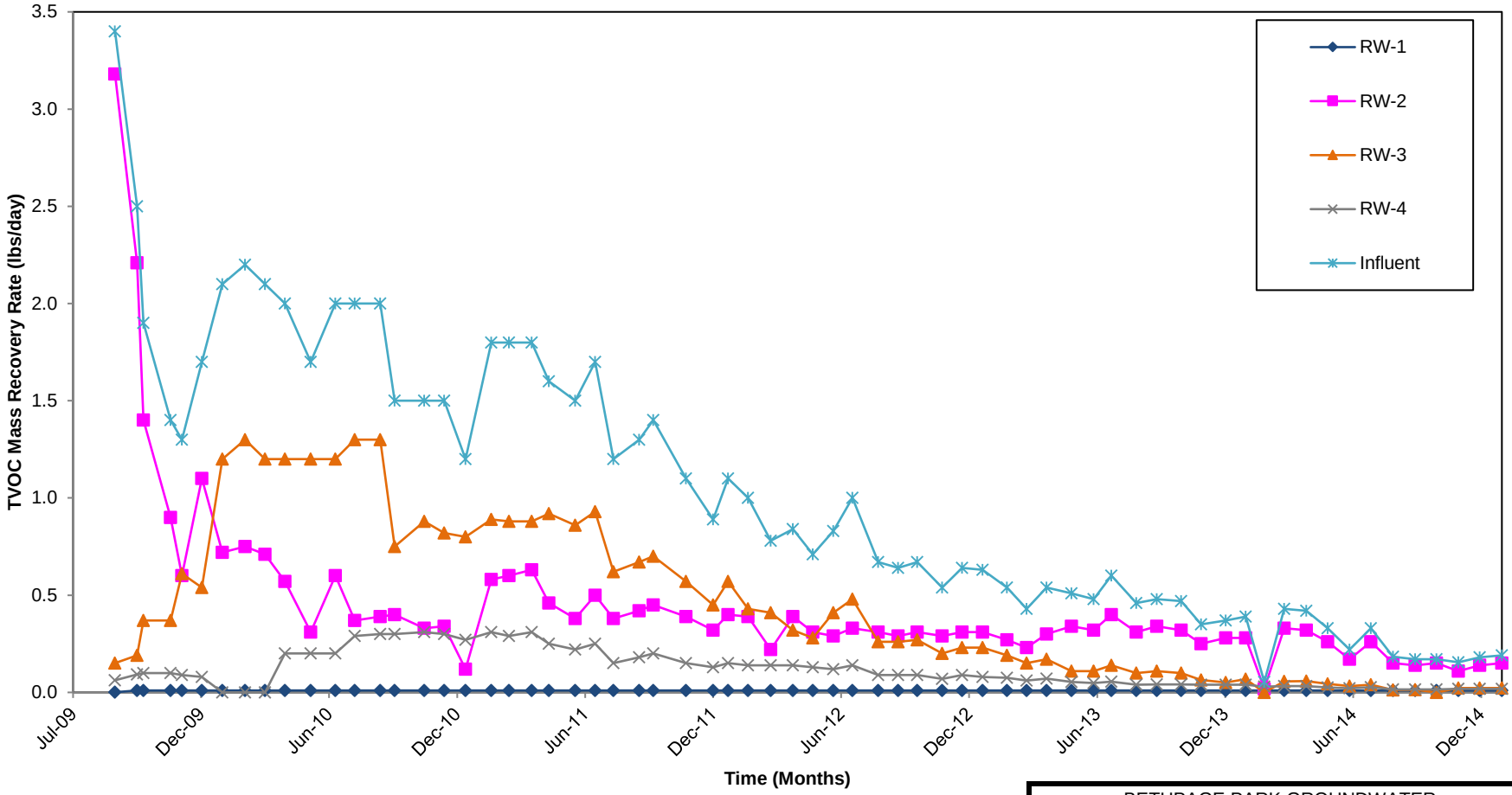
Non-Project VOCs = Sum of VOCs that are not Project VOCs.

BETHPAGE PARK GROUNDWATER
CONTAINMENT SYSTEM, OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

INFLUENT TOTAL, PROJECT, AND NON-PROJECT VOC CONCENTRATIONS THROUGH DECEMBER 2014

ARCADIS

FIGURE
7



Notes:

VOC = Volatile organic compound.

lbs/day = Pounds per day.

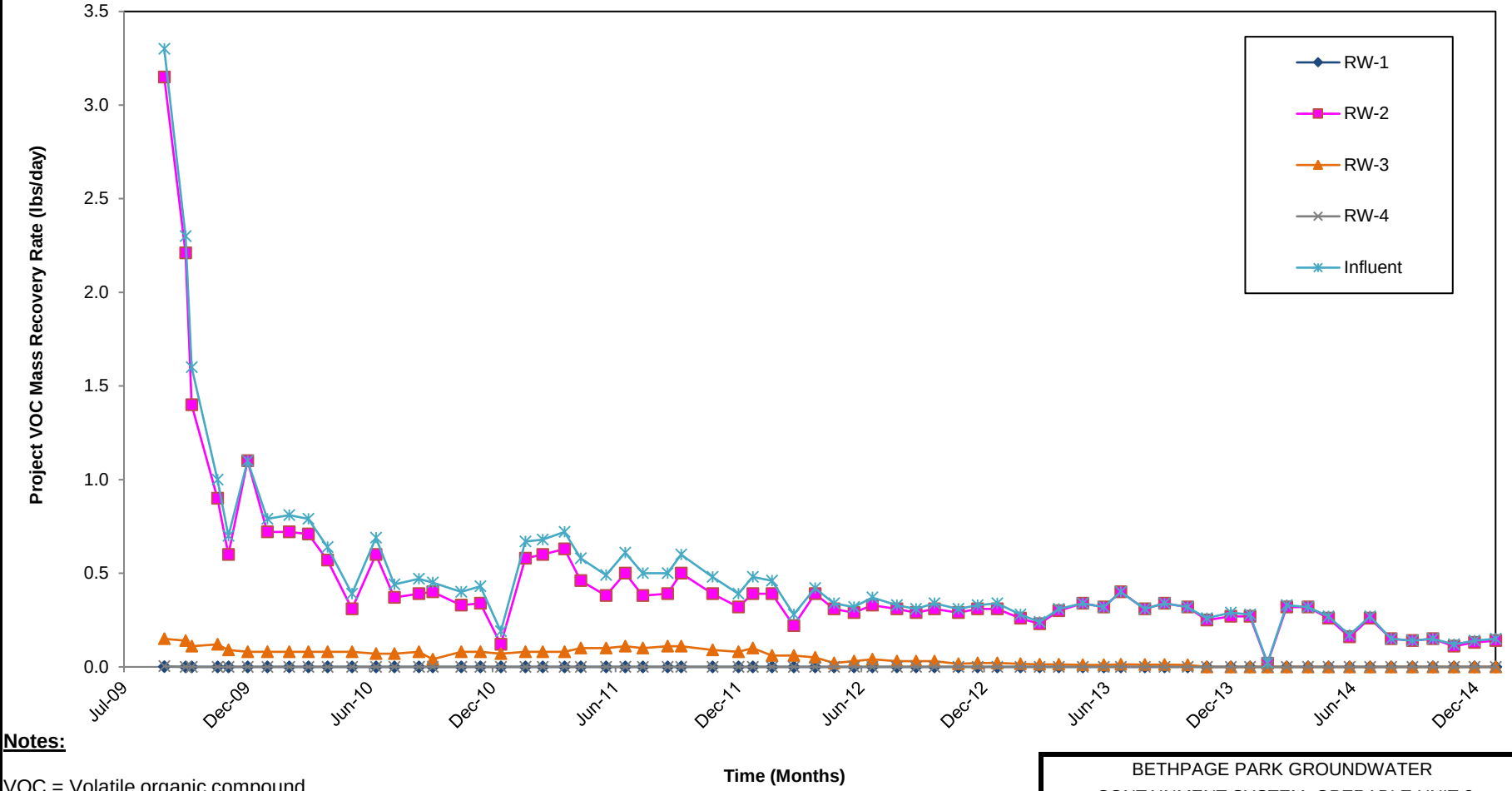
TVOCs = Sum of VOCs detected.

BETHPAGE PARK GROUNDWATER
CONTAINMENT SYSTEM, OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

TVOC MASS RECOVERY RATES THROUGH DECEMBER 2014

ARCADIS

FIGURE
8A



Notes:

VOC = Volatile organic compound.

lbs/day = Pounds per day.

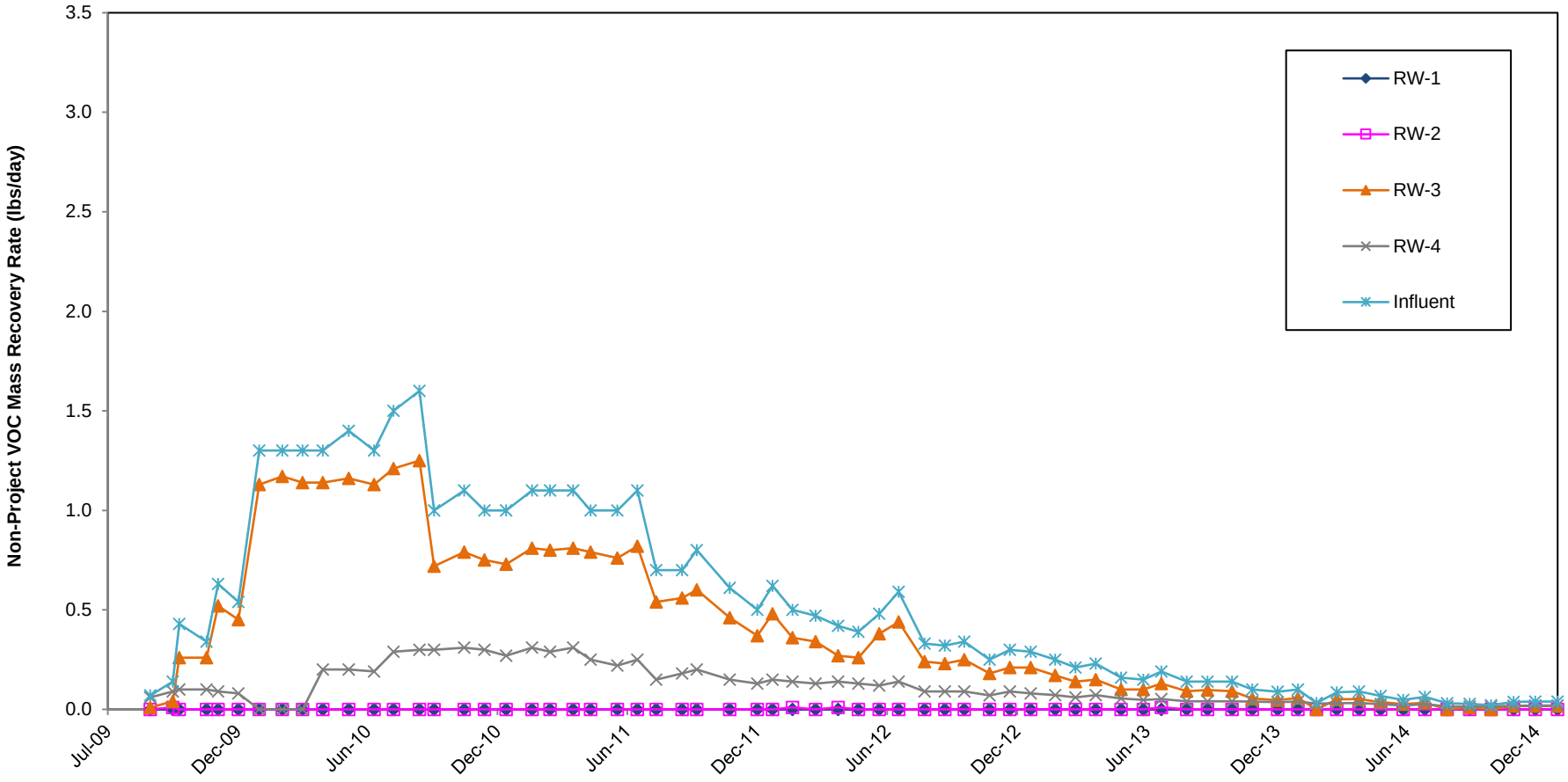
Project VOCs = Sum of 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethene; vinyl chloride; cis-1,2-dichloroethene; trans-1,2-dichloroethene; benzene; toluene; and total xylenes

BETHPAGE PARK GROUNDWATER
CONTAINMENT SYSTEM, OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

PROJECT VOC MASS RECOVERY RATES THROUGH DECEMBER 2014

ARCADIS

FIGURE
8B



Notes:

VOC = Volatile organic compound.

lbs/day = Pounds per day.

Non-Project VOCs = Sum of VOCs that are not Project VOCs.

BETHPAGE PARK GROUNDWATER
CONTAINMENT SYSTEM, OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

NON-PROJECT VOC MASS RECOVERY RATES THROUGH DECEMBER 2014

ARCADIS

FIGURE
8C

Appendix A

Well Construction Information and Environmental Effectiveness Monitoring Program

Appendix A-1. Well Construction Information and Environmental Effectiveness Monitoring Program, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds Northrop Grumman Systems Corporation, Bethpage, New York. [1,2]

Well ID	Well Diameter (inches)	Depth to Screen Top (ft bls)	Depth to Screen Bottom (ft bls)	Screen Length (ft)	Well Depth (ft)	Well Materials	Water Levels [3]	MONITORING ACTIVITY WATER QUALITY [4] VOC	Cd/Cr	Fe/Mn
Monitoring Wells										
BCPMW-1	2	50	65	15	65	Sch. 40 PVC	Quarterly	Baseline	Baseline	--
BCPMW-2	2	60	75	15	75	Sch. 40 PVC	Quarterly	Baseline	Baseline	Baseline
BCPMW-3	2	59	74	15	74	Sch. 40 PVC	Quarterly	Baseline	Baseline	Baseline
BCPMW-4-1	4	45	65	20	70	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	Baseline
BCPMW-4-2	4	68.5	83.5	15	88.5	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	Baseline
BCPMW-4-3	4	115	125	10	130	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	Baseline
BCPMW-5-1	4	50	65	15	70	Sch. 80 PVC/ SS	Quarterly	Baseline	Baseline	Baseline
BCPMW-6-1	4	88.5	98.5	10	103.5	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	--
BCPMW-6-2	4	133	143	10	148	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	--
BCPMW-7-1	4	90	100	10	105	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	--
B24MW-2	2	54	74	20	74	PVC	Quarterly	Baseline/Annual	Baseline	--
B24MW-3	2	55	70	15	70	PVC	Quarterly	Baseline/Annual	Baseline	--
B30MW-1	2	57	72	15	72	PVC	Quarterly	Baseline/Annual	Baseline	--
MW-200-1	4	85	95	10	100	Sch. 40 PVC/ SS	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	--
MW-201-1	4	70	80	10	85	Sch. 40 PVC/ SS	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	--
MW-202-1	4	125	135	10	140	Sch. 40 PVC/ SS	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	--
MW-203-1	4	103	113	10	118	Sch. 40 PVC/ SS	Quarterly	Baseline/Semiannual [5]	Baseline/Annual	--
Remedial Wells [6]										
RW-01	8	108	128	20	134	Sch. 80 PVC/SS	Quarterly	Baseline/Quarterly	Baseline/Annual	--
RW-02	6	84	104	20	104	Steel/SS	Quarterly	Baseline/Quarterly	Baseline/Annual	--
RW-03	8	84	104	20	107	Sch. 80 PVC/SS	Quarterly	Baseline/Quarterly	Baseline/Annual	--
RW-04	8	110	130	20	133	Sch. 80 PVC/SS	Quarterly	Baseline/Quarterly	Baseline/Annual	--

See notes on last page.

Appendix A-1. Well Construction Information and Environmental Effectiveness Monitoring Program, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds Northrop Grumman Systems Corporation, Bethpage, New York. (1,2)

Well ID	Well Diameter (inches)	Depth to Screen Top (ft bls)	Depth to Screen Bottom (ft bls)	Screen Length (ft)	Well Depth (ft)	Well Materials	Water Levels (3)	MONITORING ACTIVITY WATER QUALITY (4) VOC	Cd/Cr	Fe/Mn
Piezometers										
PZ-01a	2	60	65	5	68	Sch. 40 PVC	Quarterly	--	--	--
PZ-01b	1	80	85	5	88	Sch. 40 PVC	Quarterly	--	--	--
PZ-01c	1	130	135	5	138	Sch. 40 PVC	Quarterly	--	--	--
PZ-02a	2	60	65	5	68	Sch. 40 PVC	Quarterly	--	--	--
PZ-02b	1	80	85	5	85	Sch. 40 PVC	Quarterly	--	--	--
PZ-02c	1	130	135	5	138	Sch. 40 PVC	Quarterly	--	--	--
PZ-03	1	80	85	5	88	Sch. 40 PVC	Quarterly	--	--	--
PZ-04	1	80	85	5	88	Sch. 40 PVC	Quarterly	--	--	--
PZ-05a	2	65	70	5	74	Sch. 40 PVC	Quarterly	--	--	--
PZ-05b	1	110	115	5	117	Sch. 40 PVC	Quarterly	--	--	--
PZ-06a	2	65	70	5	72	Sch. 40 PVC	Quarterly	--	--	--
PZ-06b	1	90	95	5	97	Sch. 40 PVC	Quarterly	--	--	--
PZ-07a	2	65	70	5	72	Sch. 40 PVC	Quarterly	--	--	--
PZ-07b	1	113	118	5	120	Sch. 40 PVC	Quarterly	--	--	--

Notes:

(1) Water samples will be collected and analyzed in accordance with the method and procedures described in the Sampling and Analysis Plan (SAP).
(2) Approximate locations of the wells and piezometers in the OU-3 Groundwater Interim Remedial Measure Monitoring Program are shown in Figure 4.
(3) Water levels will be measured in all wells/piezometers during the baseline monitoring event. Water levels will be measured in accordance with the procedures presented in the SAP.
(4) VOC: VOCs, per Table D-3 in the Quality Assurance Project Plan (QAPP), using NYSDEC ASP 2000 Method OLM 4.3.
Cd/Cr: Cadmium and Chromium using USEPA Method 6010.
Fe/Mn: Iron and Manganese using USEPA Method 6010, both total and dissolved.
(5) Semiannual wells will be monitored annually after Year 1.
(6) Some of the analyses listed here are also covered in the Remedial System Sampling Program (Table B-1) and some of the analyses and/or frequencies may be modified based on review of short-term and/or long-term testing results. (e.g. the Cd/Cr sampling frequency was changed from quarterly to annually in 2011).

Acronyms\Key:

Sch. 80 PVC	Schedule 80 polyvinyl chloride.
Sch. 40 PVC	schedule 40 polyvinyl chloride.
SS	Stainless steel.
Steel	Low carbon steel.
ft	Feet.
ft ms	Feet relative to mean sea level.
ft bls	Feet below land surface.
--	Not applicable.
VOC	Volatile organic compound.

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Appendix B

Compliance and Performance Program and Water Sample Analytical Results

Appendix B-1. Compliance and Performance Program Elements, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Northrop Grumman Systems Corporation, Bethpage, New York.

Sample Location/Instrument [1]	Parameter (Method) [2]	Frequency			
		Short-Term [3] (first month)	Short-Term [3] (five month period following first month)	Long-Term [4]	SCADA Data Acquisition
Water Samples [5]					
Remedial Well 1 (WSP-1)	VOCs (NYSDEC 2005 OLM 4.3)	Bi-Weekly	Quarterly	Quarterly	NA
	Iron (USEPA 6010C)	Bi-Weekly	Annually	Annually	NA
	Cadmium and Chromium (USEPA 6010C)[11]	---	Annually	Annually	NA
Remedial Well 2 (WSP-2)	VOCs (NYSDEC 2005 OLM 4.3)	Bi-Weekly	Quarterly	Quarterly	NA
	Iron (USEPA 6010C)	Bi-Weekly	Annually	Annually	NA
	Cadmium and Chromium (USEPA 6010C)[11]	---	Annually	Annually	NA
Remedial Well 3 (WSP-3)	VOCs (NYSDEC 2005 OLM 4.3)	Bi-Weekly	Quarterly	Quarterly	NA
	Iron (USEPA 6010C)	Bi-Weekly	Annually	Annually	NA
	Cadmium and Chromium (USEPA 6010C)[11]	---	Annually	Annually	NA
Remedial Well 4 (WSP-4)	VOCs (NYSDEC 2005 OLM 4.3)	Bi-Weekly	Quarterly	Quarterly	NA
	Iron (USEPA 6010C)	Bi-Weekly	Annually	Annually	NA
	Cadmium and Chromium (USEPA 6010C)[11]	---	Annually	Annually	NA
Air Stripper Influent (WSP-5)	VOCs (NYSDEC 2005 OLM 4.3)	1-hr [6]; Days 1, 3, & Weekly	Monthly	Quarterly	NA
	Iron (USEPA 6010C)	1-hr [6]; Days 1, 3, & Weekly	Monthly	Quarterly	NA
Air Stripper Effluent (WSP-6)	Iron (USEPA 6010C)	1-hr [6]; As Needed	As Needed	As Needed	NA
Plant Effluent (WSP-7)	**VOCs (NYSDEC 2005 OLM 4.3)**	**1-hr [6]; Days 1, 3, & Weekly**	**Monthly**	**Monthly**	NA
	Iron (USEPA 6010C)	**1-hr [6]; Days 1, 3, & Weekly**	**Monthly**	**Monthly**	NA
	Mercury (USEPA 7470A) [7]	**1-hr [6]; Days 1, 3, & Weekly**	**Monthly**	**Monthly**	NA
	pH (field) [8]	**1-hr [6]; Days 1, 3, & Weekly**	**Monthly**	**Monthly**	NA
	Cadmium and Chromium (USEPA 6010C)[11]	---	Quarterly	Quarterly	NA
Air Samples [9] [10]					
Air Stripper Effluent/ECU-1 Influent (VSP-1)	VOCs (TO-15 Modified)	Monthly	Monthly	Quarterly	NA
ECU-1 Effluent/ECU-2 Influent (VSP-2)	VOCs (TO-15 Modified)	As Needed	As Needed	As Needed	NA
ECU-2 Effluent/ECU-3 Influent (VSP-3)	VOCs (TO-15 Modified)	As Needed	As Needed	As Needed	NA
ECU-3 Effluent/ECU-4 Influent (VSP-4)	VOCs (TO-15 Modified)	As Needed	As Needed	As Needed	NA
Total Effluent (VSP-5)	**VOCs (TO-15 Modified)**	**Monthly**	**Monthly**	**Quarterly**	NA

See notes on last page.

Appendix B-1. Compliance and Performance Program Elements, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Northrop Grumman Systems Corporation, Bethpage, New York.

Sample Location/Instrument [1]	Parameter (Method) [2]	Frequency			
		Short-Term [3] (first month)	Short-Term [3] (five month period following first month)	Long-Term [4]	SCADA Data Acquisition
Water Flow Measurements					
Remedial Well RW-1 (FT - 110)	Flow rate (gpm + total gal.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Remedial Well RW-2 (FT - 120)	Flow rate (gpm + total gal.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Remedial Well RW-3 (FT - 130)	Flow rate (gpm + total gal.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Remedial Well RW-4 (FT - 140)	Flow rate (gpm + total gal.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Combined Influent (FR - 200)	Flow rate (gpm + total gal.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
System Effluent (FT-700)	Flow rate (gpm + total gal.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Air Flow Measurements					
Air Stripper Effluent (FT-500)	Flow rate (SCFM)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Water Pressure Measurements					
Remedial Well RW-1 (PT - 110)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Remedial Well RW-2 (PT - 120)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Remedial Well RW-3 (PT - 130)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Remedial Well RW-4 (PT - 140)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Air Stripper Effluent (PT-700)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Weekly	Weekly	Continuously
Air Temperature & Relatively Humidity Measurements					
Air Stripper Effluent (TT-500)	Temperature	Weekly	Weekly	Weekly	Continuously
ECU Mid-Train (TI-503)	Temperature	Weekly	Weekly	Weekly	NA
Effluent (TI-603)	Temperature	Weekly	Weekly	Weekly	NA

See notes on last page.

Appendix B-1. Compliance and Performance Program Elements, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Northrop Grumman Systems Corporation, Bethpage, New York.

Sample Location/Instrument [1]	Parameter (Method) [2]	Frequency			
		Short-Term [3] (first month)	Short-Term [3] (five month period following first month)	Long-Term [4]	SCADA Data Acquisition
Air Pressure Measurements					
Air Stripper Effluent (PT-500)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Monthly	Quarterly	Continuously
ECU #1 Influent (PI-501)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Monthly	Quarterly	NA
ECU #2 Influent (PI-502)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Monthly	Quarterly	NA
ECU #3 Influent (PI-601)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Monthly	Quarterly	NA
ECU #4 Influent (PI-602)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Monthly	Quarterly	NA
System Effluent (PI-603)	Pressure (i.w.g.)	(Daily -1st week) Weekly	Monthly	Quarterly	NA

See notes on last page.

Appendix B-1. Compliance and Performance Program Elements, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Northrop Grumman Systems Corporation, Bethpage, New York.

Notes:

(1) Refer to Figure 3 of this Operation, Maintenance, & Monitoring (OM&M) Report and Appendix E of the Groundwater IRM OM&M Manual (OM&M Manual (ARCADIS 2009)) for a diagram showing referenced sample locations and measurement points.

(2) Parameters/methods may be modified based on review of short-term and/or long-term testing results. Parameters shown in **Bold** indicate parameters that require NYSDEC notification/approval prior to change in monitoring schedule.

(3) Short-term schedule is tentative. Modification may be required/recommended based on the results of start-up and performance testing.

(4) Long-term schedule is tentative. Modification may be required/recommended based on the results of short-term testing or water quality trends.

(5) Water samples will be collected in accordance with the methods described in the Sampling and Analysis Plan, which is included as Appendix A of the OM&M Manual (ARCADIS 2009). Samples will be analyzed in accordance with the methods and procedures described in the Sampling and Analysis Plan.

(6) Per NYSDEC request, a 1-hr pilot test was performed during system shake-down. The 1-hr pilot test samples were also analyzed for Mercury (Hg).

(7) Per the interim treated effluent (water) discharge criteria provided in the NYSDEC letter dated March 19, 2009, select samples were analyzed for Mercury (Hg).

(8) As authorized by the NYSDEC, the pH monitoring frequency was reduced from weekly to monthly beginning on February 8, 2010.

(9) Air samples collected and analyzed in accordance with methods described in the Sampling and Analysis Plan, which is included as Appendix A of the OM&M Manual (ARCADIS 2009).

(10) Additional air samples will be collected to help calculate media usage rates and to help determine media changeout frequencies.

(11) Cadium and Chromium analyses are part of the Environmental Effectiveness Monitoring Program (Table A-1) and the original discharge permit application. They are included here for consistency.

Acronyms\Key:

NA	Not Applicable.
---	Not Required
ECU	Emissions control unit.
VOCs	Volatile organic compounds (refer Tables D-3 and D-5 in the Quality Assurance Project Plan (QAPP) (Appendix D of the OM&M Manual (ARCADIS 2009)) for the analyte lists for aqueous and air samples, respectively).
gal.	Gallons.
gpm	Gallons per minute.
i.w.g.	Inches water gauge.
NYSDEC	New York State Department of Environmental Conservation.
EPA	U.S. Environmental Protection Agency.
SCADA	Supervisory Control And Data Acquisition.
OM&M	Operation, maintenance and monitoring.

Appendix B-2. Water Sample Analytical Results - October 20, 2014, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2,3]

COMPOUND (ug/L)	Sample ID: / Sample Location: / Sample Date:	WSP-05 Influent 10/20/2014	WSP-07 Effluent 10/20/2014
Volatile Organic Compounds			
1,1,1-Trichloroethane		< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0
1,1,2-Trichloroethane		< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0
2-Butanone		< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0
Acetone		< 10	< 10
Benzene		< 1.0	< 1.0
Bromodichloromethane		< 1.0	< 1.0
Bromoform		< 4.0	< 4.0
Bromomethane		< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0
Chlorodifluoromethane (Freon 22)		**12**	< 5.0
Chloroethane		< 1.0	< 1.0
Chloroform		**1.9**	< 1.0
Chloromethane		< 1.0	< 1.0
cis-1,2-Dichloroethene		**11**	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0
Dichlorodifluoromethane (Freon 12)		< 5.0	< 5.0
Dichloromethane		< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0
Methyl N-Butyl Ketone		< 5.0	< 5.0
Methyl-Tert-Butylether		< 1.0	< 1.0
Styrene (Monomer)		< 5.0	< 5.0
Tetrachloroethene		< 1.0	< 1.0
Toluene		**12**	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0
Trichloroethene		**3.7**	< 1.0
Trichlorofluoromethane (Freon 11)		< 5.0	< 5.0
Trichlorotrifluoroethane (Freon 113)		< 5.0	< 5.0
Vinyl Chloride		**17**	< 1.0
Xylene-o		**0.46 J**	< 1.0
Xylenes - m,p		**0.77 J**	< 1.0
Subtotal VOCs [4]		**59**	ND
Tentatively Identified Compounds		ND	ND
Subtotal TICs [5]		0	0
Total VOCs [6]		**59**	ND

See notes on last page.

Appendix B-2. Water Sample Analytical Results - October 20, 2014, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2,3)

COMPOUND (ug/L)	Sample ID: / Sample Location: / Sample Date:	WSP-05 Influent 10/20/2014	WSP-07 Effluent 10/20/2014
Metals			
Cadmium (Dissolved)		--	--
Cadmium (Total)		--	--
Chromium (Dissolved)		--	--
Chromium (Total)		--	--
Iron (Dissolved)		**330**	**265**
Iron (Total)		**263**	**297**
Manganese (Dissolved)		--	--
Manganese (Total)		--	--
Mercury (Dissolved)		--	< 0.20
Mercury (Total)		--	--

Notes:

(1) Water samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per USEPA Method 8260C, for iron analyses per USEPA Method 6010C and for mercury analyses per USEPA Method 7470A.

(2) Refer to Figure 3 of this OM&M Report for schematic sample locations.

(3) Results validated following protocols specified in the Sampling and Analysis Plan (Appendix A) of the Groundwater OM&M Manual (ARCADIS 2009).

(4) "Subtotal VOCs" represents the sum of individual concentrations of VOCs detected. Values shown have been rounded to the nearest whole number.

(5) "Subtotal TICs" represents the sum of individual TICs detected. Values shown have been rounded to the nearest whole number.

(6) "Total VOCs" represents the sum of VOCs and TICs detected. Values show have been rounded to the nearest whole number.

Acronyms\Key:

Bold value indicates a detection.

ELAP	Environmental Laboratory Approval Program
J	Estimated value.
NYSDOH	New York State Department of Health
OM&M	Operation, maintenance and monitoring.
USEPA	United States Environmental Protection Agency.
VOC	Volatile organic compound.
ug/L	Micrograms per liter.
--	Not analyzed.
< 5	Compound not detected above its laboratory quantification limit.

Appendix B-3. Water Sample Analytical Results - November 17, 2014, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2,3]

COMPOUND (ug/L)	Sample ID: / Sample Location: / Sample Date:	WSP-01 RW-01 11/17/2014	WSP-02 RW-02 11/17/2014	WSP-03 RW-03 11/17/2014	WSP-04 RW-04 11/17/2014	WSP-05 Influent 11/17/2014	WSP-07 Effluent 11/17/2014	WSP-07 (dup.) Effluent 11/17/2014
Volatile Organic Compounds								
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
1,1-Dichloroethane		< 1.0	**0.94 J**	< 1.0	< 1.0	< 1.0	< 1.0	--
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
2-Butanone		< 10	< 10	< 10	< 10	< 10	< 10	--
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--
Acetone		< 10	< 10	< 10	< 10	< 10	< 10	--
Benzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
Bromoform		< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	--
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	--
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	--
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
Chlorodifluoromethane (Freon 22)		< 5.0	< 5.0	**15**	**49**	**11**	< 5.0	--
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
Chloroform		< 1.0	**2.3**	**4.0**	**0.30 J**	**1.8**	< 1.0	--
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
cis-1,2-Dichloroethene		< 1.0	**44**	**2.9**	< 1.0	**9.9**	< 1.0	--
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
Dichlorodifluoromethane (Freon 12)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	--
Ethylbenzene		< 1.0	**3.5**	< 1.0	< 1.0	**0.76 J**	< 1.0	--
Methyl N-Butyl Ketone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--
Methyl-Tert-Butylether		< 1.0	< 1.0	< 1.0	**0.30 J**	< 1.0	< 1.0	--
Styrene (Monomer)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--
Tetrachloroethene		< 1.0	< 1.0	< 1.0	**0.70 J**	< 1.0	< 1.0	--
Toluene		< 1.0	**55**	< 1.0	< 1.0	**11**	< 1.0	--
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	--
Trichloroethene		**0.31 J**	**11**	**3.4**	**0.66 J**	**3.4**	< 1.0	--
Trichlorofluoromethane (Freon 11)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--
Trichlorotrifluoroethane (Freon 113)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--
Vinyl Chloride		< 1.0	**74**	< 1.0	< 1.0	**15**	< 1.0	--
Xylene-o		< 1.0	**2.4**	< 1.0	< 1.0	**0.52 J**	< 1.0	--
Xylenes - m,p		< 1.0	**3.2**	< 1.0	< 1.0	**0.61 J**	< 1.0	--
Subtotal VOCs [4]		**0.31**	**196**	**25**	**51**	**54**	ND	--
Tentatively Identified Compounds		ND	ND	ND	ND	ND	ND	--
Subtotal TICs [5]		0	0	0	0	0	0	--
Total VOCs [6]		**0.31**	**196**	**25**	**51**	**54**	ND	--

See notes on last page.

Appendix B-3. Water Sample Analytical Results - November 17, 2014, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2,3)

COMPOUND (ug/L)	Sample ID: / Sample Location: / Sample Date:	WSP-01 RW-01 11/17/2014	WSP-02 RW-02 11/17/2014	WSP-03 RW-03 11/17/2014	WSP-04 RW-04 11/17/2014	WSP-05 Influent 11/17/2014	WSP-07 Effluent 11/17/2014	WSP-07 (dup.) Effluent 11/17/2014
Metals								
Cadmium (Dissolved)		< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Cadmium (Total)		< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Chromium (Dissolved)		**30**	< 10	< 10	< 10	**12.2**	**3.1 B**	**3.2 B**
Chromium (Total)		**32**	< 10	< 10	< 10	**11.3**	**2.7 B**	**3.0 B**
Iron (Dissolved)		< 100	**1,160**	< 100B	< 100	**359**	**276**	**275**
Iron (Total)		< 100	**1,100**	< 100B	< 100	**247**	**265**	**249**
Manganese (Dissolved)		--	--	--	--	--	--	--
Manganese (Total)		--	--	--	--	--	--	--
Mercury (Dissolved)		--	--	--	--	--	< 0.20	--
Mercury (Total)		--	--	--	--	--	--	--

Notes:

(1) Water samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per USEPA Method 8260C, for iron analyses per USEPA Method 6010C and for mercury analyses per USEPA Method 7470A.

(2) Refer to Figure 3 of this OM&M Report for schematic sample locations.

(3) Results validated following protocols specified in the Sampling and Analysis Plan (Appendix A) of the Groundwater OM&M Manual (ARCADIS 2009).

(4) "Subtotal VOCs" represents the sum of individual concentrations of VOCs detected. Values shown have been rounded to the nearest whole number.

(5) "Subtotal TICs" represents the sum of individual TICs detected. Values shown have been rounded to the nearest whole number.

(6) "Total VOCs" represents the sum of VOCs and TICs detected. Values show have been rounded to the nearest whole number.

Acronyms\Key:

Bold value indicates a detection.

B	Compound found in an associated blank sample, presence may be suspect
dup.	Duplicate.
ELAP	Environmental Laboratory Approval Program
J	Estimated value.
NYSDOH	New York State Department of Health
OM&M	Operation, maintenance and monitoring.
USEPA	United States Environmental Protection Agency.
VOC	Volatile organic compound.
ug/L	Micrograms per liter.
--	Not analyzed.
< 5	Compound not detected above its laboratory quantification limit.
< 5 B	Compound considered non-detect due to associated blank contamination.

Appendix B-4. Water Sample Analytical Results - December 15, 2014, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2,3]

COMPOUND (ug/L)	Sample ID: / Sample Location: / Sample Date:	WSP-05 Influent 12/15/2014	WSP-07 Effluent 12/15/2014
Volatile Organic Compounds			
1,1,1-Trichloroethane		< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0
1,1,2-Trichloroethane		< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0
2-Butanone		< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0
Acetone		< 10	< 10
Benzene		< 1.0	< 1.0
Bromodichloromethane		< 1.0	< 1.0
Bromoform		< 4.0	< 4.0
Bromomethane		< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0
Chlorodifluoromethane (Freon 22)		**11**	< 5.0
Chloroethane		< 1.0	< 1.0
Chloroform		**1.8**	< 1.0
Chloromethane		< 1.0	< 1.0
cis-1,2-Dichloroethene		**9.0**	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0
Dichlorodifluoromethane (Freon 12)		< 5.0	< 5.0
Dichloromethane		< 2.0	< 2.0
Ethylbenzene		**0.37 J**	< 1.0
Methyl N-Butyl Ketone		< 5.0	< 5.0
Methyl-Tert-Butylether		< 1.0	< 1.0
Styrene (Monomer)		< 5.0	< 5.0
Tetrachloroethene		< 1.0	< 1.0
Toluene		**7.1**	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0
Trichloroethene		**3.5**	< 1.0
Trichlorofluoromethane (Freon 11)		< 5.0	< 5.0
Trichlorotrifluoroethane (Freon 113)		< 5.0	< 5.0
Vinyl Chloride		**16**	< 1.0
Xylene-o		**0.29 J**	< 1.0
Xylenes - m,p		**0.38 J**	< 1.0
Subtotal VOCs [4]		**49**	ND
Tentatively Identified Compounds		ND	ND
Subtotal TICs [5]		0	0
Total VOCs [6]		**49**	ND

See notes on last page.

Appendix B-4. Water Sample Analytical Results - December 15, 2014, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2,3)

COMPOUND (ug/L)	Sample ID: / Sample Location: / Sample Date:	WSP-05 Influent 12/15/2014	WSP-07 Effluent 12/15/2014
Metals			
Cadmium (Dissolved)		--	--
Cadmium (Total)		--	--
Chromium (Dissolved)		--	--
Chromium (Total)		--	--
Iron (Dissolved)		**292**	**220**
Iron (Total)		**206**	**160**
Manganese (Dissolved)		--	--
Manganese (Total)		--	--
Mercury (Dissolved)		--	< 0.20
Mercury (Total)		--	--

Notes:

(1) Water samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per USEPA Method 8260C, for iron analyses per USEPA Method 6010C and for mercury analyses per USEPA Method 7470A.
(2) Refer to Figure 3 of this OM&M Report for schematic sample locations.
(3) Results validated following protocols specified in the Sampling and Analysis Plan (Appendix A) of the Groundwater OM&M Manual (ARCADIS 2009).
(4) "Subtotal VOCs" represents the sum of individual concentrations of VOCs detected. Values shown have been rounded to the nearest whole number.
(5) "Subtotal TICs" represents the sum of individual TICs detected. Values shown have been rounded to the nearest whole number.
(6) "Total VOCs" represents the sum of VOCs and TICs detected. Values show have been rounded to the nearest whole number.

Acronyms\Key:

Bold value indicates a detection.

ELAP	Environmental Laboratory Approval Program
J	Estimated value.
NYSDOH	New York State Department of Health
OM&M	Operation, maintenance and monitoring.
USEPA	United States Environmental Protection Agency.
VOC	Volatile organic compound.
ug/L	Micrograms per liter.
--	Not analyzed.
< 5	Compound not detected above its laboratory quantification limit.

Appendix C

Vapor Sample Analytical Results

Appendix C-1. Vapor Sample Analytical Results - November 17, 2014, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. [1,2,3]

COMPOUND (ug/m^3)	Location ID: / Sample Location: / Sample Date:	VSP-1[5] / Influent[5] / 11/17/2014	VSP-5[5] / Effluent[5] / 11/17/2014
Volatile Organic Compounds			
1,1,1-Trichloroethane		**0.82**	< 0.55 U
1,1,2,2-Tetrachloroethane		< 0.69 U	< 0.69 U
1,1,2-Trichloroethane		< 0.55 U	< 0.55 U
1,1-Dichloroethane		**4.9**	**8.5**
1,1-Dichloroethene		**1.6**	**1.2**
1,2-Dichloroethane		< 0.81 U	< 0.81 U
1,2-Dichloropropane		< 0.92 U	< 0.92 U
1,3-Butadiene		< 0.44 U	< 0.44 U
1-Chloro-1,1-difluoroethane		< 0.82 U	< 0.82 U
2-Butanone		< 0.59 U	< 0.59 U
4-Methyl-2-Pentanone		< 0.82 U	< 0.82 U
Acetone		**4.0**	**6.9**
Benzene		**1.1**	< 0.64 U
Bromodichloromethane		< 0.67 U	< 0.67 U
Bromoform		< 0.41 U	< 0.41 U
Bromomethane		< 0.78 U	< 0.78 U
Carbon Disulfide		**0.37 J**	< 0.62 U
Carbon Tetrachloride		< 0.25 U	< 0.25 U
Chlorobenzene		< 0.92 U	< 0.92 U
Chlorodibromomethane		< 0.85 U	< 0.85 U
Chlorodifluoromethane (Freon 22)		**120 D**	**122 D**
Chloroethane		< 0.53 U	< 0.53 U
Chloroform		**28**	**33**
Chloromethane		**1.4**	**1.3**
cis-1,2-Dichloroethene		**150 D**	**144 D**
cis-1,3-Dichloropropene		< 0.91 U	< 0.91 U
Dichlorodifluoromethane (Freon 12)		**3.0**	**3.0**
Dichloromethane		**1.7**	**2.2**
Ethylbenzene		**12**	**0.78 J**
Methyl N-Butyl Ketone		< 0.82 U	< 0.82 U
Methyl tert-Butyl Ether		< 0.72 U	< 0.72 U
Styrene		< 0.85 U	< 0.85 U
Tetrachloroethene		**3.6**	**10**
Toluene		**184 D**	**19**
trans-1,2-Dichloroethene		< 0.79 U	< 0.79 U
trans-1,3-Dichloropropene		< 0.91 U	< 0.91 U
Trichloroethene		**47**	**2.6**
Trichlorofluoromethane (Freon 11)		< 0.56 U	< 0.56 U
Trichlorotrifluoroethane (Freon 113)		**2.3**	**2.5**
Vinyl Chloride		**187 D**	**42**
Xylene - o		**9.1**	**0.61 J**
Xylenes - m,p		**12**	**0.96**
Total VOCs		**774**	**400**

COMPOUND (ppbv)	Location ID: / Sample Location: / Sample Date:	VSP-1[5] / Influent[5] / 11/17/2014	VSP-5[5] / Effluent[5] / 11/17/2014
Tentatively Identified Compounds			
Acetaldehyde		--	**4.8 JN**
Acetophenone		**3.0 JN**	**--**
trimethyl-Silanol		**2.6 JN**	--
Unknown		**3.0 J**	**--**

See notes on last page.

Appendix C-1. Vapor Sample Analytical Results - November 17, 2014, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York. (1,2,3)

Notes:

(1) Vapor samples collected by ARCADIS on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
(2) Refer to Figure 3 of this OM&M Report for schematic sample locations.
(3) Results validated following protocols specified in the Sampling and Analysis Plan (Appendix A) of the Groundwater OM&M (ARCADIS 2009).
(4) "Total VOCs" represents the sum of individual concentrations of VOCs detected. Values shown have been rounded to the nearest whole number.

Acronyms\Key:

Bold value indicates a detection.

D	Concentration is based on a diluted sample analysis.
J	Estimated value.
JN	Compound tentatively identified, concentration is estimated.
ppbv	parts per billion by volume
OM&M	Operation, maintenance and monitoring.
NYSDEC	New York State Department of Environmental Conservation.
USEPA	United States Environmental Protection Agency.
VOC	Volatile organic compound.
ug/m^3	Micrograms per cubic meter.
< 1.5 U	Compound not detected above its laboratory quantification limit.
--	TIC not detected.

Appendix D

Air Discharge Quality Evaluation

ARCADIS

Appendix D-1. Annual Summary of SCREEN3 Model Input and Outputs, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Parameters	Date Sampled:	3/10/14[10]	05/05/14	10/01/14[11]	11/17/14
SCREEN3 Model Input					
Source Type		Point	Point	Point	Point
Emission Rate (g/s)		1	1	1	1
Stack Height (ft)		13.5	13.5	13.5	13.5
Stack Height (m)		4.1	4.1	4.1	4.1
Stack Inside Diameter (m)		0.36	0.36	0.36	0.36
Air Flow Rate (scfm)[1,9]		1,974	1,963	1,900	1,944
Air Flow Rate (acfm @ stack temp)[2]		1,976	1,995	1,870	1,943
Stack Gas Exit Temperature (K)[1]		295	299	290	294
Ambient Air Temperature (K)[3]		276	286	289	282
Receptor Height (m)[4]		1.5	1.5	1.5	1.5
Urban/Rural		Urban	Urban	Urban	Urban
Building Height (m)		2.6	2.6	2.6	2.6
Min Horizontal Bldg Dim (m)		7.9	7.9	7.9	7.9
Max Horizontal Bldg Dim (m)		9.8	9.8	9.8	9.8
Consider Bldg Downwash?		Yes	Yes	Yes	Yes
Simple/Complex Terrain Above Stack		Simple	Simple	Simple	Simple
Simple/Complex Terrain Above Stack Base		Simple	Simple	Simple	Simple
Meteorology		Full	Full	Full	Full
Automated Distances Array		Yes	Yes	Yes	Yes
Terrain Height Above Stack Base		0	0	0	0
SCREEN3 Model Output					
1-HR Max Concentration at Receptor Height ($\mu g/m^3$) [5]		2,066	2,033	2,182	2,100
Annualization Factor[6]		0.08	0.08	0.08	0.08
Average Annual Concentration at Receptor Height ($\mu g/m^3$)[7]		165	163	175	168
Distance To Max Concentration (m)[8]		8	8	8	8

See notes on last page.

Appendix D-1. Annual Summary of SCREEN3 Model Input and Outputs, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Notes:

(1) The stack air flow rate (in scfm) and temperature were measured using inline instrumentation. Values were measured at the blower effluent location.

(2) The stack air flow rate at the stack temperature (in acfm) was calculated by dividing the stack air flow rate in scfm by the ratio of the standard temperature to the actual stack gas exit temperature in degrees Rankine.

(3) The ambient temperature was recorded from the weather.newsday.com and/or weather underground (www.wunderground.com) websites for Islip, New York. The mean actual temperature from the website(s) was used in model calculation.

(4) The receptor height corresponds to the average inhalation level.

(5) SCREEN3 calculated constituent concentration at listed conditions at the specified inhalation level.

(6) A USEPA time averaging conversion factor of 1/0.08 was used to convert the 1-hour maximum concentration output to an annual average.

(7) Average annual constituent concentration at the receptor height was calculated by multiplying the one hour maximum concentration by the annualization factor.

(8) SCREEN3 calculated distance to the 1-hour maximum concentration.

(9) Beginning with the January 2013 site visit, the air flow rate in scfm is obtained from SCADA HMI.

(10) Sample VSP-5 was retaken on March 10, 2014 due to operator error on February 18, 2014.

(11) The September 2014 quarterly sample from VSP-5 was collected on October 1, 2014 due to system maintenance activities throughout September.

Acronyms\Key:

$\mu g/m^3$	Micrograms per cubic meter.
acfm	Actual cubic feet per minute.
ft	Feet.
g/s	Grams per second.
K	Kelvin.
m	Meters.
scfm	Standard cubic feet per minute.
USEPA	United States Environmental Protection Agency.

Appendix D-2. Annual Summary of Maximum Allowable Stack Concentration Calculations, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Compound	Actual Effluent Concentrations[1] (µg/m^3)			
	3/10/2014[5]	05/05/14	10/1/14[6]	11/17/2014
1,1,1 - Trichloroethane	0	0	0	0
1,1 - Dichloroethane	5.7	4.3	5.7	8.5
1,2 - Dichloroethane	0	0	0	0
1,1 - Dichloroethene	0.77	0	0	1.2
Acetone	32	18	0	6.9
Chloroform	18	16	20	33
Ethylbenzene	0.94	0	0.99	0.78
Xylene - o	0.83	0	0	0.61
Xylenes - m,p	1.7	0	0	0.96
Chloromethane	0	0	0	1.3
Methylene Chloride	0	0	2.2	2.2
Tetrachloroethene	0	0	0	10
Trichloroethene	0	1.1	2.3	2.6
Vinyl Chloride	14	4.7	55	42
cis 1,2-Dichloroethene	58	17	140	144
trans 1,2 Dichloroethene	0	0	0	0
Benzene	0	0	0	0
Toluene	33	17	20	19
Trichlorofluoromethane (Freon 11)	1.5	1.2	1.8	0
Dichlorodifluoromethane (Freon 12)	2.8	2.4	2.3	3
Chlorodifluoromethane (Freon 22)	110	93	29	122
Trichlorotrifluoroethane (Freon 113)	1.2	1.1	1.8	2.5

See notes on last page.

Appendix D-2. Annual Summary of Maximum Allowable Stack Concentration Calculations, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Compound	AGC[2]	MASC[3] (µg/m^3)			
	(µg/m^3)	3/10/2014[5]	05/05/14	10/1/14[6]	11/17/2014
1,1,1 - Trichloroethane	5,000	3.24E+07	3.27E+07	3.24E+07	3.25E+07
1,1 - Dichloroethane	0.63	4.09E+03	4.12E+03	4.09E+03	4.09E+03
1,2 - Dichloroethane	0.038	2.47E+02	2.48E+02	2.47E+02	2.47E+02
1,1 - Dichloroethene	200	1.30E+06	1.31E+06	1.30E+06	1.30E+06
Acetone	30,000	1.95E+08	1.96E+08	1.95E+08	1.95E+08
Chloroform	14.7	9.54E+04	9.60E+04	9.54E+04	9.54E+04
Ethylbenzene	1,000	6.49E+06	6.53E+06	6.49E+06	6.49E+06
Xylene - o	100	6.49E+05	6.53E+05	6.49E+05	6.49E+05
Xylenes - m,p	100	6.49E+05	6.53E+05	6.49E+05	6.49E+05
Chloromethane	90	5.84E+05	5.88E+05	5.84E+05	5.84E+05
Methylene Chloride	60	3.89E+05	3.92E+05	3.89E+05	3.89E+05
Tetrachloroethene	4.0	2.59E+04	2.61E+04	2.60E+04	2.60E+04
Trichloroethene	0.20	1.30E+03	1.31E+03	1.30E+03	1.30E+03
Vinyl Chloride	0.068	4.41E+02	4.44E+02	4.41E+02	4.41E+02
cis 1,2 Dichloroethene	63	4.09E+05	4.12E+05	4.09E+05	4.09E+05
trans 1,2 Dichloroethene	63	4.09E+05	4.12E+05	4.09E+05	4.09E+05
Benzene	0.13	8.43E+02	8.49E+02	8.44E+02	8.44E+02
Toluene	5,000	3.24E+07	3.27E+07	3.24E+07	3.25E+07
Trichlorofluoromethane (Freon 11)	5,000	3.24E+07	3.27E+07	3.24E+07	3.25E+07
Dichlorodifluoromethane (Freon 12)	12,000	7.78E+07	7.84E+07	7.79E+07	7.79E+07
Chlorodifluoromethane (Freon 22)	50,000	3.24E+08	3.27E+08	3.24E+08	3.25E+08
Trichlorotrifluoroethane (Freon 113)	180,000	1.17E+09	1.18E+09	1.17E+09	1.17E+09

See notes on last page.

Appendix D-2. Annual Summary of Maximum Allowable Stack Concentration Calculations, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Compound	Percent of MASC[4]			
	3/10/2014[5]	05/05/14	10/1/14[6]	11/17/2014
1,1,1 - Trichloroethane	0.00%	0.00%	0.00%	0.00%
1,1 - Dichloroethane	0.14%	0.10%	0.14%	0.21%
1,2 - Dichloroethane	0.00%	0.00%	0.00%	0.00%
1,1 - Dichloroethene	0.00%	0.00%	0.00%	0.00%
Acetone	0.00%	0.00%	0.00%	0.00%
Chloroform	0.02%	0.02%	0.02%	0.03%
Ethylbenzene	0.00%	0.00%	0.00%	0.00%
Xylene - o	0.00%	0.00%	0.00%	0.00%
Xylenes - m,p	0.00%	0.00%	0.00%	0.00%
Chloromethane	0.00%	0.00%	0.00%	0.00%
Methylene Chloride	0.00%	0.00%	0.00%	0.00%
Tetrachloroethene	0.00%	0.00%	0.00%	0.04%
Trichloroethene	0.00%	0.08%	0.18%	0.20%
Vinyl Chloride	3.17%	1.06%	12.46%	9.45%
cis 1,2 Dichloroethene	0.01%	0.00%	0.03%	0.04%
trans 1,2 Dichloroethene	0.00%	0.00%	0.00%	0.00%
Benzene	0.00%	0.00%	0.00%	0.00%
Toluene	0.00%	0.00%	0.00%	0.00%
Trichlorofluoromethane (Freon 11)	0.00%	0.00%	0.00%	0.00%
Dichlorodifluoromethane (Freon 12)	0.00%	0.00%	0.00%	0.00%
Chlorodifluoromethane (Freon 22)	0.00%	0.00%	0.00%	0.00%
Trichlorotrifluoroethane (Freon 113)	0.00%	0.00%	0.00%	0.00%

Notes/Acronyms:

(1) Actual effluent concentrations are analytical results from air samples collected on the dates shown.

(2) Compound-specific AGC values per the NYSDEC DAR-1 AGC/SGC tables, revised February 28, 2014.

(3) Maximum allowable stack concentrations were calculated by dividing the product of the annual guideline concentration of a compound and the ratio of the SCREEN3 gas emission rate and the SCREEN3 average concentration at receptor height by the air flow rate at the stack temperature and multiplying by the appropriate conversion factors.

(4) Percent of MASC was calculated by dividing the actual effluent concentration by the MASC for a given monitoring event.

(5) Sample VSP-5 was retaken on March 10, 2014 due to operator error on February 18, 2014.

(6) The September 2014 quarterly sample from VSP-5 was collected on October 1, 2014 due to system maintenance activities throughout September.

$\mu g/m^3$ Micrograms per cubic meter

AGC Annual guideline concentration

MASC Maximum allowable stack concentration