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Date: March 31, 2022
Our Ref: 30123958
Subject: 2021 Annual Summary Report - System Operation and Monitoring, Bethpage Park Groundwater Containment System (BPGWCS), Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York, NYSDEC Site #1-30-003A.

Dear Jason,

Enclosed is one electronic PDF copy of the 2021 Annual Summary Report for the BPGWCS operation and monitoring, performed in accordance with the NYSDEC-approved OU3 Groundwater IRM OM&M Manual (Arcadis 2009) and the NYSDEC-approved Sampling and Analysis Plan (SAP; Arcadis 2009). As we have transitioned to electronic submittals (via PDF) in line with NYSDEC's paper reduction program, hard copies of the report can be provided on request.

If you have any questions, please do not hesitate to contact me.

Sincerely,
Arcadis of New York, Inc.

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Vice President

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Northrop Grumman

2021 Annual Operation, Maintenance, And Monitoring Report

Operable Unit 3 – Groundwater

Bethpage, New York

NYSDEC ID # 1-30-003A

March 31, 2022

2021 Annual Operation, Maintenance, and Monitoring Report

Operable Unit 3 – Groundwater
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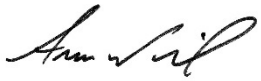

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1 Introduction

Pursuant to the Administrative Order on Consent (AOC) Index #W1-0018-04-01 (New York State Department of Environmental Conservation [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, has prepared this OU3 Bethpage Park Groundwater Containment System (BPGWCS) Annual Summary Report for submittal to the NYSDEC. The present-day Bethpage Community Park property (Park), McKay Field Access Road, and Former Plant 24 Access Road, which the NYSDEC has termed the "Former Grumman Settling Ponds Area" and designated as OU3, are referred to herein as the Site Area. **Figure 1** provides a Site Location map.

The BPGWCS (previously referred to as the Groundwater Interim Remedial Measure and also known as the OU3 On-site Containment [ONCT] system) has been operational since July 21, 2009. The operation, maintenance, and monitoring (OM&M) activities performed during 2021 (i.e., January 1 through December 31, 2021 [the "annual reporting period"]) are summarized in this Annual Summary Report. Data summaries for the previous three 2021 quarterly operational periods are available in the following letter reports:

- Results of First Quarter 2021 System Operation and Monitoring for the Bethpage Park Groundwater Containment System, May 2021 (Arcadis 2021a)
- Results of Second Quarter 2021 System Operation and Monitoring for the Bethpage Park Groundwater Containment System, August 2021 (Arcadis 2021b)
- Results of Third Quarter 2021 System Operation and Monitoring for the Bethpage Park Groundwater Containment System, November 2021 (Arcadis 2021c)

During the annual reporting period, the BPGWCS Remedial System was operated and the Environmental Effectiveness Monitoring Programs were conducted in accordance with the OU3 BPGWCS Groundwater Interim Operation, Maintenance, and Monitoring Manual (OM&M Manual; Arcadis 2016). However, in contrast to previous reporting periods, there were intermittent In-Situ Thermal Remedy (ISTR) water discharges through the BPGWCS treatment system during this annual reporting period, which were conducted in accordance with the NYSDEC-approved ISTR Liquid Waste Management Plan (EMAGIN 2020).

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 Site Area groundwater. Throughout this Annual Report, a distinction is made between "Project" and "Non-Project" volatile organic compounds (VOCs), defined as follows:

- Project VOCs: VOCs that may be related to former Northrop Grumman historical activities. For this OM&M Report, Project VOCs include 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethylene (TCE); vinyl chloride (VC); cis-1,2-dichloroethene (cis-1,2-DCE); trans-1,2-dichloroethene (trans-1,2-DCE); benzene; toluene; xylene-O, and xylenes-M,P.
- Non-Project VOCs: VOCs, such as Chloroform, Freon 12 and Freon 22, that are understood to be unrelated to former Northrop Grumman activities but have been detected in 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) former ice rink. Based on Town information (Zervos 2007), Freon 22 was used by the Town and released to the environment.

2 Bethpage Park Groundwater Containment System Objectives

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

- Mitigate the off-site migration of dissolved-phase VOCs in groundwater. Specifically, the BPGWCS was designed to address:
    - Groundwater that has total VOC concentrations greater 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 has total VOC concentrations greater 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-waterfront atop 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 Former 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 to comply with applicable NYSDEC SCGs for treated water.
    - 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 Naval Weapons Industrial Reserve Plant (NWIRP) property.
- A vapor-phase treatment system that reduces concentrations of Project VOCs to below AGCs/SGCs in the air stripper off-gas prior to discharge to the atmosphere.
- A groundwater monitoring network utilized to periodically assess the environmental effectiveness of the BPGWCS.

Major components of the BPGWCS are as follows:

- 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 flow rate of 210 gpm.

- One low-profile air stripper to remove VOCs from extracted groundwater prior to discharge to the recharge basin.
- Two bag filter units 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 operational bag filters are full to prevent a system shutdown and the spent filters are then replaced.
- Four emission control units, two containing vapor-phase granular-activated carbon and two containing potassium permanganate-impregnated zeolite, to treat Project VOCs in the air stripper off-gas.
- A groundwater monitoring network, consisting of 47 monitoring locations, including 23 groundwater monitoring wells, four remedial wells, and 20 piezometers.

Figure 2 shows the layout of the BPGWCS, and **Figure 3** provides a schematic drawing of the remedial systems. **Figure 4** shows groundwater sampling locations that form the groundwater monitoring network. **Appendix A** provides construction details for the monitoring wells and piezometers. The latest version of the OM&M Manual (Arcadis 2016) provides additional information.

4 Operation and Maintenance Activities

4.1 Annual System Performance and Alarm Summary

The 2021 system operational up-time is documented in Table 1 and summarized below along with BPGWCS shutdowns that occurred in 2021.

In 2021:

- The system operated 346 out of 365 days (95% uptime), which is about the same as the 95% runtime observed in 2020.
- The remedial wells operated at reduced flow rates during portions of the year due to pump wear attributed to iron build-up in the pumps, influent pipelines and valves. The reduced flow rates were corrected by adjusting the manifold globe valves or through the performance of periodic system maintenance (i.e., pulling and replacing the remedial well pumps and valve cleaning).
- There were twenty-nine (29) routine system shutdowns (less than 12 hours each) due to alarm conditions encountered during normal operation of the system. Alarms in this category were responded to and troubleshooting was completed to restart the system within the same day (less than 12 hours).
- The following six (6) non-routine system shutdowns resulted in downtime period greater than 12 hours each, of which:
  - One (1) shutdown was due to high incoming voltage from PSEG on March 30th, 2021. The system was brought back online March 31st, 2021.
  - One (1) shutdown was due to high incoming voltage from PSEG on April 1st, 2021. The system was brought back online April 2nd, 2021.
  - One (1) shutdown was due to the Air Stripper High Pressure Alarm on July 6th, 2021. The Air Stripper was power washed to resolve the issue. The system was brought back online July 7th, 2021.

  - One (1) shutdown was due to the Air Stripper High Pressure Alarm on July 10th, 2021. The Air Stripper Pressure meter was adjusted. The system was brought back online July 11th, 2021.
  - One (1) planned shutdown was due to Hurricane Henri on August 22nd, 2021. The system was brought back online the same day.
  - One (1) shutdown was due to the changeout of the Emission Control Unit media on December 1st, 2021. The system was brought back online December 2nd, 2021.

- In total for 2021, there was approximately 24 days of reduced flow attributed to RW-1 being turned off for ISTR discharge and unforeseen RW-2 motor and pump overload conditions associated with iron build-up. The RW-2 pump and motor were replaced on May 17th, 2021. Generally, the system was restarted without incident the same day or the day following routine alarms.

5 System Monitoring Activities

5.1 2021 System Monitoring Activities

The following compliance and performance monitoring activities were conducted during the annual reporting period (per Section 6 of the OM&M Manual for a summary of the compliance and performance monitoring program requirements):

- Fourteen (14) sampling events to collect forty-four (44) required water samples (WSP-1 through WSP-5 on a quarterly basis and WSP-7 on a monthly basis) and ten (10) air samples (influent and effluent on a quarterly basis). Additional water samples (WSP-1 through WSP-7) and air samples (influent and effluent) were taken on a monthly basis during the fourth quarter due to an increase in TVOC concentration observed in August in RW-2.

Forty-one (41) weekly site visits to monitor and record key system operational parameters. System O&M results for the annual reporting period are summarized in the following tables and figures:

- 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.
- Summary of Influent and Effluent Vapor Sample Analytical Results and Summary of Effluent Vapor Tentatively Identified Compounds (Tables 4, 5 and 6, respectively) - Table 5 also provides the BPGWCS treatment system removal efficiency.
- Summary of System Parameters, including flow rates, line pressures, and temperatures (Table 7).
- Summary of Groundwater Recovered, VOC Mass Recovered, and VOC Mass Recovery Rates (Table 8) - Table 8 provides a breakdown of these parameters by Remedial Well and System and breaks down the VOC mass recovered and VOC recovery rates into Project, Non-Project, and total VOCs.
- Cumulative Total, Project, and Non-Project VOC Mass Removed (Figure 5).
- Remedial Well Total, Project, and Non-Project VOC Concentrations (Figures 6A, 6B, and 6C, respectively).

- Influent Total, Project, and Non-Project VOC Concentrations (Figure 7); and,
- Total, Project, and Non-Project VOC Mass Recovery Rates (Figures 8A, 8B, and 8C, respectively).

5.2 Summary of Monitoring Results and Conclusions

5.2.1 System Operation and Effectiveness

Annual BPGWCS monitoring results and conclusions are summarized below:

- Total volume of groundwater recovered and treated (Table 8):
  - 2021 Annual Total: 104 million gallons
  - Cumulative total since system startup: 1.3 billion gallons
- Total VOC mass recovered (Table 8):
  - 2021 Annual Total: 173.3 lbs of VOCs
  - Cumulative total since system startup: 2,388 lbs of VOCs
- VOC mass recovered and mass removal rates (Table 8 and Figures 8A, 8B, and 8C):
  - The majority of VOCs recovered during the annual reporting period were Project VOCs (97 percent or 168.9 lbs).
  - The majority of Project VOCs were recovered by RW-2 (99 percent or 167.7 lbs).
- The majority of Non-Project VOCs were recovered by RW-2 (81 percent or 3.6 lbs).
- Treatment system influent concentrations (Tables 2, and Figures 6A, 6B, 6C, and 7):
  - During the annual reporting period, total Project VOC influent concentrations increased from 20.6 µg/L in February to 430.2 µg/L in August. In response to this increase, sampling frequency was increased to monthly for the fourth quarter 2021. Total Project VOC concentrations steadily decreased to 177.3 ug/l on October 26, 2021, to 107.5 ug/l on November 17, 2021, and to 86.8 ug/L on December 16, 2021. As previously discussed in the Third Quarter 2021 System Operation and Monitoring report, the increase in project VOC concentrations in the treatment system influent may have been associated with the previous ISTR system activities on the Bethpage Community Park property.
  - A similar increase and subsequent decrease was observed in total Non-Project VOCs. Influent concentrations ranged from non-detect in February and April to 7.6 µg/L in August. Total Non-Project VOC concentrations steadily decreased to 4 ug/l on October 26, 2021, to 3.4 ug/l on November 17, 2021, and 2.9 ug/L on December 16, 2021. These concentrations were below the peak concentration observed in 2014 (55 µg/L). Total Non-Project VOC influent concentrations have generally decreased since 2010.
- Total iron (< 100 µg/L – 494 µg/L-**Table 3)** detected during the annual reporting period is consistent with historical values.
- Project VOC Concentrations in Remedial Wells (Table 10):
  - In RW-1, one Project VOC (TCE) was detected in the fourth quarter, but the detections were below the applicable SCG, and none were detected during the first, second, and third quarters.

- A similar increase in Project VOC concentrations, as was observed in the treatment system influent samples, was also observed in RW-2. During the annual reporting period, total Project VOC influent concentrations increased from 86.1 µg/L in February to 1,618.1 µg/L in August. In response to this increase, sampling frequency was increased to monthly for the fourth quarter 2021. Total Project VOC concentrations steadily decreased to 656.5 ug/l on October 26, 2021, to 388.9 ug/l on November 17, 2021, and to 305.1 ug/L on December 16, 2021. These concentrations were below the peak concentration observed at system startup in July 2009 (3,858 µg/L). As previously discussed in the Third Quarter 2021 System Operation and Monitoring report, the increase in Project VOC concentrations in RW-2 may have been associated with the previous ISTR system activities on the Bethpage Community Park property.
- In RW-3, some Project VOCs (cis-1,2-DCE and TCE) were detected during all quarters. Total Project VOC concentrations ranged from 2.8 ug/l in October to 19.8 ug/l in December.
- In RW-4, one Project VOC (TCE) was detected in the first quarter, but the detection was below the applicable SCG, and no VOCs were detected during the second, third, and fourth quarters.

- Non-Project VOCs were not detected in Remedial Well RW-1 and were detected in RW-4 (Table 10) below applicable SCGs during 2021. Total Non-Project VOCs in RW-2 increase from non-detect in February to 43.3 ug/l in August and then decreased to 15.7 in December. In RW-3, Non-Project total VOCs increased from 1.2 ug/L in February to 10.4 ug/L in December.
- The air stripper, air stripper off-gas treatment system, and bag filter system performed within acceptable operating ranges during the annual reporting period, as indicated by:
  - The air stripper VOC removal efficiency was greater than 99.9 percent for Project and Non-Project VOCs (Table 3).
  - Both water and air discharges complied with applicable SCGs and discharge limits (Tables 3, and 9).

5.2.2 Regulatory Status of Discharges

5.2.2.1 Air Discharge and Dispersion Modeling

Facility-wide emissions were evaluated for the reporting period to determine compliance with DAR-1 Guideline for The Evaluation and Control of Ambient Air Contaminants Under 6 CRR-NY 212 (Rule 212). Four different emission sources, that operated for different durations throughout the reporting period, are the facility-wide emission sources. These emission sources included:

- OU3 Bethpage Park Groundwater Containment System (BPGWCS) which operated for the entire reporting period.
- ISTR system which operated independently from January 1 through October 20, 2021 of the reporting period
- OU3 Bethpage Park Soil Gas Containment System (BPSGCS) which operated from January 1, 2021 through October 20, 2021 of the reporting period
- Combined BPSGCS and ISTR which operated from October 21, 2021 throughout December 31, 2021 of the reporting period.

Pursuant to 6 CRR-NY 212-2.1, for an air contaminant listed in section 212-2.2 table 2 – high toxicity air contaminant (HTAC) list, the facility owner or operator shall either limit the actual annual emissions from all process operations at the facility so as to not exceed the mass emission limit listed for the individual HTAC; or demonstrate compliance with the air cleaning requirements for the HTAC as specified in subdivision 212-2.3(b), table 4 – degree of air cleaning required for non-criteria air contaminants, of this Subpart for the environmental rating assigned to the contaminant by the department. For each non-HTAC air contaminant, dispersion modeling will not be required if the actual annual emission rate is less than 100 pounds per year facility-wide. Actual annual emission rates used for comparison can take control devices into account and must meet the provisions of 212-1.5(g). Emission source specific and facility-wide emission rates were calculated for the detected constituents for the reporting period and are summarized in Table 9.

For any constituents that exceeded the Rule 212 facility-wide emission limit, the U.S. Environmental Protection Agency (USEPA) air quality dispersion model AERMOD was executed to estimate the highest ambient air impact beyond the property line during the reporting period. The maximum impact was compared to the respective annual and short-term guideline concentrations provided in NYSDEC DAR-1 guidance policy. Compliance with Rule 212 is demonstrated if the predicted ambient impacts are below the published AGC and SGC thresholds

AERMOD is the USEPA's recommended best state-of-the-art practice Gaussian plume dispersion model. Gaussian models are the most widely used techniques for estimating the impact of non-reactive pollutants, per Appendix W of Title 40 Code of Federal Regulations (CFR) 51 – Guideline of Air Quality Models.

The AERMOD air dispersion model program requires the input of certain site-specific data to produce results that are representative of the actual site conditions. The following parameters were used for the AERMOD model analysis:

- Stack height, stack diameter, exhaust gas temperature, and velocity for the BPGWCS, BPSGCS, ISTR, and the combined BPSGCS/ISTR stacks
- Urban dispersion coefficients;
- AERMAP base and terrain elevations, processed using National Elevation Dataset (NED) digitized terrain data;
- Surface and upper air observations measured at the National Weather Service stations located at Farmingdale and Brookhaven airports for calendar years 2016-2020. This meteorological data was provided by NYSDEC;
- Discrete receptor grids, per the following methodology:
    - Receptors were located along the property boundary at distances not exceeding 25 meters;
    - 0.5 km x 0.5 km Cartesian grid with distances of 25 meters between the receptors;
    - 1.0 km x 1.0 km Cartesian grid with distances of 50 meters between the receptors; and
    - 2.0 km x 2.0 km Cartesian grid with distances of 100 meters between the receptors.

The model was executed with a unit emission rate of 1.0 grams per second (normalized rate) for each source. The predicted impacts at the normalized rate for each source are provided in the table below:

Description	AERMOD Normalized Ambient Impact at 1 g/s	
	Hourly ([µg/m^3]/[g/s])	Annual ([µg/m^3]/[g/s])
BPGWCS	888.9	13.9
BPSGCS only - not combined with ISTR	1213.3	33.3
ISTR Only	612.7	16.1
BPSGCS - combined with ISTR	1115.5	30.6

The actual emission rate of each compound was multiplied by the predicted ambient impact at 1.0 grams per second to obtain the scaled impact for the compound. For the compound that triggered Rule 212 evaluation, Table 9 provides the facility-wide scaled hourly ambient air impact and the scaled annual ambient air impact for the annual reporting period. As shown on Table 9, toluene was the only constituent that triggered the Rule 212 evaluation and the scaled facility-wide ambient air impacts are below the SGC and AGC for toluene.

Based on the ambient modeling analysis, the facility-wide effluent air discharge for the annual reporting period meets the requirements of Rule 212.

5.2.2.2 Water Discharge

The BPGWCS-treated water effluent met NYSDEC regulatory requirements during the annual reporting period (Table 3 and Appendix B), as noted below:

- The measured concentration of individual VOCs in the treated water effluent were below applicable discharge limits, per the interim State Pollutant Discharge Elimination System (SPDES) equivalency permit.
- The measured concentrations of total and dissolved iron in the treated water effluent were below applicable SPDES discharge limits.

6 Environmental Effectiveness Monitoring

The OU3 BPGWCS System environmental effectiveness (i.e., hydraulic monitoring and groundwater quality monitoring) activities and results for the annual reporting period are discussed below.

6.1 Hydraulic Monitoring

6.1.1 Activities

In accordance with the OM&M Manual requirements and methodologies (Arcadis 2016), groundwater hydraulic monitoring was performed quarterly during the annual reporting period. Specifically, depth-to-water measurements were completed on February 11, June 7, August 3, and November 29, 2021, at the 43 monitoring wells/piezometers and 4 remedial wells forming the approved monitoring well network (Figure 4). **Table 11** summarizes results of depth-to-water measurements to date.

6.1.2 Results

Figure 9 provides the configuration of the shallow potentiometric surface and the inferred horizontal groundwater flow directions on August 8, 2021 (3rd quarter) at the Site Area. Comparing third quarter water-level elevations from 2021 to those from 2020 reveal that the shallow potentiometric surface was approximately 0.25 feet higher at the time water level elevations were recorded in 2021 as compared to 2020.

Groundwater hydraulic monitoring is conducted quarterly however, the shallow potentiometric surface is mapped for only one quarter yearly as the rise and fall of this surface seasonally, due to recharge or lack thereof, has a negligible effect on the capture zone. As **Figure 9** shows, groundwater flow in the area is generally toward the south/southeast north of the remedial wells. The BPGWCS system is capturing groundwater from beneath the entire Bethpage Community Park. The southern edge of the capture zone (groundwater divide) extends to the south of Monitoring Wells MW-204-1, MW-205-1 and MW-206-1 and is slightly north of Sycamore Avenue and , north of Monitoring Wells MW-200-1 through MW-202-1.

Figure 10 provides a cross-sectional view of vertical groundwater flow (based on groundwater levels measured on August 3, 2021), and Project VOC concentrations in groundwater (based on results from the July/August 2021 groundwater sampling round [3rd Quarter]). **Figure 10** indicates groundwater containing Project VOCs is being captured and removed by the remedial wells, which is consistent with and greater than the intended purpose of the OU3 BPGWCS System.

Figure 9 in combination with **Figure 10** indicate that the OU3 BPGWCS System provides effective vertical and horizontal hydraulic control of groundwater containing Project VOCs and prevents its movement offsite.

6.2 Groundwater Quality Monitoring

6.2.1 Activities

An annual groundwater sampling round was performed in July and August 2021 as part of site-wide sampling activity. Groundwater samples were collected from 19 monitoring wells that are specified for sampling in the OM&M Manual (Arcadis 2016).

6.2.2 Results

Groundwater samples collected from the 19 monitoring wells were analyzed for Target Compound List (TCL) VOCs, plus Freon 12 and Freon 22, using USEPA Method 8260C, 1,4-Dioxane using USEPA Method 8270D SIM and total (unfiltered) and dissolved (filtered) metals (cadmium and chromium) using USEPA Method 6010.

Groundwater quality data, including historical results to date, are summarized in **Table 12** (for VOCs and 1,4-Dioxane) and **Table 13** (for metals).

Total Project and Non-Project VOCs concentrations in samples collected from the 19 monitoring wells during the July/August 2021 annual sampling event have been consistent with previous historical results and did not show notable increases during 2021 with one exception. Similar to the increase in VOC concentrations observed in RW-2 in August 2021, TVOC concentrations in monitoring well BCPMW-4-2, located approximately 85 feet west of RW-2, had also increased from 100 ug/L on July 20, 2020 to 1,700 ug/L on August 2, 2021. In response to this increase in TVOC concentrations in BCPMW-4-2, groundwater samples were collected from seven monitoring wells (MW-200-1, MW201-1, WM202-1, MW-203-1, WM-204-1, MW205-1, and MW-206-1) located immediately

downgradient of the BPGWCS remedial wells to confirm there was no off-site migration of VOCs. Results from the additional (November/December) samples from the downgradient monitoring wells (**Table 12**) were consistent with previous historical results and did not show notable increases indicating that VOCs were not migrating offsite.

6.3 Environmental Effectiveness Monitoring Conclusions

As discussed above, **Figures 9** and **10** indicate that the OU3 BPGWCS System is operating as designed, that the expected associated capture zone has developed, and that off-site migration of groundwater containing Project VOCs is being prevented.

Groundwater monitoring results presented on **Figures 9** and **10**, and in **Table 12** confirm that the OU3 BPGWCS is effectively preventing Project VOCs in groundwater from migrating offsite.

7 Suggestions

Based on the groundwater analytical results collected during the annual reporting period, Arcadis suggests continued operation of the OU3 BPGWCS consistent with the 2021 operational parameters.

8 Certification

Statement of Certification

On behalf of Northrop Grumman, I hereby certify and attest that the Operable Unit 3 Bethpage Park Groundwater Containment System is operated in compliance with the remedial action objectives provided within the NYSDEC approved Groundwater Interim Remedial Measure Work Plan (Arcadis 2007), which was prepared pursuant to NYSDEC Administrative Order on Consent Index # W1-0018-04-01 (NYSDEC 2005) referencing the Former Grumman Settling Ponds Site and dated July 4, 2005.

Christopher Engler, P.E.

Engineer of Record

License # 069748

9 References

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Tables

Table 1
Operational Summary
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
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
2014 Total																																349
2015 Total																																348
2016 Total																																351
2017 Total																																354
2018 Total																																348
2019 Total																																355
2020 Total																																345
Oct 2021																																31
Nov 2021								(2)																								29
Dec 2021																																28
4Q 2021																																88
2021 Total																																346
TOTAL																																**4366**

Legend:

Indicates system online for greater than 18 hours.
Indicates system operated with reduced flows for 6 hours or greater.
Indicates system off-line for 6 hours or greater.

Notes, Abbreviations, and Units on last page.

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

Notes:

1. Days the system was operational for greater than 18 hours are counted as one day.

Fourth Quarter 2021

2. ISTR Discharge event.

Abbreviations/Units:

4Q	Fourth Quarter

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

Compound (All Constituent Concentrations in µg/L)	02/10/21	04/08/21	08/13/21	10/26/2021 (3)	11/17/21	12/16/21
Project VOCs						
1,1,1 - Trichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 - Dichloroethane	< 1.0	< 1.0	**0.74 J**	< 1.0	< 1.0	< 1.0
1,2 - Dichloroethane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1 - Dichloroethene	< 1.0	< 1.0	**0.62 J**	< 1.0	< 1.0	< 1.0
Tetrachloroethene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	**3.8**	**4.8**	**22.8**	**14**	**11.5**	**11.8**
Vinyl Chloride	**3.6**	**4.1**	**18.0**	**6.4**	**4.6**	**3.9**
cis 1,2-Dichloroethene	**13.2**	**17.7**	**126**	**65.6**	**51.2**	**57.4**
trans 1,2-Dichloroethene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	< 0.50	< 0.50	**0.67**	**0.44 J**	< 0.50	< 0.50
Toluene	< 1.0	< 1.0	**230**	**70.4**	**27.1**	**6.9**
o-Xylene	< 1.0	< 1.0	**10.2**	**7.9**	**5.2**	**3.1**
m,p-Xylene	< 1.0	< 1.0	**21.2**	**12.6**	**7.9**	**3.7**
Subtotal Project VOCs	**20.6**	**26.6**	**430.2**	**177.3**	**107.5**	**86.8**
Non-Project VOCs						
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
1,2-Dichloropropane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Butanone						
1,3-Butadiene	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
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
Bromodichloromethane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	< 1.0	< 1.0	< 1.0	**1.4**	**2.2**	**2.9**
Chloromethane	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Notes, Abbreviations, Qualifiers, and Units on last page.

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

Compound (All Constituent Concentrations in µg/L)	02/10/21	04/08/21	08/13/21	10/26/21	11/17/21	12/16/21
Non-Project VOCs						
Dichlorodifluoromethane (Freon 12)	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichloromethane	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	< 1.0	< 1.0	**7.6**	**2.6**	**1.2**	**< 1.0**
Methyl N-Butyl Ketone	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl Tert-Butyl Ether	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)	< 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
Trichlorofluoromethane (Freon 11)	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorotrifluoroethane (Freon 113)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1-Chloro-1,1-difluoroethane (Freon 142b)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Subtotal Non-Project VOCs	**ND**	**ND**	**7.6**	**4.0**	**3.4**	**2.9**
Total VOCs[1]	**21**	**27**	**438**	**181**	**111**	**90**
1,4-Dioxane	0.43	1.3	1.1	1.3	0.98	1.0
pH[2]	5.2	5.9	5.6	--	5.9	5.4

Notes, Abbreviations, Qualifiers, and Units:

1. "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.

2. Influent pH samples collected and measured in the field by Arcadis personnel on the dates listed using a field calibrated pH/conductivity meter. pH units are standard units.

3. pH not recorded due to a field recording error.

USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
3.8	Bold value indicates a detection.
< 1.0	Compound not detected at or above the laboratory quantification limit.
µg/L	micrograms per liter
ND	Analyte not detected at, or above its laboratory quantification limit.
J	Result is estimated.

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

Compound (All Constituent Concentrations in µg/L)	Discharge Limit[1]	01/05/21	02/10/21	03/02/21	04/08/21	05/04/21	06/02/21	07/13/21	08/13/21	09/27/21	10/06/21	11/02/21	12/16/21
Project VOCs													
1,1,1-Trichloroethane	5[2]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5[2]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5[2]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5[2]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	5[2]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	5[2]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans 1,2-Dichloroethene	5[2]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Subtotal Project VOCs		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Compound (All Constituent Concentrations in µg/L)	**Discharge Limit[1]**	**01/05/21**	**02/10/21**	**03/02/21**	**04/08/21**	**05/04/21**	**06/02/21**	**07/13/21**	**08/13/21**	**09/27/21**	**10/06/21**	**11/02/21**	**12/16/21**
Non-Project VOCs													
Acetone	50	< 10	< 10	< 10	< 10	< 10	< 10	**3.4 J**	< 10	< 10	< 10	< 10	< 10
Chloroform	5[2]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	5[2]	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorotrifluoroethane (Freon 113)	5[2]	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Subtotal Non-Project VOCs		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Total VOCs[3]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Treatment Efficiency[4]		> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%	> 99.9%
Compound (All Constituent Concentrations in µg/L)	**Discharge Limit[1]**	**01/05/21**	**02/10/21**	**03/02/21**	**04/08/21**	**05/04/21**	**06/02/21**	**07/13/21**	**08/13/21**	**09/27/21**	**10/06/21**	**11/02/21**	**12/16/21**
Inorganics													
Total Iron	600	< 100	< 100	< 100	< 100	< 100	**329**	**268**	**253**	**300**	**494**	**291**	**147**
Total Manganese	600	**41.3**	**39.2**	**42.5**	**43.7**	**40.8**	**44.0**	**48.9**	**47.2**	**43.9**	**48.9**	**51.7**	**55.2**
Nitrate and Nitrite	10,000	**2,300**	**2,800**	**2,500**	**2,600**	**2,700**	**2,600**	**2,600**	**2,300**	**2,500**	**2,600**	**2,600**	**2,600**
Total Kjeldahl Nitrogen	10,000	< 200	**210**	**230**	< 200	< 200	< 200	< 200	< 200	< 200	< 200	< 200	< 200
Total Nitrogen	10,000	**2,300**	**3,000**	**2,700**	**2,600**	**2,700**	**2,600**	**2,800**	**2,500**	**2,500**	**2,600**	**2,600**	**2,600**
1,4-Dioxane	NE	**0.24**	**0.64**	**1.4**	**1.80**	**1.30**	**1.5**	**1.2**	**1.4**	**2.1**	**1.0**	**1.6**	**1.1**
pH[5]	5.5-8.5	6.5	5.9	6.4	6.1	5.9	7.2	6.4	7.1	6.3	7.3	6.9	6.8

Notes, Abbreviations, Qualifers, and Units on last page.

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

Notes, Abbreviations, Qualifiers, and Units:

1. 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 SPDES Permit Equivalency.

2. As of September 2017, the 10 SPDES VOCs discharge limits are per Site Number 1-30-003A Operable Unit 3 SPDES Permit Equivalency.

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

5. Effluent pH measured on site using a handheld pH meter. pH units are standard units.

NYSDEC	New York State Department of Environmental Conservation
SPDES	State Pollutant Discharge Elimination System
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
NE	Not Established
1.0	Bold value indicates a detection.
< 1.0	Compound not detected above the laboratory quantification limit.
µg/L	micrograms per liter
ND	Analyte not detected at, or above its laboratory quantification limit.

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

Compound[1] (All Constituent Concentrations in µg/m^3)	2/10/2021[3]	04/08/21	08/17/21	10/26/21	11/17/21	12/16/21
Project VOCs						
1,1,1 - Trichloroethane	< 0.44	**1.4**	< 22	**1.0**	**1.0**	**1.1**
1,1 - Dichloroethane	< 0.65	**7.3**	< 32	**6.5**	**6.1**	**6.5**
1,2 - Dichloroethane	< 0.65	**0.36 J**	< 32	**0.31 J**	**0.32 J**	**0.30 J**
1,1 - Dichloroethene	< 0.13	**1.3**	< 6.3	**5.2**	**4.4**	**5.2**
Tetrachloroethene	< 0.22	**2.5**	< 11	**2.5**	**2.0**	**47**
Trichloroethene	**0.36**	**96.7**	**301**	**212**	**183**	**235**
Vinyl Chloride	**0.33**	**77.7**	**159**	**85.9**	**78.2**	**59.8**
cis 1,2-Dichloroethene	**1.2**	**326**	**1450**	**1,040**	**959**	**1,230**
trans 1,2-Dichloroethene	< 0.63	**0.59 J**	< 32	**5.6**	**5.2**	**9.1**
Benzene	**0.30 J**	**1.1**	< 26	**8.3**	**5.8**	**6.1**
Toluene	< 0.6	**3.0**	**3590**	**927**	**403**	**139**
o-Xylene	< 0.69	**1.4**	**135**	**119**	**96.0**	**72.1**
m,p-Xylene	< 0.69	**1.3**	**295**	**181**	**134**	**83.8**
Subtotal Project VOCs	**2**	**521**	**5931**	**2594**	**1878**	**1895**
Non-Project VOCs						
1,1,2,2-Tetrachloroethane	< 0.55	< 0.55	< 27	< 0.55	< 0.55	< 0.55
1,1,2-Trichloroethane	< 0.44	< 0.44	< 22	< 0.44	< 0.44	< 0.44
1,2-Dichloropropane	< 0.74	**0.83**	< 37	**1.0**	**0.79**	**0.79**
1,3-Butadiene	< 0.35	< 0.35	< 18	< 0.35	< 0.35	< 0.35
2-Butanone	< 0.47	**0.47**	< 24	**0.80**	**0.62**	**1.4**
4-Methyl-2-Pentanone	< 0.66	< 0.66	< 33	**0.70**	**0.30 J**	< 0.66
Acetone	**2.6**	**6.7**	< 19	**5.0**	**5.9**	**7.6**
Bromodichloromethane	< 0.54	**1.1**	< 27	**1.1**	**1.9**	**2.7**
Bromoform	< 0.33	< 0.33	< 17	< 0.33	< 0.33	< 0.33
Bromomethane	< 0.62	< 0.62	< 31	< 0.62	< 0.62	< 0.62
Carbon Disulfide	< 0.50	< 0.50	< 25	< 0.50	< 0.50	**0.29 J**
Carbon Tetrachloride	**0.49**	**0.48**	< 10	**0.40**	**0.43**	**0.42**
Chlorobenzene	< 0.74	< 0.74	< 37	< 0.74	< 0.74	< 0.74
Chlorodibromomethane	< 0.68	< 0.68	< 34	< 0.68	< 0.68	< 0.68
Chlorodifluoromethane (Freon 22)	**0.77**	**5.6**	< 28	**3.3**	**3.5**	**3.4**
Chloroethane	< 0.42	< 0.42	< 21	< 0.42	< 0.42	< 0.42
Chloroform	< 0.78	**9.3**	< 39	**22**	**36**	**55.7**
Chloromethane	**0.89**	**1.9**	< 17	**1.4**	**1.6**	**1.7**
cis-1,3-Dichloropropene	< 0.73	< 0.73	< 36	< 0.73	< 0.73	< 0.73
Dichlorodifluoromethane (Freon 12)	**1.6**	**1.7**	< 40	**1.6**	**1.9**	**2.1**
Dichloromethane	**3.8**	**0.63**	< 28	**1.0**	**1.2**	**2.6**
Ethylbenzene	< 0.69	**1.3**	**95.6**	**43.9**	**19**	**10**
Methyl N-Butyl Ketone	< 0.65	< 0.65	< 33	< 0.65	**0.74**	**1.4**
Methyl Tert-Butyl Ether	< 0.58	**0.43 J**	< 29	**0.40 J**	**0.30 J**	**0.32 J**
Styrene (Monomer)	< 0.68	< 0.68	< 34	**2.1**	**1.3**	**0.94**
trans-1,3-Dichloropropene	< 0.73	< 0.73	< 36	< 0.73	< 0.73	< 0.73
Trichlorofluoromethane (Freon 11)	**2.4**	**1.2**	< 22	**1.1**	**1.3**	**1.2**
Trichlorotrifluoroethane (Freon 113)	< 0.61	**1.5**	< 31	**1.3**	**1.3**	**1.5**
1-Chloro-1,1-difluoroethane (Freon 142b)	< 0.66	< 0.66	< 33	< 0.66	**0.31 J**	< 0.66
Subtotal Non-Project VOCs	**13**	**33**	**96**	**87**	**78**	**94**
Total VOCs[2]	**15**	**554**	**6027**	**2681**	**1956**	**1989**

Notes, Abbreviations, Qualifiers, and Units on last page.

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

Notes, Abbreviations, Qualifiers, and Units:

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 Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). 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. "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.

3. Results validated following protocols specified in Sampling and Analysis Plan in the Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). See previous annual reports for historical analytical results.

ELAP	Environmental Laboratory Approval Program
NYSDOH	New York State Department of Health
OM&M	Operation, Maintenance, and Monitoring
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

1.3	Bold value indicates a detection.
< 0.44	Compound not detected above the laboratory quantification limit.
J	Result is estimated.

µg/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)
Northrop Grumman,
Bethpage, New York

Compound[1] (All Constituent Concentrations in µg/m^3)	02/10/21	04/08/21	08/17/21	10/26/21	11/17/21	12/16/21
Project VOCs						
1,1,1 - Trichloroethane	**0.65**	**1.0**	< 11	**0.87**	**0.87**	< 0.44
1,1 - Dichloroethane	**3.70**	**6.1**	**9.7 J**	**6.9**	**6.1**	**1.0**
1,2 - Dichloroethane	**0.23 J**	**0.45 J**	< 16	**0.32 J**	**0.34 J**	< 0.65
1,1 - Dichloroethene	**0.91**	**0.83**	< 3.2	**4.0**	**3.7**	**0.31**
Tetrachloroethene	**1.6**	**1.6**	< 5.4	**2.2**	**1.4**	**0.58**
Trichloroethene	**29**	**42**	**260**	**142**	**108**	**13**
Vinyl Chloride	**27.6**	**38.1**	**170**	**79.0**	**66.5**	**6.1**
cis 1,2-Dichloroethene	**104**	**122**	**1140**	**654**	**571**	**44.4**
trans 1,2-Dichloroethene	< 0.63	< 0.63	< 16	**2.4**	**2.4**	< 0.63
Benzene	**0.58**	**0.35 J**	**8.0 J**	**5.8**	**4.2**	**0.96**
Toluene	**1.3**	**2.3**	**3360**	**697**	**297**	**20**
o-Xylene	< 0.69	**0.74**	**109**	**83.4**	**55.6**	**8.3**
m,p-Xylene	**0.52 J**	**1.1**	**232**	**132**	**78.6**	**9.6**
Subtotal Project VOCs	**170**	**217**	**5289**	**1810**	**1196**	**104**
Non-Project VOCs						
1,1,2,2-Tetrachloroethane	< 0.55	< 0.55	< 14	< 0.55	< 0.55	< 0.55
1,1,2-Trichloroethane	< 0.44	< 0.44	< 11	< 0.44	< 0.44	< 0.44
1,2-Dichloropropane	< 0.74	**0.46 J**	< 18	**0.69 J**	**0.55 J**	< 0.74
1,3-Butadiene	< 0.35	< 0.35	< 8.8	< 0.35	< 0.35	< 0.35
2-Butanone	**2.3**	**4.1**	< 12	**2.9**	**1.7**	**1.0**
4-Methyl-2-Pentanone	< 0.66	< 0.66	< 16	**0.61 J**	**0.30 J**	< 0.66
Acetone	**16**	**22**	**52.5**	**31.6**	**17**	**11**
Bromodichloromethane	< 0.54	< 0.54	< 13	**0.74**	**1.3**	< 0.54
Bromoform	< 0.33	< 0.33	< 8.3	< 0.33	< 0.33	< 0.33
Bromomethane	< 0.62	< 0.62	< 16	< 0.62	< 0.62	< 0.62
Carbon Disulfide	< 0.50	< 0.5	< 12	< 0.50	< 0.50	< 0.50
Carbon Tetrachloride	**0.75**	**0.40**	< 5	**0.33**	**0.38**	< 0.20
Chlorobenzene	< 0.74	< 0.74	< 18	< 0.74	< 0.74	< 0.74
Chlorodibromomethane	< 0.68	< 0.68	< 17	< 0.68	< 0.68	< 0.68
Chlorodifluoromethane (Freon 22)	**4.9**	**5.6**	< 14	**3.3**	**4.2**	**3.5**
Chloroethane	< 0.42	< 0.42	< 11	< 0.42	< 0.42	< 0.42
Chloroform	**8.3**	**8.8**	**9.3 J**	**19**	**30**	**8.3**
Chloromethane	**1.2**	**1.6**	< 8.3	**1.2**	**1.4**	**1.2**
cis-1,3-Dichloropropene	< 0.73	< 0.73	< 18	< 0.73	< 0.73	< 0.73
Dichlorodifluoromethane (Freon 12)	**1.6**	**1.8**	< 20	**1.7**	**2.1**	**1.2**
Dichloromethane	< 0.56	**0.90**	< 14	**0.87**	**1.3**	**0.56**
Ethylbenzene	**0.52 J**	**0.69**	**76.9**	**31**	**13**	**0.87**
Methyl N-Butyl Ketone	< 0.65	< 0.65	< 16	**0.86**	**0.65**	< 0.65
Methyl Tert-Butyl Ether	< 0.58	< 0.58	< 14	< 0.58	**0.23 J**	< 0.58
Styrene (Monomer)	< 0.68	< 0.68	< 17	< 0.68	< 0.68	< 0.68
trans-1,3-Dichloropropene	< 0.73	< 0.73	< 18	< 0.73	< 0.73	< 0.73
Trichlorofluoromethane (Freon 11)	**1.2**	**1.5**	< 11	**1.2**	**1.5**	< 0.45
Trichlorotrifluoroethane (Freon 113)	**1.8**	**1.5**	< 15	**1.7**	**1.5**	**0.24 J**
1-Chloro-1,1-difluoroethane (Freon 142b)	< 0.66	**0.32 J**	< 16	< 0.66	**0.35 J**	< 0.66
Subtotal Non-Project VOCs	**39**	**50**	**139**	**98**	**77**	**28**
Total VOCs[2]	**209**	**266**	**5427**	**1908**	**1273**	**132**

Notes, Abbreviations, Qualifiers, and Units on last page.

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

Notes, Abbreviations, Qualifiers, and Units:

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 Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). 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. "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.

ELAP	Environmental Laboratory Approval Program
NYSDOH	New York State Department of Health
OM&M	Operation, Maintenance, and Monitoring
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
1.1	Bold value indicates a detection.
< 11	Compound not detected above the laboratory quantification limit.
J	Result is estimated.
$\mu g/m^3$	micrograms per cubic meter

Table 6
Summary of Effluent Vapor Tentatively Identified Compounds
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
Bethpage, New York

Compound[1] (All Constituent Concentrations in ppbv)	02/10/21	04/08/21	08/17/21	10/26/21	11/17/21	12/16/21
Tentatively Identified Compounds						
Acetone	ND	ND	ND	ND	ND	ND
Carbon Dioxide	**230 JNB**	**330 JNB**	**21000 JNB**	**44 JNB**	**510 JNB**	**520 JNB**
Difluorochloromethane	ND	ND	ND	ND	ND	ND
Ethanol	**1.2 JN**	ND	ND	ND	ND	ND
Cumene	ND	ND	ND	ND	ND	ND
2-Phenyl-2-Propanol	ND	ND	ND	ND	ND	ND
Acetaldehyde	ND	ND	ND	ND	ND	ND
1,2,3-Trimethylbenzene	ND	ND	ND	ND	**1.7 JN**	ND
Unknown (A)	ND	ND	ND	ND	ND	ND
Unknown (B)	ND	ND	ND	ND	ND	ND
Total VOC TICs[2]	**1.2 J**	**ND**	**ND**	**9.4 J**	**3.3 J**	**ND**

Notes, Abbreviations, Qualifiers, and Units:

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 Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). 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. VSP-5 sample location moved to new sample port at ECU effluent stack.
3. Compounds found in associated method blank are not included in Total VOC TICs.

ECU	Emission Control Unit
ELAP	Environmental Laboratory Approval Program
NYSDOH	New York State Department of Health
OM&M	Operation, Maintenance, and Monitoring
TIC	Tentatively Identified Compound
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
65	Bold value indicates a detection.
ND	TIC were not detected.
B	TIC was detected in the associated method blank.
J	Result is estimated.
N	Indicates presumptive evidence of a compound.
ppbv	parts per billion by volume

Table 7
Summary of System Parameters
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
Bethpage, New York

Date [1]	Water Flow Rates (All Flows in gpm)						Water Pressures (All Pressures in psi)					Air Flow Rate (scfm) [2]	Air Pressures (All Pressures in iwc) [5,6]					Air Temp. (^{o}R)[5]
	Remedial Well [2]				Combined Influent [3]	Effluent [2]	Remedial Well Effluent [2,4]				Effluent [5]	Effluent	ECU Influents				Effluent	Effluent
	RW-1	RW-2	RW-3	RW-4			RW-1	RW-2	RW-3	RW-4			GAC-501	GAC-502	PPZ-601	PPZ-602		
01/05/21	30.3	66.8	75.5	30.4	203	218	56	6	31	56	14	1,474	< 1.0	< 1.0	< 1.0	< 1.0	5.0	521
02/10/21	30.1	45.0	75.0	30.2	180	195	56	4	33	56	9	1,533	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	520
03/02/21	29.9	73.9	76.0	29.4	209	232	57	59	31	57	25	1,460	< 1.0	< 1.0	< 1.0	< 1.0	1.0	519
04/08/21	31.6	75.0	74.6	29.9	211	227	56	11	36	57	12	1,468	< 1.0	< 1.0	< 1.0	< 1.0	1.0	540
05/04/21	30.8	65.3	75.9	30.7	203	220	56	5	38	56	21	1,384	< 1.0	< 1.0	< 1.0	< 1.0	1.0	536
06/02/21	31.0	76.0	75.2	30.3	213	227	56	66	39	56	12	1,327	< 1.0	< 1.0	< 1.0	< 1.0	1.0	542
07/13/21	29.0	75.5	75.8	29.9	210	223	58	65	38	56	17	1,724	< 1.0	< 1.0	< 1.0	< 1.0	0.5	542
08/13/21	30.4	69.9	70.0	30.6	201	228[8]	57	74	56	56	18[8]	1,753	< 1.0	< 1.0	< 1.0	< 1.0	0.5	554
09/10/21	29.2	75.8	75.8	30.2	211	235[9]	57	55	42	57	22[9]	1,746	< 1.0	< 1.0	< 1.0	< 1.0	0.5	546
10/06/21	29.9	73.9	75.5	30.4	210	205	57	44	45	57	25	1,806	< 1.0	< 1.0	< 1.0	< 1.0	0.5	540
11/02/21	30.6	75.2	75.2	30.2	211	200	57	35	47	58	14	1,740	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0[10]	535[10]
12/16/21	29.9	77.5	76.7	30.5	215	208	57	34	45	57	16	1,501	6.0	< 1.0	< 1.0	< 1.0	< 1.0	532

Notes, Abbreviations, and Units on last page.

Table 7
Summary of System Parameters
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
Bethpage, New York

Notes, Abbreviations, and Units:

1. Operational data collected by Arcadis on days noted. Parameters listed were typically recorded during compliance monitoring events. Data in this table correspond to approximately the past year of system operation.
2. Instantaneous parameters obtained from the SCADA HMI: Water Flow Rate, Water Pressure, Air Flow Rate.
3. Combined influent water-flow rate is the sum of individual well flow rates via the SCADA System.
4. Remedial Well effluent pressure readings measured at the influent manifold within the treatment system building.
5. Instantaneous values recorded from field-mounted instruments during weekly site visits.
6. Pressure readings recorded as < 1.0 iwc due to pressure being too low for gauge sensitivity.
7. Data recorded by Northrop Grumman Operator due to compliance monitoring event taking place during ISTR discharge event which required RW-1 to be turned off.
8. Data recorded by Northrop Grumman Operator on 8/09/2021 due to field recording error.
9. Data recorded by Northrop Grumman Operator on 9/08/2021 due to field recording error.
10. Data recorded by Northrop Grumman Operator on 11/01/2021 due to field recording error.

ECU	Emission Control Unit
GAC	Granular Activated Carbon
HMI	Human-Machine Interface
RW	Remedial Well
SCADA	Supervisory Control and Data Acquisition
Temp	Temperature
gpm	gallons per minute
iwc	inches of water column
psi	pounds per square inch
^{o}R	degrees Rankine
scfm	standard cubic feet per minute

Table 8
Summary of Groundwater Recovered, VOC Mass Recovered, and VOC Mass Recovery Rates
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
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
2010 Totals	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	15,218	36,570	37,682	15,196	104,666	0.36	167	271	78	516	0.36	167	35	0.090	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	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	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
2014 Totals	15,690	33,222	31,199	15,691	95,802	0.063	67	9.9	8.1	85	0.063	65	2.0	0.20	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
2015 Totals	15,859	38,082	34,961	14,755	103,657	0.028	47	7.1	4.5	57	0.021	45	1.5	0.20	45	<0.01	1.7	5.6	4.2	12	<0.01	0.13	0.019	0.012	0.16	<0.01	0.12	<0.01	<0.01	0.12	<0.01	<0.01	0.015	0.012	0.032
2016 Totals	15,826	34,539	39,349	15,826	105,540	<0.01	38	3.2	2.2	44	<0.01	37	1.4	0.20	39	<0.01	1.5	1.7	2.0	5.2	<0.01	0.10	<0.01	<0.01	0.12	<0.01	0.10	<0.01	<0.01	0.11	<0.01	<0.01	<0.01	<0.01	0.014
2017 Totals	16,005	31,600	37,614	15,965	101,184	< 0.01	13	2.2	1.2	17	< 0.01	13	1.1	0.16	14	< 0.01	0.56	1.1	1.1	2.7	< 0.01	0.037	< 0.01	< 0.01	0.046	< 0.01	0.035	< 0.01	< 0.01	0.038	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2018 Totals	15,145	37,712	32,473	14,917	100,247	< 0.01	13.71	0.90	0.56	15.2	< 0.01	13.5	0.70	< 0.01	14.2	< 0.01	0.27	0.19	0.52	0.97	< 0.01	0.038	< 0.01	< 0.01	0.042	< 0.01	0.037	< 0.01	< 0.01	0.039	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2019 Totals	15,456	32,470	38,416	15,343	101,685	< 0.01	11.51	1.36	0.22	13.10	< 0.01	11.51	1.07	< 0.01	12.59	< 0.01	< 0.01	0.29	0.18	0.63	< 0.01	0.032	< 0.01	< 0.01	0.036	< 0.01	0.032	< 0.01	< 0.01	0.034	< 0.01	< 0.01	< 0.01	0.001	< 0.01
2020 Totals	14,475	35,814	37,537	15,113	102,939	< 0.01	19.3	1.3	< 0.01	20.6	< 0.01	19.3	0.91	< 0.01	20.2	< 0.01	< 0.01	0.36	< 0.01	0.36	< 0.01	0.053	< 0.01	< 0.01	0.056	< 0.01	0.053	< 0.01	< 0.01	0.055	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
January 2021 through March 2021																																			
01/01/21 · 02/01/21	1,325	2,694	3,340	1,345	8,704	< 0.01	1.93	0.15	< 0.01	2.08	< 0.01	1.9	0.11	< 0.01	2.0	< 0.01	< 0.01	0.03	< 0.01	0.033	< 0.01	0.062	< 0.01	< 0.01	0.067	< 0.01	0.062	< 0.01	< 0.01	0.066	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
02/01/21 · 03/01/21	1,186	2,579	3,043	1,210	8,018	< 0.01	1.85	0.13	< 0.01	1.98	< 0.01	1.9	0.10	< 0.01	2.0	< 0.01	< 0.01	0.03	< 0.01	0.030	< 0.01	0.066	< 0.01	< 0.01	0.071	< 0.01	0.066	< 0.01	< 0.01	0.070	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
03/01/21 · 04/01/21	1,308	3,281	3,298	1,314	9,201	< 0.01	2.35	0.15	< 0.01	2.50	< 0.01	2.4	0.11	< 0.01	2.5	< 0.01	< 0.01	0.03	< 0.01	0.033	< 0.01	0.076	< 0.01	< 0.01	0.081	< 0.01	0.076	< 0.01	< 0.01	0.080	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Subtotal Jan - Mar 2021	3,820	8,554	9,681	3,869	25,923	< 0.01	6.14	0.43	< 0.01	6.56	< 0.01	6.1	0.33	< 0.01	6.5	< 0.01	< 0.01	0.10	< 0.01	0.10	< 0.01	0.068	< 0.01	< 0.01	0.073	< 0.01	0.068	< 0.01	< 0.01	0.072	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
April 2021 through June 2021																																			
04/01/21 · 05/01/21	1,267	2,960	3,182	1,262	8,670	< 0.01	2.25	0.10	< 0.01	2.35	< 0.01	2.2	0.08	< 0.01	2.3	< 0.01	< 0.01	0.02	< 0.01	0.024	< 0.01	0.075	< 0.01	< 0.01	0.078	< 0.01	0.075	< 0.01	< 0.01	0.078	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
05/01/21 · 06/01/21	1,339	2,852	3,334	1,341	8,866	< 0.01	2.16	0.11	< 0.01	2.27	< 0.01	2.2	0.08	< 0.01	2.2	< 0.01	< 0.01	0.03	< 0.01	0.025	< 0.01	0.070	< 0.01	< 0.01	0.073	< 0.01	0.070	< 0.01	< 0.01	0.073	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
06/01/21 · 07/01/21	1,291	3,200	3,208	1,292	8,991	< 0.01	2.43	0.10	< 0.01	2.53	< 0.01	2.4	0.08	< 0.01	2.5	< 0.01	< 0.01	0.02	< 0.01	0.024	< 0.01	0.081	< 0.01	< 0.01	0.084	< 0.01	0.081	< 0.01	< 0.01	0.084	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Subtotal Apr - Jun 2021	3,896	9,012	9,724	3,895	26,528	< 0.01	6.84	0.32	< 0.01	7.16	< 0.01	6.8	0.24	< 0.01	7.1	< 0.01	< 0.01	0.07	< 0.01	0.073	< 0.01	0.075	< 0.01	< 0.01	0.079	< 0.01	0.075	< 0.01	< 0.01	0.078	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
July 2021 through September 2021 [9]																																			
07/01/21 · 08/01/21	1,128	2,881	2,862	1,141	8,013	< 0.01	39.89	0.10	< 0.01	39.99	< 0.01	38.9	0.08	< 0.01	38.9	< 0.01	1.040	0.02	0.02	1.081	< 0.01	1.287	< 0.01	< 0.01	1.290	< 0.01	1.253	< 0.01	< 0.01	1.256	< 0.01	0.03	< 0.01	< 0.01	0.0350
08/01/21 · 09/01/21	871	3,013	2,959	1,262	8,104	< 0.01	41.72	0.10	< 0.01	41.82	< 0.01	40.6	0.08	< 0.01	40.7	< 0.01	1.087	0.02	0.02	1.131	< 0.01	1.346	< 0.01	< 0.01	1.349	< 0.01	1.311	< 0.01	< 0.01	1.313	< 0.01	0.04	< 0.01	< 0.01	0.0360
09/01/21 · 10/01/21	944	3,255	3,271	1,307	8,776	< 0.01	45.06	0.11	< 0.01	45.17	< 0.01	43.9	0.09	< 0.01	44.0	< 0.01	1.174	0.03	0.02	1.221	< 0.01	1.502	< 0.01	< 0.01	1.506	< 0.01	1.463	< 0.01	< 0.01	1.466	< 0.01	0.04	< 0.01	< 0.01	0.0410
Subtotal Jul - Sep 2021	2,943	9,149	9,092	3,709	24,893	< 0.01	126.67	0.32	< 0.01	126.98	< 0.01	123.4	0.24	< 0.01	123.6	< 0.01	3.301	0.07	0.06	3.433	< 0.01	1.377	< 0.01	< 0.01	1.380	< 0.01	1.341	< 0.01	< 0.01	1.344	< 0.01	0.04	< 0.01	< 0.01	0.0370
October 2021 through December 2021																																			
10/01/21 · 11/01/21	1,304	3,274	3,316	1,310	9,205	< 0.01	10.73	0.29	0.02	11.03	< 0.01	10.6	0.1	< 0.01	10.7	< 0.01	0.115	0.17	0.02	0.304	< 0.01	0.346	< 0.01	< 0.01	0.356	< 0.01	0.342	< 0.01	< 0.01	0.346	< 0.01	< 0.01	< 0.01	< 0.01	0.0100
11/01/21 · 12/01/21	1,287	3,208	3,194	1,278	8,967	< 0.01	10.51	0.27	0.02	10.80	< 0.01	10.4	0.1	< 0.01	10.5	< 0.01	0.112	0.17	0.02	0.295	< 0.01	0.350	< 0.01	< 0.01	0.360	< 0.01	0.347	< 0.01	< 0.01	0.350	< 0.01	< 0.01	< 0.01	< 0.01	0.0100
12/01/21 · 01/01/22	1,239	3,205	3,147	1,262	8,854	< 0.01	10.50	0.27	0.02	10.78	< 0.01	10.4	0.1	< 0.01	10.5	< 0.01	0.112	0.17	0.02	0.292	< 0.01	0.339	< 0.01	< 0.01	0.348	< 0.01	0.335	< 0.01	< 0.01	0.338	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Subtotal Jul - Sep 2021	3,830	9,688	9,657	3,851	27,026	< 0.01	31.73	0.83	0.05	32.61	< 0.01	31.4	0.3	< 0.01	31.7	< 0.01	0.3	0.5	0.1	0.891	< 0.01	0.345	< 0.01	< 0.01	0.354	< 0.01	0.341	< 0.01	< 0.01	0.345	< 0.01	< 0.01	< 0.01	< 0.01	0.0100
2021 Totals	14,490	36,403	38,153	15,324	104,370	< 0.01	171.4	1.9	0.05	173.3	< 0.01	167.7	1.14	< 0.01	168.9	< 0.01	3.6	0.75	0.11	4.49	< 0.01	1.865	< 0.01	< 0.01	1.886	< 0.01	1.825	< 0.01	< 0.01	1.839	< 0.01	0.04	< 0.01	< 0.01	0.0470
Total Since System Start Up	191,847	438,338	454,974	191,915	1,277,074	2	1,220	918	256	2,394	2	1,205	108	2	1,317	< 0.01	14	810	254	1,071	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes, Abbreviations, Qualifiers, and Units:

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. The volume of groundwater recovered and mass recovered calculations represent the operational period between October 1st, 2021 and January 1st 2022.

NA	Not Applicable
VOC	Volatile Organic Compound.
<	Less than
gal	Gallons
lbs	Pounds
lbs/day	Pounds per day

Table 9
2021 Rule 212 Applicability and Evaluation
Bethpage Park Soil Gas Containment System, ISTR, and Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
Bethpage, New York

Project VOCs	CAS#	HTAC?[1]	2021 BPGWCS Maximum Effluent Conc. (ug/m3)[2]	2021 BPSGCS Maximum Effluent Conc.- not combined with ISTR (ug/m3)[2]	2021 ISTR Maximum Effluent Conc. (ug/m3)[2]	2021 BPSGCS Maximum Effluent Conc.- combined with ISTR (ug/m3)[2]	2021 BPGWCS Emissions (lb/yr)[4]	2021 BPSGCS Emissions - not combined with ISTR (lb/yr)[4]	2021 ISTR Emissions (lb/yr)[4]	2021 BPSGCS Emissions - combined with ISTR (lb/yr)[4]	Facility Wide Emissions (lb/yr)[5]	Rule 212 Emission Limit (lb/yr)[6]	Further evaluation Required?[7]	2021 BPGWCS Emissions (g/s)[8]	2021 BPSGCS Emissions - not combined with ISTR (g/s)[8]	2021 ISTR Emissions (g/s)[8]	2021 BPSGCS Emissions - combined with ISTR (g/s)[8]	Total Scaled Impact -Hourly (µg/m3)[9]	Total Scaled Impact -Annual (µg/m3)[9]	SGC3 (µg/m3)[10]	AGC3 (µg/m3)[10]	% of SGC	% of AGC
1,1,1-Trichloroethane	71-55-6	No	1.00	2.40			0.059	0.113	0.000	0.000	0.172	100	N	--	--	--	--	--	--	9,000	5,000		
1,1 - Dichloroethane	75-34-3	No	6.10	4.50			0.361	0.212	0.000	0.000	0.573	100	N	--	--	--	--	--	--	--	0.63		
1,1 - Dichloroethene	75-35-4	No	3.70	9.90	0.91		0.219	0.466	0.012	0.000	0.697	100	N	--	--	--	--	--	--	--	200		
1,2 - Dichloroethane	107-06-2	Yes	0.45				0.027	0.000	0.000	0.000	0.027	100	N	--	--	--	--	--	--	--	0.038		
Benzene	71-43-2	Yes	8.00	2.10	41.20	7.00	0.473	0.099	0.556	0.085	1.213	100	N	--	--	--	--	--	--	27	0.13		
cis- 1,2-Dichloroethene	156-59-2	No	1140	354	115.00	6	67.413	16.672	1.552	0.068	85.706	100	N	--	--	--	--	--	--	--	63		
Tetrachloroethene	127-18-4	Yes	1.6	6.6	16	11	0.095	0.311	0.216	0.134	0.755	1000	N	--	--	--	--	--	--	300	3.8		
Toluene	108-88-3	No	3360	2.1	433	26	198.692	0.099	5.845	0.316	204.952	100	Y	2.9E-03	1.7E-06	1.0E-04	2.7E-05	2.63	0.042	37,000	5000	0.01%	0.00%
trans- 1,2-Dichloroethene	156-60-5	No	2.40	15.00	8.70	1.40	0.142	0.706	0.117	0.017	0.983	100	N	--	--	--	--	--	--	--	63		
Trichloroethene	79-01-6	Yes	260	1550	164	9	15.375	73.001	2.214	0.105	90.694	500	N	--	--	--	--	--	--	20	0.2		
Vinyl Chloride	75-01-4	Yes	170	28.1	1960	81.8	10.053	1.323	26.458	0.995	38.829	100	N	--	--	--	--	--	--	180,000	0.11		
Xylenes[3]	1330-20-7	No	341.00	1.04	413.00	19.00	20.165	0.049	5.575	0.231	26.020	100	N	--	--	--	--	--	--	22,000	100		
Non-Project VOCs																							
1,2-Dichloropropane	78-87-5	No	0.55				0.033	0.000	0.000	0.000	0.033	100	N	--	--	--	--	--	--	--	4		
1-Chloro-1,1-difluoroethane (Freon 142B)	75-68-3	No	0.35	58.4			0.021	2.750	0.000	0.000	2.771	100	N	--	--	--	--	--	--	--	50,000		
2-Butanone	78-93-3	No	4.1	0.44			0.242	0.021	0.000	0.000	0.263	100	N	--	--	--	--	--	--	13,000	5,000		
2-Hexanone	591-78-6	No	0.65		3.6		0.038	0.000	0.049	0.000	0.087	100	N	--	--	--	--	--	--	4000.0	30		
4-Methyl-2-Pentanone	108-10-1	No	0.3				0.018	0.000	0.000	0.000	0.018	100	N	--	--	--	--	--	--	31,000	3,000		
Acetone	67-64-1	No	52.5	10	1220	57.5	3.105	0.471	16.469	0.699	20.744	100	N	--	--	--	--	--	--	180,000	30,000		
Bromodichloromethane	75-27-4	No	1.3				0.077	0.000	0.000	0.000	0.077	100	N	--	--	--	--	--	--	--	70		
Bromoform	75-25-2	No			4		0.000	0.000	0.054	0.000	0.054	100	N	--	--	--	--	--	--	--	0.91		
Carbon Disulfide	75-15-0	No			427	11	0.000	0.000	5.764	0.134	5.898	100	N	--	--	--	--	--	--	6200	700		
Carbon Tetrachloride	56-23-5	Yes	0.75	0.34			0.044	0.016	0.000	0.000	0.060	100	N	--	--	--	--	--	--	1,900	0.17		
Chlorodifluoromethane (Freon 22)	75-45-6	No	5.6	0.56			0.331	0.026	0.000	0.000	0.358	100	N	--	--	--	--	--	--	--	50,000		
Chloroethane	75-00-3	No			36.7	3.2	0.000	0.000	0.495	0.039	0.534	100	N	--	--	--	--	--	--	--	10000		
Chloromethane	74-87-3	No	1.6	0.37	36.6	3.3	0.095	0.017	0.494	0.040	0.646	100	N	--	--	--	--	--	--	22000	90		
Chloroform	67-66-3	Yes	30	15			1.774	0.706	0.000	0.000	2.480	100	N	--	--	--	--	--	--	150	14.7		
Dichlorodifluoromethane (Freon 12)	75-71-8	No	2.1	2.7	2.7	3.6	0.124	0.127	0.036	0.044	0.332	100	N	--	--	--	--	--	--	--	12,000		
Ethylbenzene	100-41-4	No	76.9		84.3	4.3	4.547	0.000	1.138	0.052	5.738	100	N	--	--	--	--	--	--	--	1000		
Methylene Chloride	75-09-2	No	1.3	4.5	41.3	3.8	0.077	0.212	0.558	0.046	0.893	100	N	--	--	--	--	--	--	14,000	46		
Methyl-Tert-Butylether	1634-04-4	No	0.23				0.014	0.000	0.000	0.000	0.014	100	N	--	--	--	--	--	--	--	3.8		
Styrene (Monomer)	100-42-5	No		0.47			0.000	0.022	0.000	0.000	0.022	100	N	--	--	--	--	--	--	17000.0	1000		
Trichlorofluoromethane (Freon 11)	75-69-4	No	1.5	0.79	1.6	2.3	0.089	0.037	0.022	0.028	0.175	100	N	--	--	--	--	--	--	9,000	5,000		
Trichlorotrifluoroethane (Freon 113)	76-13-1	No	1.8				0.106	0.000	0.000	0.000	0.106	100	N	--	--	--	--	--	--	960,000	180,000		
1,2,4-Trimethylbenzene	95-36-3	No			25		0.000	0.000	0.337	0.000	0.337	100	N	--	--	--	--	--	--		60		
1,2-Dibromoethane (EDB)	106-93-4	Yes			12		0.000	0.000	0.162	0.000	0.162	5	N	--	--	--	--	--	--		1.7E-03		
1,3,5-Trimethylbenzene	108-67-8	No			15		0.000	0.000	0.202	0.000	0.202	100	N	--	--	--	--	--	--		60		
2,2,4-Trimethylpentane	540-84-1	No			2.3		0.000	0.000	0.031	0.000	0.031	100	N	--	--	--	--	--	--		3,300		
4-Ethyltoluene[11]	622-96-8	No			6.9		0.000	0.000	0.093	0.000	0.093	100	N	--	--	--	--	--	--		0.1		
Cyclohexane	110-82-7	No			1.7		0.000	0.000	0.023	0.000	0.023	100	N	--	--	--	--	--	--		6,000		
Ethanol	64-17-5	No			718	301	0.000	0.000	9.692	3.660	13.352	100	N	--	--	--	--	--	--		45,000		
Ethyl Acetate	141-78-6	No			280	17	0.000	0.000	3.780	0.207	3.986	100	N	--	--	--	--	--	--		3,400		
Heptane	142-82-5	No			8.6		0.000	0.000	0.116	0.000	0.116	100	N	--	--	--	--	--	--	210,000	3,900		
Hexane	110-54-3	No			4.2		0.000	0.000	0.057	0.000	0.057	100	N	--	--	--	--	--	--		700		
Isopropyl Alcohol	67-63-0	No			44.7	69.6	0.000	0.000	0.603	0.846	1.450	100	N	--	--	--	--	--	--	98,000	7,000		
Methyl ethyl ketone	78-93-3	No			17	11	0.000	0.000	0.229	0.134	0.363	100	N	--	--	--	--	--	--	13,000	5,000		
Methyl Isobutyl Ketone	108-10-1	No			3.3	323	0.000	0.000	0.045	3.927	3.972	100	N	--	--	--	--	--	--	31,000	3,000		
Propylene	115-07-1	No			800	72.5	0.000	0.000	10.799	0.882	11.681	100	N	--	--	--	--	--	--		3,000		

Table 9
2021 Rule 212 Applicability and Evaluation
Bethpage Park Soil Gas Containment System, ISTR, and Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
Bethpage, New York

Flowrates and Normalized Modeling Impacts

Description	Flow (cfm)	AERMOD Normalized Ambient Impact at 1 g/s	
		Hourly ([µg/m^3]/[g/s])	Annual ([µg/m^3]/[g/s])
BPGWCS	1806	888.9	13.9
BPSGCS only - not combined with ISTR	1727	1213.3	33.3
ISTR Only	495	612.7	16.1
BPSGCS - combined with ISTR	2222	1115.5	30.6

Notes:

1. High toxicity air contaminant (HTAC) based on 6 CRR-NY Rule 212-2.2, Table 2 – high toxicity air contaminant list.

2. Maximum effluent conctrations based on sampling performed in 2021. Soil gas effluent from VSP-601, GW vapor from VSP-05, ISTR vapor from KMNO4-5, and combined soil gas/ISTR from VGAC4; Compounds not detected above the laboratory reporting limit are excluded from the air quality impact analysis summary

3. Total for xylenes m, o, and P

4. Emission rate calculated based on maximum effluent concentration and maximum air flow rates measured during the sampling events. Emission rate standardized at 70 ^{o}F and 1 atm.

1,1,1-Trichloroethane (lb/yr) = TCE [µg/m^3] x Air Flow Rate [ft^3/min] x (1 m^3/35.3147 ft^3) x (60 min/hr) x (0.000001 g/1 µg) x (0.0022 lb/g) x 8,760 hrs/yr

The soil gas and ISTR systems were combined in the end of October 2021. Therefore, the annual emissions for each of the soil gas and ISTR systems were estimated based on 304 days (10 months) and 24 hours/day of operations; the annual emissios for combined ISTR/soil gas system are based on 61 days (2 months) and 24 hr/day of operation .

5. Combined 2021 emissions from grounwater, ISTR, and soil gas containment systems

6. 100 lb/yr for non-HTACs, and mass emission limits based on Rule 212-2.2, Table 2 for HTACs

7. For HTACs, no further demonstration is required if the actual facility-wide emissions are less than mass emission limit. For non-HTACs, no further demonstration is required if the actual facility-wide emissions are less than 100 lbs/yr

8. g/s = Concentration [µg/m3] x Air Flow Rate [ft3/min] x (1 m3/35.3147 ft3) x (60 min/hr) x (0.000001 g/1 µg) x (0.0022 lb/g) x hr/3,600 sec x 453.59 g/lb

9. Ambient impact based on AERMOD modeling using normalized rate of 1 g/s is scaled to the actual emission rate of the pollutant. Modeling was performed using the representative meteorological data from the nearest station (Brookhaven/Farmingdale) for the years 2016 through 2020. The maximum impact from all the years was used for the calculations.

Scaled hourly impact (µg/m^3) = AERMOD predicted hourly ambient impact at 1 g/s ([µg/m^3]/[g/s]) x Actual emission rate (g/s)

Scaled annual impact (µg/m^3) = AERMOD predicted annual ambient impact at 1 g/s ([µg/m^3]/[g/s]) x Actual emission rate (g/s)

Example for total scaled hourly for Toluene

Toluene scaled hourly impact (µg/m^3) = (BPGWCS hourly ambient impact at 1 g/s ([µg/m^3]/[g/s]) x Actual emission rate (g/s)) + (BPSGCS hourly ambient impact at 1 g/s ([µg/m3]/[g/s]) x Actual emission rate (g/s)) + (ISTR hourly ambient impact at 1 g/s ([µg/m3]/[g/s]) x Actual emission rate (g/s)) + (BPSGCS/ISTR hourly ambient impact at 1 g/s ([µg/m3]/[g/s]) x Actual emission rate (g/s))

Toluene scaled hourly impact (µg/m^3) = (888.9 (µg/m3)/(g/s) x 2.9E-03(g/s)) + (1,213.3 (µg/m3)/(g/s) x 1.7E-06 (g/s)) + (612.7 (µg/m3)/(g/s) x 1.0E-04 (g/s)) + (1,115.5 (µg/m3)/(g/s) x 2.7E-05 (g/s))

10. Short-term and annual guideline concentrations specified in the NYSDEC DAR-1 AGC/SGC tables revised February 12, 2021.

11. The default AGC -0.1 ug/m3 to be used if the air contaminant does not have a published SGC/AGC. Medium toxicity will be assumed.

Table 10
Summary of Remedial Well Groundwater Sample Analytical Results - VOCs
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
Bethpage, New York

Compound[1] (All Constituent Concentrations in µg/L)	Sample Location: Sample Date: NYSDEC SCGs	RW-1 2/10/2021	RW-1 4/8/2021	RW-1 8/13/2021	RW-1 10/26/2021	RW-1 11/17/2021	RW-1 12/16/2021	RW-2 2/10/2021	RW-2 4/8/2021	RW-2 8/13/2021	RW-2 10/26/2021	RW-2 11/17/2021	RW-2 12/16/2021	RW-3 2/10/2021	RW-3 4/8/2021	RW-3 8/13/2021	RW-3 10/26/2021	RW-3 11/17/2021	RW-3 12/16/2021
Project VOCs																			
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**1.1**	**0.99 J**	**2.8**	**1.1 J**	**1.1**	**1.1**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**2.6**	**< 2.0**	**0.95 J**	**0.82 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethylene	5	< 1.0	< 1.0	< 1.0	**0.54 J**	**0.61 J**	< 1.0	**14.0**	**15.4**	**92.3**	**47.2**	**37.9**	**33.9**	**2.1**	**1.7**	**1.7**	**1.6**	**2.2**	**7.4**
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**12.0**	**13.7**	**80.2**	**20.3**	**16.0**	**13.7**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**59.0**	**61.0**	**423**	**242**	**182**	**201**	**2.0**	**1.3**	**1.5**	**1.2**	**1.8**	**12.4**
trans-1,2-dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**1.8**	**2.3**	**1.1**	**1.5**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**2.8**	**1.8**	**1.2**	**1.2**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**882**	**266**	**99.6**	**25.6**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene-o	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**42.3**	**29.7**	**19.5**	**12**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes-m,p	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**88.3**	**46.1**	**29.5**	**14.3**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Subtotal Project VOCs		**ND**	**ND**	**ND**	**0.54**	**0.61**	**ND**	**86.1**	**91.1**	**1618.1**	**656.5**	**388.9**	**305.1**	**4.1**	**3.0**	**3.2**	**2.8**	**4.0**	**19.8**
Non-Project VOCs																			
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Butadiene	0.5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
4-methyl-2-pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**11.5**	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifluoromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.7 J	< 1.0	14	**1.2**	**0.9**	**0.97 J**	**3.9**	**6.3**	**10.4**
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichloromethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**31.8**	**9.4**	**4.2**	**1.7**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl tert-Butyl Ether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane (Freon 11)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorotrifluoroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1-Chloro-1,1-difluoroethane (Freon 142b)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Subtotal Non-Project VOCs		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**43.3**	**11.1**	**4.2**	**15.7**	**1.2**	**0.9**	**0.97**	**3.9**	**6.3**	**10.4**
Total VOCs[2]		**ND**	**ND**	**ND**	**0.5**	**0.6**	**ND**	**86.1**	**91.1**	**1661.4**	**667.6**	**393.1**	**320.8**	**5.3**	**3.9**	**4.2**	**6.7**	**10.3**	**30.2**
1,4-Dioxane		**0.26**	**0.23**	**0.28**	**0.27**	**0.27**	**0.16 J**	**2.7**	**2.7**	**4.0**	**3.9**	**2.7**	**2.6**	**0.65**	**0.50**	**0.53**	**0.50**	**0.53**	**0.60**

Notes, Abbreviations, Qualifiers, and Units on last page.

Table 10
Summary of Remedial Well Groundwater Sample Analytical Results - VOCs
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
Bethpage, New York

Compound[1] (All Constituent Concentrations in µg/L)	Sample Location: Sample Date: NYSDEC SCGs	RW-4 2/10/2021	RW-4 4/8/2021	RW-4 8/13/2021	RW-4 10/26/2021	RW-4 11/17/2021	RW-4 12/16/2021
Project VOCs							
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethylene	5	**0.56 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylene-o	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes-m,p	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Subtotal Project VOCs		**0.56**	**ND**	**ND**	**ND**	**ND**	**ND**
Non-Project VOCs							
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Butadiene	0.5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
4-methyl-2-pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifluoromethane (Freon 22)	NE	< 5.0	< 5.0	**1.9 J**	**1.6 J**	**1.4 J**	**1.6 J**
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichloromethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methyl tert-Butyl Ether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane (Freon 11)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorotrifluoroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1-Chloro-1,1-difluoroethane (Freon 142b)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Subtotal Non-Project VOCs		**ND**	**ND**	**1.9**	**1.6**	**1.4**	**1.6**
Total VOCs[2]		**0.56**	**ND**	**1.9**	**1.6**	**1.4**	**1.6**
1,4-Dioxane		**0.12 J**	**0.095 J**	**0.24 U**	**0.12 J**	**0.24 U**	**0.24 U**

Notes, Abbreviations, Qualifiers, and Units on last page.

Table 10
Summary of Remedial Well Groundwater Sample Analytical Results - VOCs
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Northrop Grumman,
Bethpage, New York

Notes, Abbreviations, Qualifiers, and Units:

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 EPA Method 8260C (after September 1, 2014). Results validated following protocols specified in Sampling and Analysis Plan in the DRAFT Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). See previous quarterly reports for historical analytical results.

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

ASP	Analytical Services Protocol
ELAP	Environmental Laboratory Approval Program
NE	Not Established
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OLM	Ozone Limited Method
OM&M	Operation, Maintenance, and Monitoring
SCGs	Standards, Criteria, and Guidance values
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
	Bold cell outline indicates an exceedance of an SCG
1.2	Bold data indicates a detection
< 1.0	Compound not detected above its laboratory quantification limit
J	Compound detected below its reporting limit; value is estimated
U	Indicates the compound was analyzed for but not detected above t
ND	Analyte not detected at, or above its laboratory quantification limit.
µg/L	micrograms per liter

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

ARCADIS Design & Consultancy for natural and built assets

Well/Piezometer Identification (All Elevations in ft msl)	Casing Elevation	Baseline [1] 5/8/2009	Q1 2021 2/11/2021	2Q 2021 6/7/2021	Q3 2021 8/3/2021	4Q 2021 11/29/2021
Recovery Wells						
RW-1	125.18	69.75	70.18	70.58	70.39	70.98
RW-2	124.48	72.27	64.48	60.78	60.83	60.28
RW-3	122.84	69.40	66.84	67.14	67.10	67.84
RW-4	121.24	69.25	69.64	69.74	69.75	70.54
Monitoring Wells						
B24MW-2	126.96	74.31	73.08	--	74.16	69.61
B24MW-3	127.11	72.63	74.87	--	73.47	73.76
B30MW-1	128.33	73.55	NA	--	73.12	73.37
BCPMW-1	125.73	73.16	NM	NM	NM	NM
BCPMW-2	126.39	72.55	NM	NM	NM	NM
BCPMW-3	124.94	72.46	NA	NM	NM	NM
BCPMW-4-1	128.71	72.30	71.08	71.19	71.43	71.82
BCPMW-4-2	129.33	72.58	71.36	71.48	71.73	72.09
BCPMW-4-3	129.20	72.32	71.20	71.32	61.53	71.94
BCPMW-5-1	129.37	72.79	NM	NM	NM	NM
BCPMW-6-1	126.01	72.12	71.88	70.96	71.26	71.66
BCPMW-6-2	125.16	71.74	70.52	70.62	70.84	71.33
BCPMW-7-1	124.81	72.00	71.43	70.92	71.12	71.61
MW-200-1	123.49	72.16	70.96	--	72.88	71.90
MW-201-1	121.69	72.04	71.71	--	71.19	71.63
MW-202-1	119.27	71.90	70.72	--	71.15	71.59
MW-203-1	118.25	71.83	70.68	--	70.95	71.55
MW-204-1	124.95	--	NA	--	71.55	69.85
MW-205-1	123.47	--	NA	--	71.19	71.57
MW-206-1	120.80	--	70.70	--	71.14	71.58
MW-207A-1R[2]	120.38	--	70.33	--	70.87	71.40
MW-207B-1R[2]	120.48	--	70.53	--	70.96	71.42
MW-208-1	118.56	--	NA	--	71.11	71.25
Piezometers						
PZ-1a	128.82	72.56	70.68	70.69	70.92	71.37
PZ-1b	128.92	72.47	71.12	71.01	71.28	71.71
PZ-1c	128.96	72.47	71.14	71.23	71.46	71.94
PZ-2a	128.36	72.47	70.96	70.97	71.25	71.64
PZ-2b	128.37	72.43	70.95	70.93	71.18	71.65
PZ-2c	128.55	72.41	71.04	71.14	71.35	71.87
PZ-3	124.99	72.52	70.77	--	71.09	70.53
PZ-4	125.31	72.50	44.06	--	71.19	45.35
PZ-5a	129.07	72.50	71.47	71.82	71.91	72.38
PZ-5b	129.06	72.50	71.34	71.62	71.86	72.35
PZ-5c	128.84	--	71.31	71.62	71.44	72.22
PZ-6a	125.67	72.50	70.67	70.79	71.00	71.55
PZ-6b	125.74	72.50	70.17	70.71	70.89	71.45
PZ-7a	125.10	72.50	70.35	71.13	71.31	71.78
PZ-7b	125.06	72.50	70.78	70.83	70.98	71.61
PZ-8a	127.63	--	70.65	70.73	71.04	71.44
PZ-8b	127.54	--	70.73	69.78	71.11	71.50
PZ-8c	127.57	--	70.92	71.01	73.96	70.76
PZ-9a	125.30	--	NM	NM	NM	NM
PZ-10a	125.27	--	71.72	--	72.27	70.56

Notes and abbreviations on last page.

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

ARCADIS Design & Consultancy for natural and built assets

Notes and Abbreviations:

1.	Baseline readings were taken prior to system startup, which occurred on July 21, 2009.
2.	Wells installed by EMAGIN in 2017 to replace monitoring wells MW-207-1a (replaced by MW-207A-1R) and MW-207-1b (replaced by MW-207B-1R) installed by ERM in 2015.
ft msl	Feet relative to mean sea level
NM	Not measured due to In-Situ Thermal Remediation activities
--	Not measured
NA	Not Accessible obstructed by snow

Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	B24MW-2 12/29/2016	B24MW-2 8/4/2017	B24MW-2 8/9/2018	B24MW-2 7/18/2019	B24MW-2 7/16/2020	B24MW-2 7/23/2021
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	**2.4**	**2.1**	**2.5**	**4.0**	**6.1**	**4.2**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**2.4**	**2.1**	**2.5**	**4**	**6.1**	**4.2**
Project VOCs[5]		**2.4**	**2.1**	**2.5**	**4**	**6.1**	**4.2**
1,4-Dioxane[6]		**0.417**	**0.348**	**0.16 J**	**0.29**	**0.91**	**0.52**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	B24MW-3 1/20/2017	B24MW-3 8/2/2017	B24MW-3 8/9/2018	B24MW-3 7/16/2019	B24MW-3 7/9/2020	B24MW-3 7/21/2021
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	**0.59 J**	< 1.0	**3.2**	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	< 1.0	< 1.0	**1.3**	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**ND**	**0.59**	**ND**	**4.5**	**ND**	**ND**
Project VOCs[5]		**ND**	**0.59**	**ND**	**4.5**	**ND**	**ND**
1,4-Dioxane[6]		**0.918**	**0.675**	**0.11 J**	< 0.24	**0.31**	**0.1 J**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	B30MW-1 1/4/2017	B30MW-1 8/3/2017	B30MW-1 8/9/2018	B30MW-1 7/17/2019	B30MW-1 7/21/2020	B30MW-1 7/23/2021
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Project VOCs[5]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
1,4-Dioxane[6]		< 0.200	< 0.200	< 0.24	< 0.24	< 0.24	< 0.24

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: / Sample Date:	BCPMW-4-1 12/30/2015	BCPMW-4-1 12/28/2016	BCPMW-4-1 7/31/2017	BCPMW-4-1 7/24/2018	BCPMW-4-1 7/11/2019	BCPMW-4-1 7/20/2020	BCPMW-4-1 7/20/2021
	NYSDEC SCGs							
1,1,1-Trichloroethane	5	**7.3**	**0.36 J**	< 1.0	< 1.0	< 1.0	**1.4**	**< 1.0**
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	**1.7**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	**27.1**	**3.2**	**1.6**	**0.87 J**	**0.73 J**	**6.2**	**3.4**
1,1-Dichloroethene	5	**1.7**	**0.42 J**	< 1.0	< 1.0	< 1.0	< 1.0	0.60 J
1,2-Dichloroethane	0.6	**1.3**	**0.87 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	**1.5**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	**1.1**	**1.4**	**0.76 J**	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**252 D**	**81.4**	**53.5**	**30.7**	**20.7**	**96.7**	**38.6**
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	**1.1**	**0.50 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	**0.86 J**	**0.49 J**	< 1.0	< 1.0	< 1.0	< 1.0	0.99 J
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	**81.5**	**48.2**	**21.9**	**13.5**	**8.9**	**32.9**	**46.8**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	**197**	**3.3**	< 1.0	< 1.0	< 1.0	**5.6**	**6.8**
o-Xylene	5	**0.70 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**570**	**140**	**78**	**45**	**30**	**142.8**	**97.19**
Project VOCs[5]		**570**	**140**	**77**	**45**	**30**	**142.8**	**97.19**
1,4-Dioxane[6]		**37.7**	**39.3**	**2.64**	**0.68**	**7.4**	**31**	**15**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location:	BCPMW-4-2	BCPMW-4-2 (REP)	BCPMW-4-2	BCPMW-4-2	BCPMW-4-2	BCPMW-4-2	BCPMW-4-2
	Sample Date:	12/22/2016	12/22/2016	7/31/2017	7/24/2018	7/11/2019	7/20/2020	8/2/2021
	NYSDEC SCGs							
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
1,1-Dichloroethane	5	**0.22 J**	**0.23 J**	**0.25 J**	**0.87 J**	**0.97 J**	**0.59**	**< 10**
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 100
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 100
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Chloroform	7	**3.9**	**3.6**	**2.3**	**1.3**	< 1.0	< 1.0	< 10
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
cis-1,2-Dichloroethene	5	**16.9**	**17.4**	**19.9**	**58.1**	**68.5**	**54.6**	**342**
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	13.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Tetrachloroethene	5	< 1.0	**0.27 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1230
trans-1,2-Dichloroethene	5	**0.62 J**	**0.58 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 10
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
Trichloroethene	5	**18.0**	**18.1**	**17.6**	**61.5**	**37.0**	**44.1**	**42.4**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**0.97**	**33.9**
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	13.6
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	27.6
Total VOCs[4]		**40**	**40**	**40**	**120**	**110**	**100.26**	**1689.5**
Project VOCs[5]		**36**	**37**	**38**	**120**	**110**	**100.26**	**1702.5**
1,4-Dioxane[6]		**2.34**	**2.40**	**1.35**	**2.4**	**0.77**	**10**	**27**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: / Sample Date:	BCPMW-4-3 12/22/2016	BCPMW-4-3 8/3/2017	BCPMW-4-3 8/8/2018	BCPMW-4-3 7/11/2019	BCPMW-4-3 7/21/2020	BCPMW-4-3 8/2/2021
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	**0.52 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**0.52**	**ND**	**ND**	**ND**	**ND**	**ND**
Project VOCs[5]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
1,4-Dioxane[6]		**0.776**	**0.616**	**0.43**	**0.41**	**0.44**	**0.26**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: / Sample Date:	BCPMW-6-1 12/27/2016	BCPMW-6-1 8/1/2017	BCPMW-6-1 8/6/2018	BCPMW-6-1 7/15/2019	BCPMW-6-1 7/13/2020	BCPMW-6-1 8/2/2021
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	**3.7 J**	**4.1 J**	**3.0**	**< 5.0**
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**ND**	**ND**	**3.7**	**4.1**	**3**	**ND**
Project VOCs[5]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
1,4-Dioxane[6]		< 0.200	< 0.200	< 0.24	< 0.23	< 0.23	< 0.23

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: / Sample Date:	BCPMW-6-2 12/27/2016	BCPMW-6-2 8/2/2017	BCPMW-6-2 8/6/2018	BCPMW-6-2 7/16/2019	BCPMW-6-2 7/13/2020	BCPMW-6-2 7/20/2021
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	**0.21 J**	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	< 1.0	**0.97 J**	**0.92 J**	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**ND**	**0.21**	**0.97**	**0.92**	**ND**	**ND**
Project VOCs[5]		**ND**	**0.21**	**0.97**	**0.92**	**ND**	**ND**
1,4-Dioxane[6]		< 0.200	< 0.100	**0.092 J**	**0.096 J**	**0.16**	**0.092 J**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: / Sample Date:	BCPMW-7-1 12/28/2016	BCPMW-7-1 8/1/2017	BCPMW-7-1 8/3/2018	BCPMW-7-1 8/8/2018	BCPMW-7-1 7/10/2019	BCPMW-7-1 7/9/2020	BCPMW-7-1 7/21/2021
	NYSDEC SCGs							
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Project VOCs[5]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
1,4-Dioxane[6]		< 0.200	< 0.200	--	< 0.24	< 0.24	< 0.24	< 0.23

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	MW-200-1 1/17/2017	MW-200-1 8/7/2017	MW-200-1 7/30/2018	MW-200-1 7/8/2019	MW-200-1 7/14/2020	MW-200-1 7/27/2021	MW-200-1 11/30/2021
	NYSDEC SCGs							
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Project VOCs[5]		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
1,4-Dioxane[6]		**0.725**	**0.537**	**0.40**	**0.26**	**0.35**	**0.13 J**	**0.11 JB**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	MW-201-1 1/18/2017	MW-201-1 8/8/2017	MW-201-1 8/1/2018	MW-201-1 7/8/2019	MW-201-1 7/14/2020	MW-201-1 7/30/2021	MW-201-1 12/1/221
	NYSDEC SCGs							
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**2.0**	**1.5**	**0.87 J**	< 1.0	**0.6**	**< 1.0**	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	**1.6**	**1.3**	**0.90 J**	**0.69 J**	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**3.6**	**2.8**	**1.8**	**0.69**	**0.6**	**ND**	**ND**
Project VOCs[5]		**3.6**	**2.8**	**1.8**	**0.69**	**0.6**	**ND**	**ND**
1,4-Dioxane[6]		**0.655**	**0.676**	**0.40**	**0.30**	**0.47**	**0.34**	**0.22 JB**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	MW-202-1 1/19/2017	MW-202-1 8/9/2017	MW-202-1 7/31/2018	MW-202-1 7/10/2019	MW-202-1 7/17/2020	MW-202-1 7/29/2021	MW-202-1 12/2/2021
	NYSDEC SCGs							
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	**0.66 J**	**0.80 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	**0.33 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**0.45 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	**1.3**	**1.4**	**1.1**	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	**0.68 J**	**0.96 J**	**0.70 J**	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**3.4**	**3.2**	**1.8**	**ND**	**ND**	**ND**	**ND**
Project VOCs[5]		**3.4**	**3.2**	**1.8**	**ND**	**ND**	**ND**	**ND**
1,4-Dioxane[6]		**0.396**	**0.518**	**0.30**	**0.17 J**	**0.24**	**0.26**	**0.42 B**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	MW-203-1 1/20/2017	MW-203-1 8/10/2017	MW-203-1 8/2/2018	MW-203-1 7/9/2019	MW-203-1 7/15/2020	MW-203-1 7/26/2021	MW-203-1 12/3/221
	NYSDEC SCGs							
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	**0.30 J**	**0.34 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	**2.0 J**	**3.3 J**	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	**0.27 J**	**0.35 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**0.92 J**	**0.55 J**	< 1.0	< 1.0	< 1.0	0.61 J	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	**0.76 J**	**1.2**	< 1.0	**1.2**	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	**3.9**	**2.9**	**2.6**	**2.3**	**3.2**	**2.6**	**2.5**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**8.2**	**8.6**	**2.6**	**3.5**	**3.2**	**3.2**	**2.5**
Project VOCs[5]		**5.9**	**5.0**	**2.6**	**3.5**	**3.2**	**3.2**	**2.5**
1,4-Dioxane[6]		**0.401**	**0.262**	**0.19 J**	**0.24**	**0.27**	**--**	**0.22 J**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	MW-204-1 1/17/2017	MW-204-1 8/7/2017	MW-204-1 (REP) 8/7/2017	MW-204-1 7/30/2018	MW-204-1 7/8/2019	MW-204-1 7/14/2020	MW-204-1 7/27/2021	MW-204-1 11/30/2021
	NYSDEC SCGs								
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	**0.24 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**3.4**	< 1.0	< 1.0	< 1.0	< 1.0	**1.0**	**3.2**	**0.62 J**
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	**4.1**	**2.4**	**2.5**	**0.63 J**	< 1.0	**1.7**	**3.0**	**2.2**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**7.7**	**2.4**	**2.5**	**0.63**	**ND**	**2.7**	**6.2**	**2.8**
Project VOCs[5]		**7.5**	**2.4**	**2.5**	**0.63**	**ND**	**2.7**	**6.2**	**2.8**
1,4-Dioxane[6]		**0.350**	**0.306**	**0.319**	**0.25 J**	**0.14 J**	< 0.23	< 0.24	<0.23

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: / Sample Date:	MW-204-1 (REP) 11/3/2021
	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	< 1.0
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	< 0.50
Bromodichloromethane	50	< 1.0
Bromoform	50	< 1.0
Bromomethane	5	< 2.0
Carbon Disulfide	60	< 2.0
Carbon Tetrachloride	5	< 1.0
Chlorobenzene	5	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0
Chloroethane	5	< 1.0
Chloroform	7	< 1.0
Chloromethane	5	< 1.0
cis-1,2-Dichloroethene	5	**0.60 J**
cis-1,3-Dichloropropene	0.4	< 1.0
Chlorodibromomethane	50	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0
Ethylbenzene	5	< 1.0
Methyl-Tert-Butylether	5	< 1.0
Methylene Chloride	5	< 2.0
Styrene (Monomer)	5	< 1.0
Tetrachloroethene	5	< 1.0
Toluene	5	< 1.0
trans-1,2-Dichloroethene	5	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0
Trichloroethene	5	**2.1**
Trichlorotrifloroethane (Freon 113)	5	< 5.0
Vinyl Chloride	2	< 1.0
o-Xylene	5	< 1.0
m,p-Xylene	5	< 1.0
Total VOCs[4]		**2.7**
Project VOCs[5]		**2.7**
1,4-Dioxane[6]		<0.24

See Notes and Abbreviations on Last Page

Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	MW-205-1 1/18/2017	MW-205-1 8/8/2017	MW-205-1 8/1/2018	MW-205-1 7/8/2019	MW-205-1 7/30/2021	MW-205-1 12/1/2021
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	**0.64 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**0.39 J**	**0.62 J**	**0.76 J**	< 1.0	< 1.0	**0.85 J**
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	**0.91 J**	**0.41 J**	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**1.9**	**1.0**	**0.76**	**ND**	**ND**	**0.85**
Project VOCs[5]		**1.3**	**1.0**	**0.76**	**ND**	**ND**	**0.85**
1,4-Dioxane[6]		**0.366**	**0.714**	**0.40**	**0.16 J**	**< 0.23**	<0.24

See Notes and Abbreviations on Last Page

Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: Sample Date:	MW-206-1 1/19/2017	MW-206-1 8/9/2017	MW-206-1 7/31/2018	MW-206-1 7/9/2019	MW-206-1 7/17/2020	MW-206-1 7/29/2021	MW-206-1 12/2/2021
	NYSDEC SCGs							
1,1,1-Trichloroethane	5	**0.27 J**	**0.76 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	**0.74 J**	**3.0**	**0.96 J**	< 1.0	**0.58**	**1.7**	**0.83 J**
1,1-Dichloroethene	5	**0.27 J**	**1.7**	< 1.0	< 1.0	< 1.0	0.86 J	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**0.92 J**	**1.3**	**0.56 J**	< 1.0	< 1.0	**1.7**	**1.3**
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	**0.56 J**	**2.8**	**1.4**	< 1.0	**1.3**	**1.6**	**1.3**
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	**0.65 J**	**0.79 J**	< 1.0	**0.75**	**0.76 J**	**0.73 J**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**2.8**	**10**	**3.7**	**ND**	**2.6**	**6.6**	**4.16**
Project VOCs[5]		**2.8**	**10**	**3.7**	**ND**	**2.6**	**6.6**	**4.16**
1,4-Dioxane[6]		**0.301**	**1.06**	**0.34**	**0.21 J**	**0.59**	**0.32**	**0.40 B**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location:	MW-207A-1R	MW-207B-1R	MW-207A-1R	MW-207A-1R	MW-207B-1R	MW-207B-1R
	Sample Date:	7/10/2019	7/10/2019	7/16/2020	7/28/2021	7/16/2020	7/28/2021
	NYSDEC SCGs						
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	< 1.0	**0.88 J**	< 1.0	< 1.0	**0.69**	**0.75 J**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**ND**	**0.88**	**ND**	**ND**	**0.69**	**0.75**
Project VOCs[5]		**ND**	**0.88**	**ND**	**ND**	**0.69**	**0.75**
1,4-Dioxane[6]		**0.45**	**0.68**	**0.45**	**0.3**	**0.87**	**0.62**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: / Sample Date:	MW-208-1 1/20/2017	MW-208-1 8/10/2017	MW-208-1 8/2/2018	MW-208-1 (REP) 8/2/2018	MW-208-1 7/9/2019	MW-208-1 (REP) 7/9/2019	MW-208-1 7/15/2020	MW-208-1 7/26/2021
	NYSDEC SCGs								
1,1,1-Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	5	**2.1**	**1.1**	**0.61 J**	< 1.0	**0.69 J**	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	5	**0.70 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	1	**0.35 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
Acetone	NE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	7	**2.8**	**1.4**	**0.75 J**	**0.71 J**	**0.53 J**	**0.62 J**	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**597**	**268**	**129**	**135**	**176 J**	**166**	**44.6**	**24.6**
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-Tert-Butylether	5	**0.43 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	**0.60 J**	**1.6**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	5	**10.9**	**12.8**	**11.7**	**11.4**	**9.1**	**9.4**	**4.5**	**2.4**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Chloride	2	**3.3**	**1.8**	**1.1**	**0.98 J**	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[4]		**620**	**290**	**140**	**150**	**190**	**180**	**49.1**	**27.0**
Project VOCs[5]		**610**	**290**	**140**	**150**	**190**	**180**	**49.1**	**27.0**
1,4-Dioxane[6]		**1.02**	**0.800**	**0.51**	**0.35**	**0.38**	**0.40**	**0.40**	**--**

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Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Compound [1,2,3] (All Constituent Concentrations in ug/L)	Sample Location: / Sample Date:	MW-208-2 (REP) 7/16/2020	MW-208-2 (REP) 7/26/2021
	NYSDEC SCGs		
1,1,1-Trichloroethane	5	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	5	< 1.0	< 1.0
1,1,2-Trichloroethane	1	< 1.0	< 1.0
1,1-Dichloroethane	5	< 1.0	< 1.0
1,1-Dichloroethene	5	< 1.0	< 1.0
1,2-Dichloroethane	0.6	< 1.0	< 1.0
1,2-Dichloropropane	1	< 1.0	< 1.0
2-Butanone	NE	< 10	< 10
2-Hexanone	50	< 5.0	< 5.0
4-Methyl-2-Pentanone	50	< 5.0	< 5.0
Acetone	NE	< 10	< 10
Benzene	1	< 0.50	< 0.50
Bromodichloromethane	50	< 1.0	< 1.0
Bromoform	50	< 1.0	< 1.0
Bromomethane	5	< 2.0	< 2.0
Carbon Disulfide	60	< 2.0	< 2.0
Carbon Tetrachloride	5	< 1.0	< 1.0
Chlorobenzene	5	< 1.0	< 1.0
Chlorodifloromethane (Freon 22)	NE	< 5.0	< 5.0
Chloroethane	5	< 1.0	< 1.0
Chloroform	7	< 1.0	< 1.0
Chloromethane	5	< 1.0	< 1.0
cis-1,2-Dichloroethene	5	**44.4**	**25.8**
cis-1,3-Dichloropropene	0.4	< 1.0	< 1.0
Chlorodibromomethane	50	< 1.0	< 1.0
Dichlorodifloromethane (Freon 12)	5	< 2.0	< 2.0
Ethylbenzene	5	< 1.0	< 1.0
Methyl-Tert-Butylether	5	< 1.0	< 1.0
Methylene Chloride	5	< 2.0	< 2.0
Styrene (Monomer)	5	< 1.0	< 1.0
Tetrachloroethene	5	< 1.0	< 1.0
Toluene	5	< 1.0	< 1.0
trans-1,2-Dichloroethene	5	< 1.0	< 1.0
trans-1,3-Dichloropropene	0.4	< 1.0	< 1.0
Trichloroethene	5	**4.5**	**2.6**
Trichlorotrifloroethane (Freon 113)	5	< 5.0	< 5.0
Vinyl Chloride	2	< 1.0	< 1.0
o-Xylene	5	< 1.0	< 1.0
m,p-Xylene	5	< 1.0	< 1.0
Total VOCs[4]		**48.9**	**28.4**
Project VOCs[5]		**48.9**	**28.4**
1,4-Dioxane[6]		**0.41**	**--**

See Notes and Abbreviations on Last Page

Table 12
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Grondwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Notes and Abbreviations

1. Historical data available in previous quarterly reports.
2. Results are validated at 20% frequency, per protocols specified in Sampling and Analysis Plan in the Bethpage Park Groundwater Containment System OM&M Manual (ARCADIS 2016).
3. Samples analyzed for the TCL VOCs using USEPA Method 8260C.
4. "Total VOCs" represents the sum of individual concentrations of the VOCs detected. TVOCs were rounded to two significant figures.
5. "Project VOCs" represents the sum of individual 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.
6. Samples analyzed for 1,4-Dioxane using USEPA Method 8270D SIM (prior to 2016), per USEPA Method 522 SIM (2016-2017) and per USEPA Method 8270D SIM (since 2018).

	Bolded outline indicates an exceedance of an SCG.
< 5	Compound not detected above its laboratory quantification limit.
2.1	Bold value indicates a detection.
D	Constituent identified from secondary dilution
J	Result is estimated
ug/L	Micrograms per liter
NE	Not Established
--	Not Analyzed
NYSDEC	New York State Department of Environmental Conservation
REP	Field Replicate QA/QC sample
SCGs	Standards, Criteria, and Guidance values
SIM	Selective Ion Monitoring
TCL	Target compound list.
USEPA	United State Environmental Protection Agency
VOC	Volatile Organic Compound
OU	Operable Unit
ND	Analyte not detected at, or above its laboratory quantification limit.

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	BCPMW-4-1 7/31/2017	BCPMW-4-1 7/24/2018	*BCPMW-4-1 7/11/2019*	*BCPMW-4-1 7/20/2020*	*BCPMW-4-1 7/20/2021*
	NYSDEC SCGs					
Cadmim, Total	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	< 10	< 10	***19.4***	***30.3***	***45.6***
Chromim, Dissolved	50	< 10	< 10	***17.2***	***27.6***	***44.4***

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	BCPMW-4-2 7/31/2017	BCPMW-4-2 7/24/2018	*BCPMW-4-2 7/11/2019*	*BCPMW-4-2 7/20/2020*	*BCPMW-4-2 8/2/2021*
	NYSDEC SCGs					
Cadmim, Total	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	< 10	< 10	*< 10*	*< 10*	*< 10*
Chromim, Dissolved	50	< 10	< 10	*< 10*	*< 10*	*< 10*

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	BCPMW-4-3 8/3/2017	BCPMW-4-3 8/8/2018	*BCPMW-4-3 7/11/2019*	*BCPMW-4-3 7/21/2020*	*BCPMW-4-3 8/2/2021*
	NYSDEC SCGs					
Cadmim, Total	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	< 10	< 10	*< 10*	*< 10*	*< 10*
Chromim, Dissolved	50	< 10	< 10	*< 10*	*< 10*	*< 10*

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	BCPMW-6-1 8/1/2017	BCPMW-6-1 8/6/2018	*BCPMW-6-1 7/15/2019*	*BCPMW-6-1 7/13/2020*	*BCPMW-6-1 8/2/2021*	BCPMW-6-2 8/2/2017	BCPMW-6-2 8/6/2018	BCPMW-6-2 7/13/2020	BCPMW-6-2 7/20/2021
	NYSDEC SCGs									
Cadmim, Total	5	< 3.0	< 3.0	< *3.0*	< *3.0*	< *3.0*	**3.3**	< 3.0	< 3.0	< 3.0
Cadmim, Dissolved	5	< 3.0	< 3.0	< *3.0*	< *3.0*	< *3.0*	< 3.0	< 3.0	< 3.0	< 3.0
Chromim, Total	50	< 10	< 10	< *10*	< *10*	< *10*	**87.7**	< 10	**19.8**	< 10
Chromim, Dissolved	50	< 10	< 10	< *10*	< *10*	< *10*	< 10	< 10	< 10	< 10

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	BCPMW-7-1 8/1/2017	BCPMW-7-1 8/3/2018	BCPMW-7-1 8/8/2018	*BCPMW-7-1 7/10/2019*	*BCPMW-7-1 7/9/2020*	*BCPMW-7-1 7/21/2021*	MW-200-1 8/7/2017	MW-200-1 7/30/2018	*MW-200-1 7/8/2019*	*MW-200-1 7/14/2020*	*MW-200-1 7/27/2021*
	NYSDEC SCGs											
Cadmim, Total	5	< 3.0	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	< 10	< 10	< 10	*< 10*	**11.6**	**11.1**	**11.1**	**12.4**	***11.5***	***15.4***	***14.3***
Chromim, Dissolved	50	< 10	< 10	< 10	*< 10*	*< 10*	*< 10*	< 10	< 10	*< 10*	*< 10*	*< 10*

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	MW-201-1 8/8/2017	MW-201-1 8/1/2018	*MW-201-1* 7/8/2019	*MW-201-1* 7/14/2020	*MW-201-1* 7/30/2021
	NYSDEC SCGs					
Cadmim, Total	5	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Cadmim, Dissolved	5	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Chromim, Total	50	**11.7**	< 10	< 10	**18**	< 10
Chromim, Dissolved	50	< 10	< 10	< 10	< 10	< 10

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	MW-202-1 8/9/2017	MW-202-1 7/31/2018	*MW-202-1 7/10/2019*	*MW-202-1 7/17/2020*	*MW-202-1 7/29/2021*
	NYSDEC SCGs					
Cadmim, Total	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	**73.4**	**21.4**	***26.5***	**71.4**	**10.8**
Chromim, Dissolved	50	**14.4**	< 10	*< 10*	***13.2***	*< 10*

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	MW-203-1 8/10/2017	MW-203-1 8/2/2018	*MW-203-1 7/9/2019*	*MW-203-1 7/15/2020*	*MW-203-1 7/26/2021*
	NYSDEC SCGs					
Cadmim, Total	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	**138**	**22.7**	< 10	**13.1**	< 10
Chromim, Dissolved	50	< 10	< 10	< 10	< 10	< 10

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	MW-204-1 8/7/2017	MW-204-1 (REP) 8/7/2017	MW-204-1 7/30/2018	*MW-204-1 7/8/2019*	*MW-204-1 7/14/2020*	*MW-204-1 7/27/2021*	MW-205-1 8/8/2017	MW-205-1 8/1/2018	*MW-205-1 7/8/2019*	*MW-205-1 7/14/2020*	*MW-205-1 7/30/2021*
	NYSDEC SCGs											
Cadmim, Total	5	< 3.0	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	**175**	**171**	**239**	***30.1***	***18.9***	***22.3***	**134**	**88.7**	***70.2***	***242***	**39.7**
Chromim, Dissolved	50	**87.0**	**85.3**	**89.1**	*< 10*	*< 10*	*< 10*	< 10	**23.7**	***22.1***	***80***	**22.8**

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	MW-206-1 8/9/2017	MW-206-1 7/31/2018	*MW-206-1 7/9/2019*	*MW-206-1 7/17/2020*	*MW-206-1 7/29/2021*	*MW-207A-1R 7/10/2019*	*MW-207A-1R 7/16/2020*	*MW-207A-1R 7/28/2021*	*MW-207B-1R 7/10/2019*	*MW-207B-1R 7/16/2020*	*MW-207B-1R 7/28/2021*
	NYSDEC SCGs											
Cadmim, Total	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	**82.0**	**13.6**	***10.7***	***24.7***	***20.2***	*< 10*	*< 10*	*< 10*	***86.6***	***215***	***98.7***
Chromim, Dissolved	50	**10.7**	< 10	*< 10*	*< 10*	*< 10*	*< 10*	*< 10*	*< 10*	*< 10*	*< 10*	***12.8***

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

Constituents (All Constituent Concentrations in µg/L)	Sample Location: Sample Date:	MW-208-1 8/10/2017	MW-208-1 8/2/2018	MW-208-1 (REP) 8/2/2018	MW-208-1 7/9/2019	MW-208-1 (REP) 7/9/2019	MW-208-1 7/15/2020	MW-208-1 (REP) 7/15/2020	MW-208-1 7/26/2021
	NYSDEC SCGs								
Cadmim, Total	5	< 3.0	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*
Cadmim, Dissolved	5	< 3.0	< 3.0	< 3.0	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*	*< 3.0*
Chromim, Total	50	< 10	< 10	< 10	*< 10*	*< 10*	*< 10*	*< 10*	*< 10*
Chromim, Dissolved	50	< 10	< 10	< 10	*< 10*	*< 10*	*< 10*	*< 10*	*< 10*

Table 13
Concentrations of Metals in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds), Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Notes and Abbreviations:

1. Historical data available in previous quarterly reports.
2. Results are validated at 20% frequency, per protocols specified in Sampling and Analysis Plan in the Bethpage Park Groundwater Containment System OM&M Manual (ARCADIS 2016).
3. Samples analyzed for metals using USEPA Method 6010.

ug/L	Micrograms per liter
	Indicates an exceedance of an SCG
12.5	Bold indicates a detection
< 3.0	Compound not detected above its laboratory quantification limit
NYSDEC	New York State Department of Environmental Conservation
SCGs	Standards, Criteria, and Guidance values
OU	Operable Unit

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

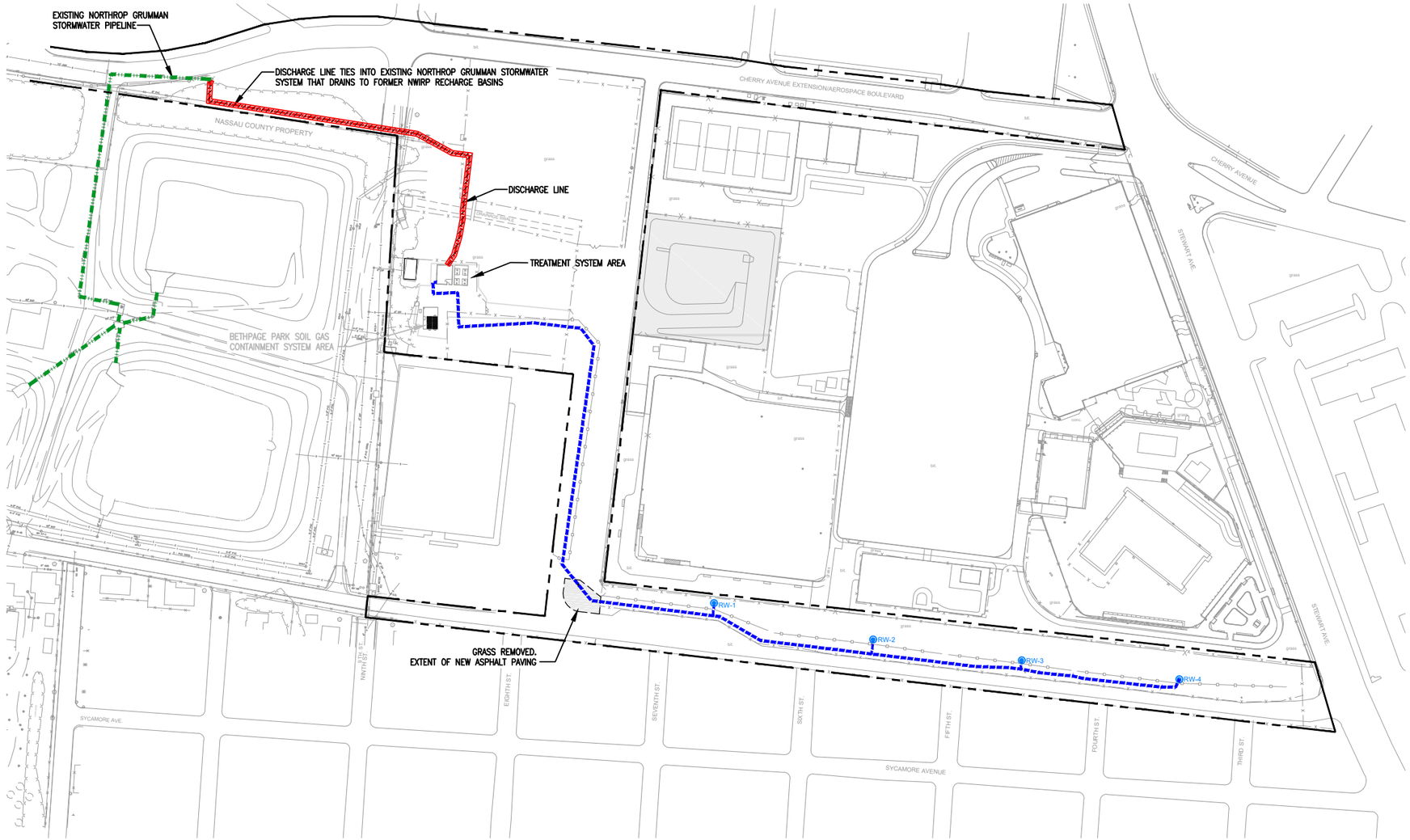
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

SITE LOCATION

ARCADIS

FIGURE

1



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'

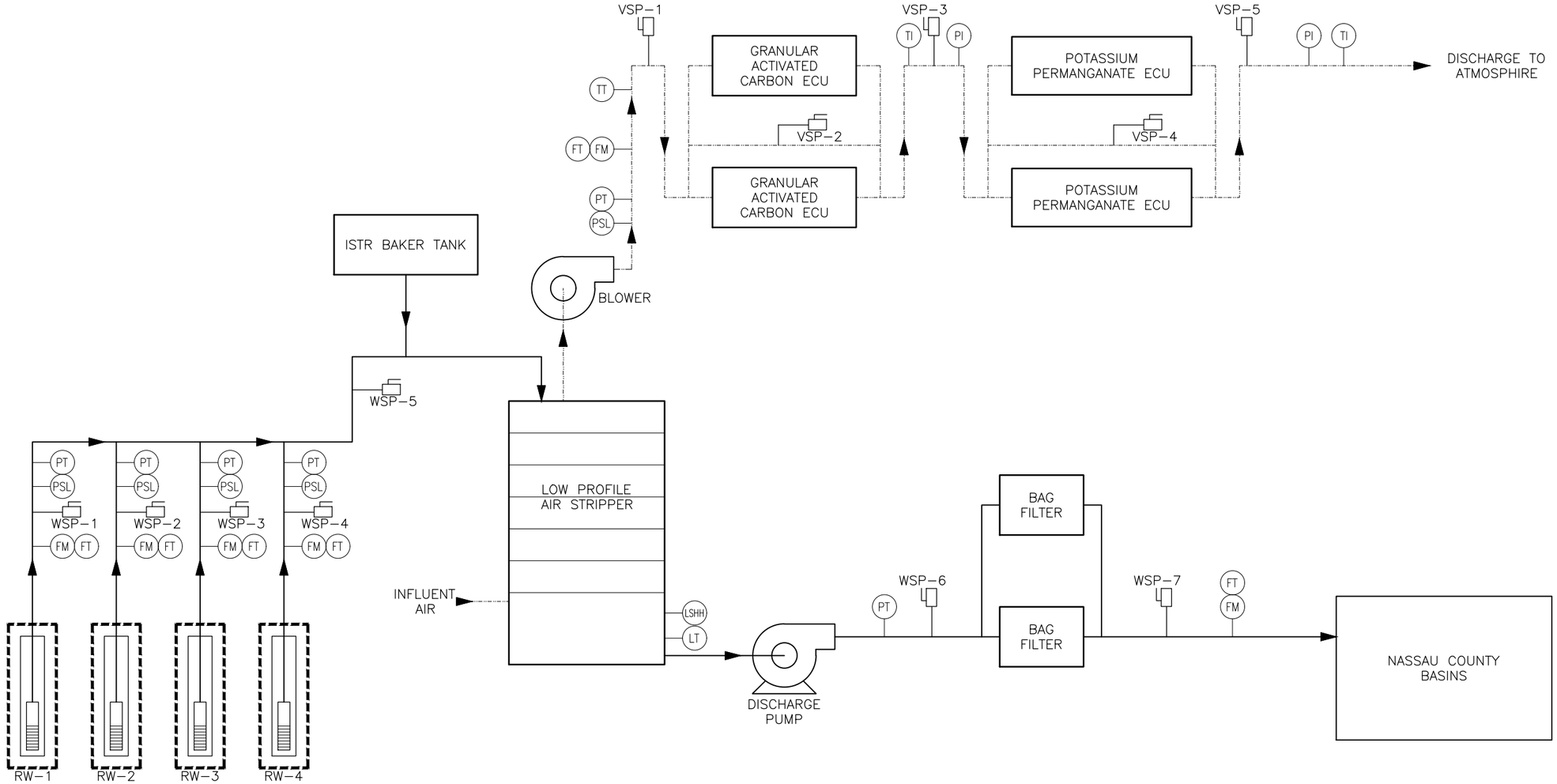
SCALE IN FEET

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

SITE AND GROUNDWATER CONTAINMENT SYSTEM

ARCADIS

FIGURE 2



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, PROCESS FLOW DIAGRAM, AND MONITORING LOCATIONS

ARCADIS

FIGURE 3

C:\Users\iamiceli\BIM 360\Arcadis\ANA - Northrop Grumman\Project Files\OU3 Regional Groundwater\2021\01-DWG\GRNDWTR TRTMNT SYS PROCESS SCHEM.dwg LAYOUT: 3 SAVED: 5/12/2021 2:43 PM ACADVER: 23.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 5/12/2021 2:52 PM BY: IAMICELI, KIMBERLY
XREFS: IMAGES: PROJECTNAME: ----

CHERRY AVENUE EXTENSION/AEROSPACE BOULEVARD

FORMER NURSERY AREAS

BALL FIELDS

grass

OU3 BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM (BPGWCS) BUILDINGS

DRAINAGE SWALE

OU3 BETHPAGE PARK SOIL GAS CONTAINMENT SYSTEM (BPSGCS) BUILDINGS

McKAY FIELD

ACCESS ROAD

FORMER TRANSFORMER AREA

ARUMDAUN PRESBYTERIAN CHURCH VISION CENTER (FORMER GRUMMAN PLANT 24)

PARKING LOT

B24MW-3

GRASS REMOVED
EXTENT OF NEW ASPHALT PAVING

B30MW-1

TENNIS COURTS

PADDLEBALL COURTS

BASKETBALL COURTS

B24MW-2

RECHARGE BASIN

SKATE PARK

TOWN STORAGE AREA

STORAGE BUILDING

BCPMW-1

PZ-9A

BLDG

GATE

PZ-10A

PARKING LOT

BASEBALL FIELD

BCPMW-5-1

BCPMW-3

PLAYGROUND

BCPMW-2

PZ-5A

PZ-5B

PZ-5C

RW-1

BCPMW-4-2

BCPMW-4-3

BCPMW-4-1

PZ-1A

PZ-1B

PZ-1C

RW-2

PZ-2A

PZ-2B

PZ-2C

PZ-8B

PZ-8A

PZ-8C

RW-3

PZ-6A

PZ-6B

PZ-4

PZ-3

FORMER GRUMMAN PLANT 24 ACCESS ROAD PROPERTY

BCPMW-6-1

BCPMW-6-2

RW-4

PZ-7A

PZ-7B

BCPMW-7-1

MW-204-1

MW-205-1

MW-206-1

MW-200-1

MW-201-1

MW-202-1

MW-203-1

MW-207-1a

MW-207-1b

MW-208-1

EIGHTH ST.

SEVENTH ST.

SIXTH ST.

FIFTH ST.

FOURTH ST.

THIRD ST.

SYCAMORE AVENUE

CHERRY AVENUE

STEWART AVE.

BETHPAGE HIGH SCHOOL PROPERTY

POOL HOUSE

INGROUND SWIMMING POOL

1 STORY MASONRY

POOL AREA

conc.

bit.

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'

APPROXIMATE 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:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(On)ON*;*OFF;*REF*
C:\Users\asanchez\Onedrive - ARCADIS\BIM 360 Docs\NORTHROP GRUMMAN\OMM\411686\PTI\4B01.dwg LAYOUT: 4 SAVED: 8/15/2018 7:41 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 8/16/2018 1:19 PM BY: SANCHEZ, ADRIAN
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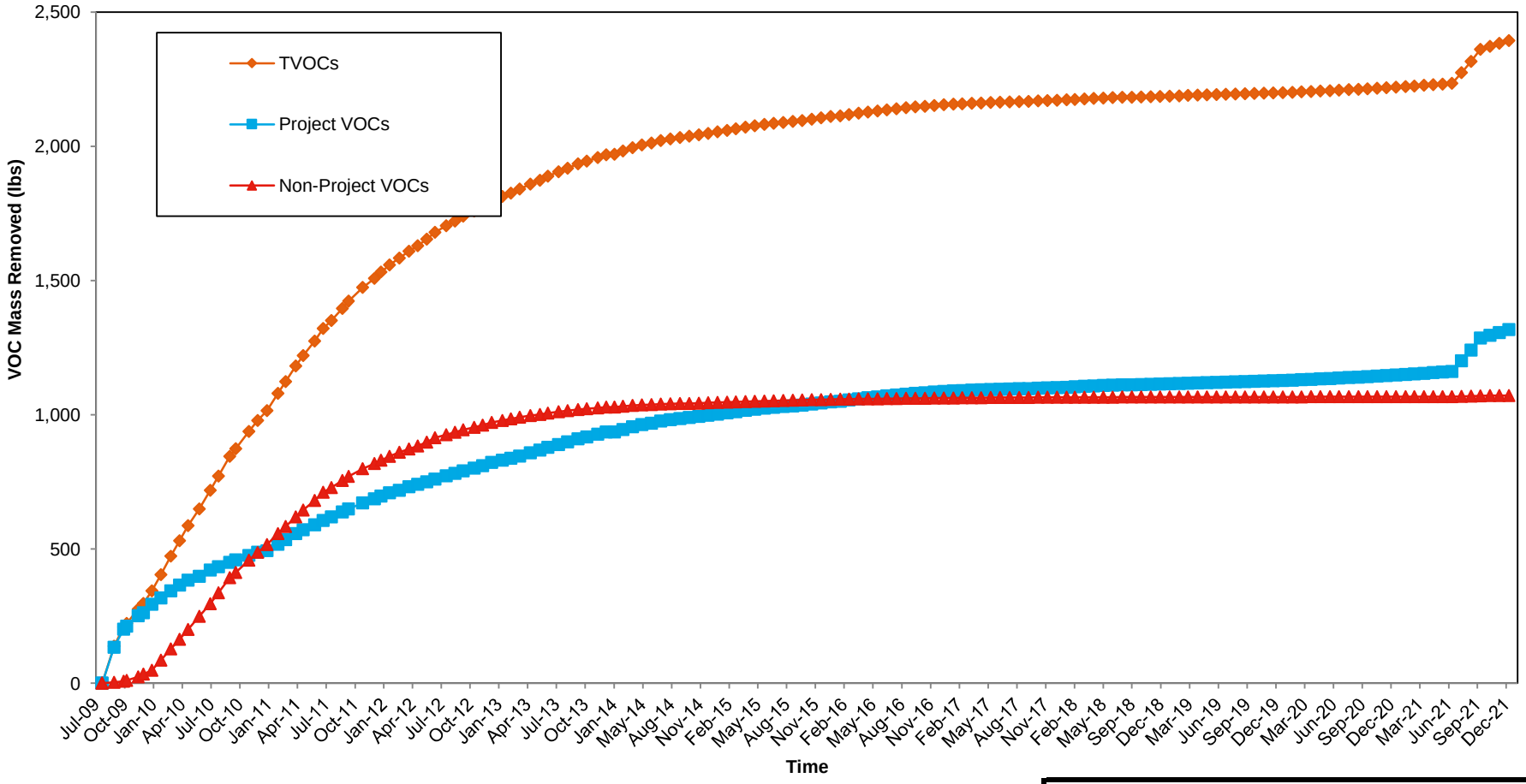
X-ONSITE-BASE SITE
X-BDR-CL
X-1168649



Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound
TVOCs = Total 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.

lbs = pounds

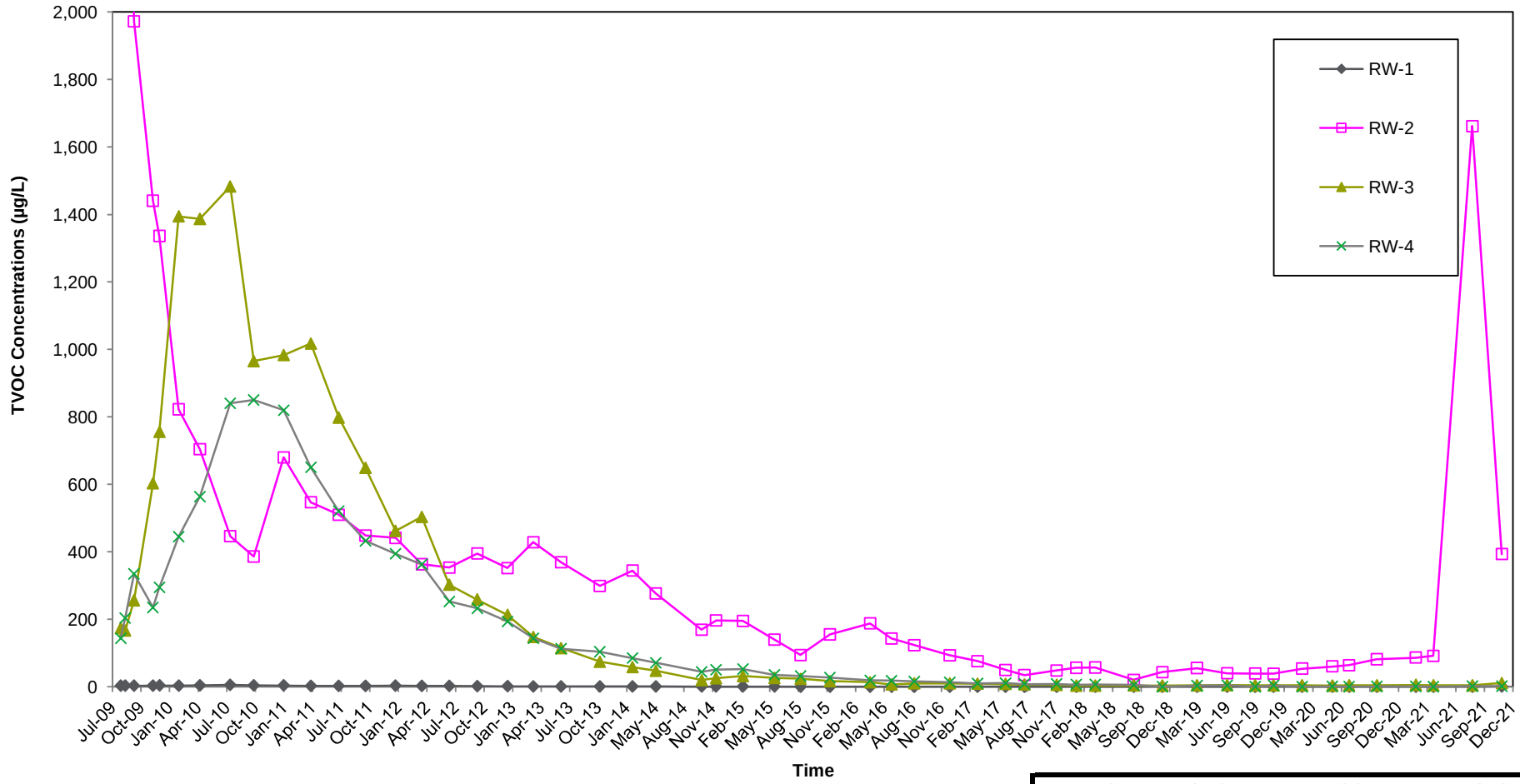
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

CUMULATIVE TOTAL, PROJECT, AND NON-PROJECT VOC MASS REMOVED

ARCADIS

FIGURE
5

\\arcadis-us.com\OfficeData\Melville-NY\APROJECT\Northrop Grumman Bethpage\OU3.2 Groundwater Containment System\11 Draft Reports-Presentations\Reports\2021 Q4\Tables\Q4_Table 2-8Figure 5 TVOC Mass Graph



Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound
TVOCs = Total VOCs detected

1. Results prior to September 10, 2009 are not shown to improve figure clarity. The TVOC concentrations are greater than 2,000 µg/L. See previous reports for full data set.

µg/L = micrograms per liter

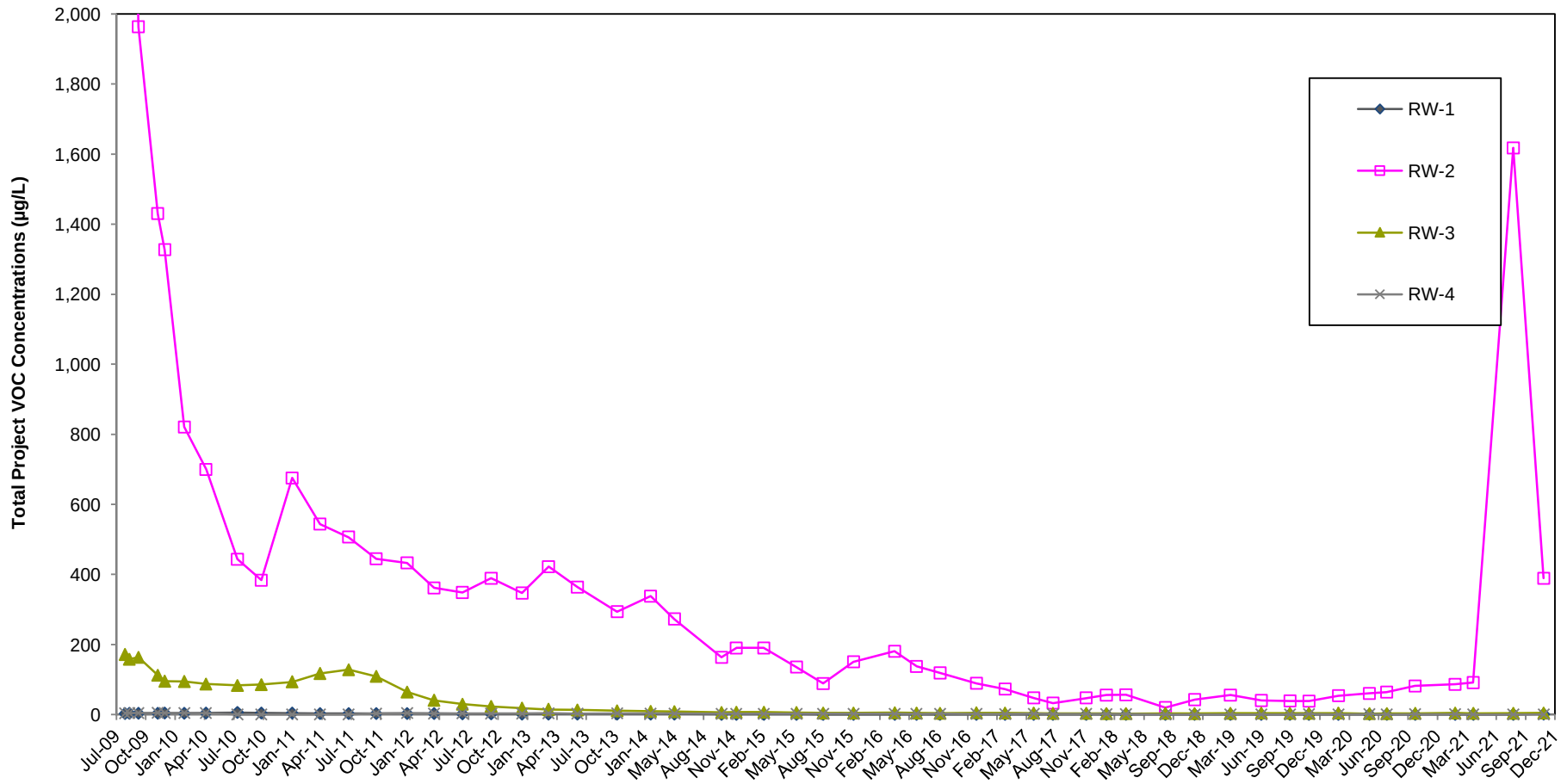
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

REMEDIAL WELL TOTAL VOC CONCENTRATIONS

ARCADIS

FIGURE
6A

\\arcadis-us.com\OfficeData\Melville-NY\APROJECT\Northrop Grumman Bethpage\OU3.2 Groundwater Containment System\11 Draft Reports-Presentations\Reports\2021 Q4\Tables\Q4_Table 2-8Figure 6A RW Total VOC



Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound
TVOCs = Total 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 September 10, 2009 are not shown to improve figure clarity. Total Project VOC concentrations are greater than 2,000 µg/L. See previous reports for full data set.

µg/L = micrograms per liter

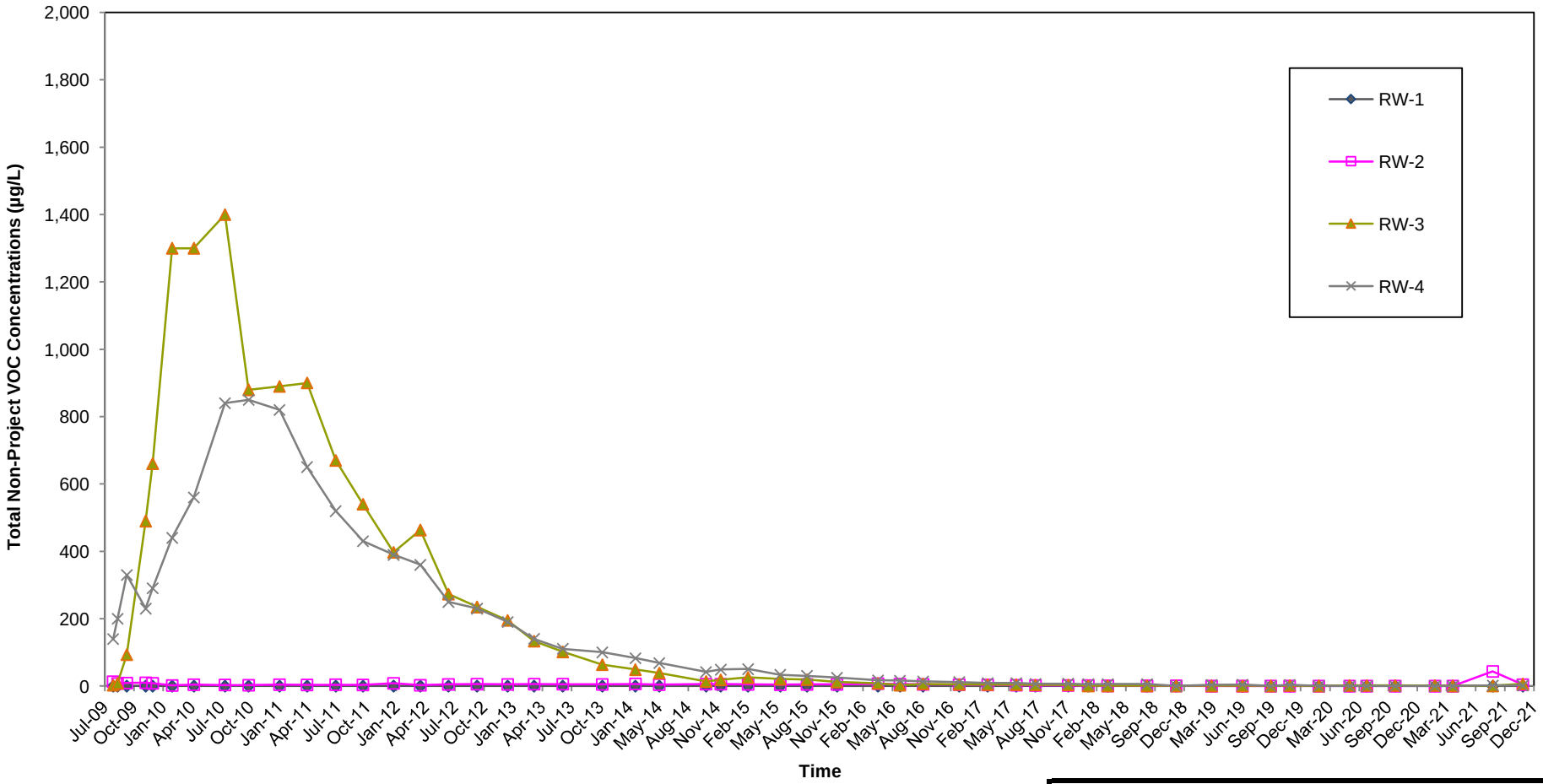
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

REMEDIAL WELL PROJECT VOC CONCENTRATIONS

ARCADIS

FIGURE
6B

\\arcadis-us.com\OfficeData\Melville-NY\APROJECT\Northrop Grumman Bethpage\OU3.2 Groundwater Containment System\11 Draft Reports-Presentations\Reports\2021 Q4\Tables\Q4_Table 2-8Figure 6B RW Project VOC



Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound
TVOCs = Total VOCs detected.

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

µg/L = micrograms per liter

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

REMEDIAL WELL NON-PROJECT VOC CONCENTRATIONS

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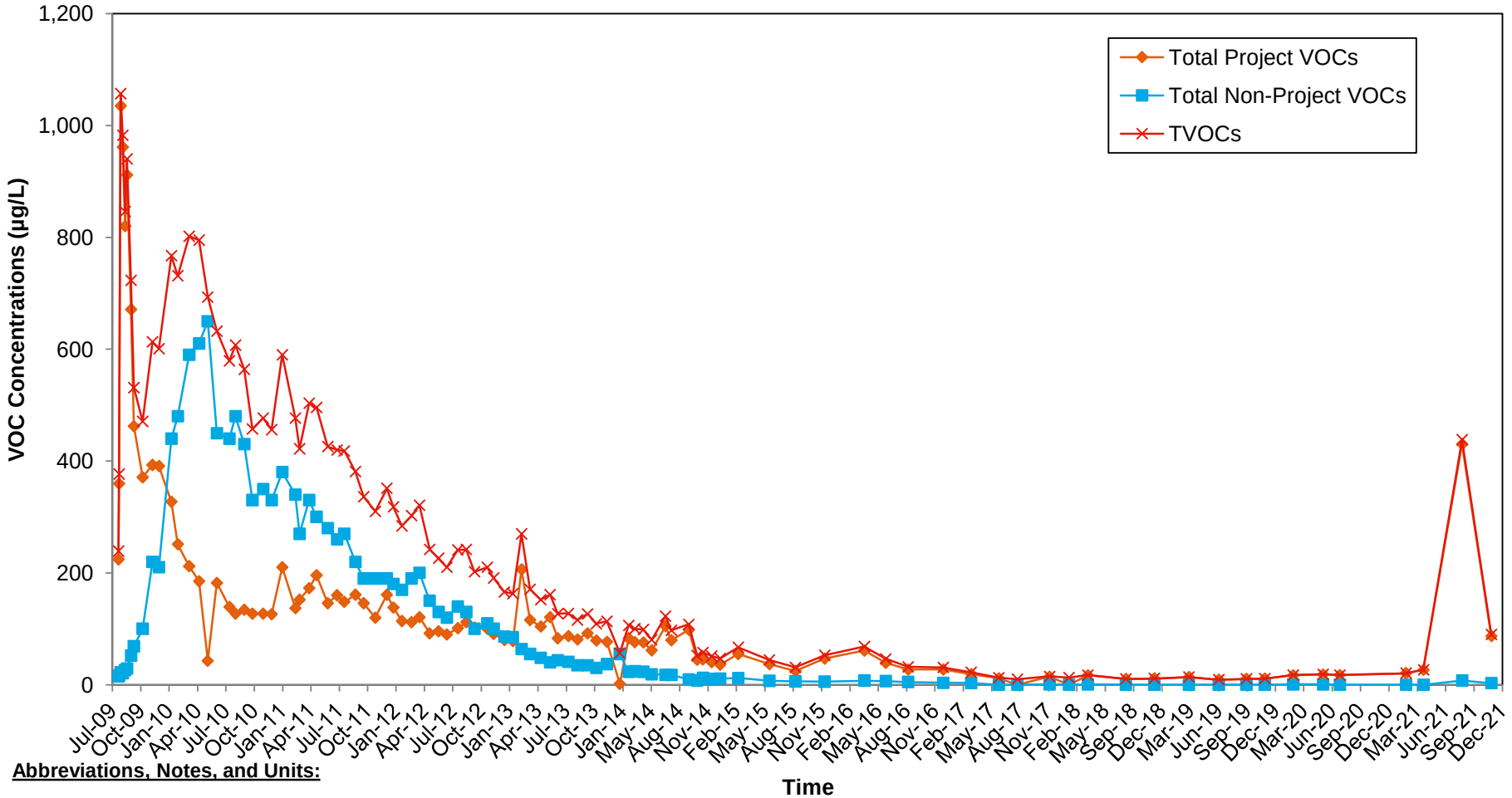
FIGURE
6C

\\arcadis-us.com\OfficeData\Melville-NY\APROJECT\Northrop Grumman Bethpage\OU3.2 Groundwater Containment System\11 Draft Reports-Presentations\Reports\2021 Q4\Tables\Q4_Table 2-8Figure 6C RW Non-Proj VOC



Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound
TVOCs = Total 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.
1. Quarter 4 sampling was conducted during ISTR Baker Tank discharge. The combined Influent sample port (WSP-5) is located upstream of the ISTR connection into the influent line. Due to this setup, the combined influent port (WSP-5) was not sampled as it would not be representative of the true combined influent.

µg/L = micrograms per liter

(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

INFLUENT TOTAL, PROJECT AND NON-PROJECT VOC CONCENTRATIONS

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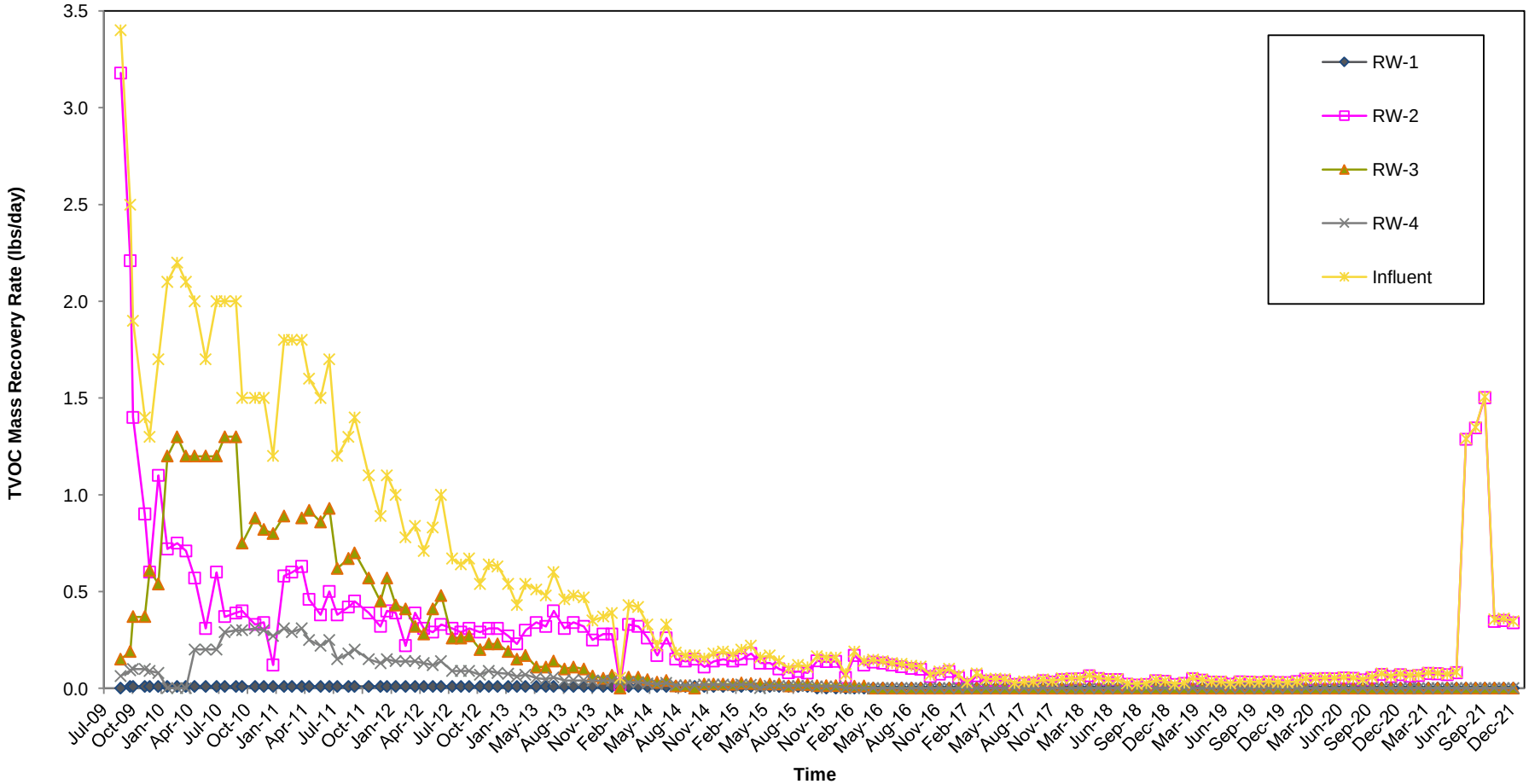
FIGURE 7

\\arcadis-us.com\OfficeData\Melville-NY\APROJECT\Northrop Grumman Bethpage\OU3.2 Groundwater Containment System\11 Draft Reports-Presentations\Reports\2021 Q4\Tables\Q4_Table 2-8Figure 7 Comb. Inf. VOC Conc.



Abbreviation, Notes, and Units:

VOC = Volatile Organic Compound
TVOCs = Total VOCs detected

lbs/day = pounds per day

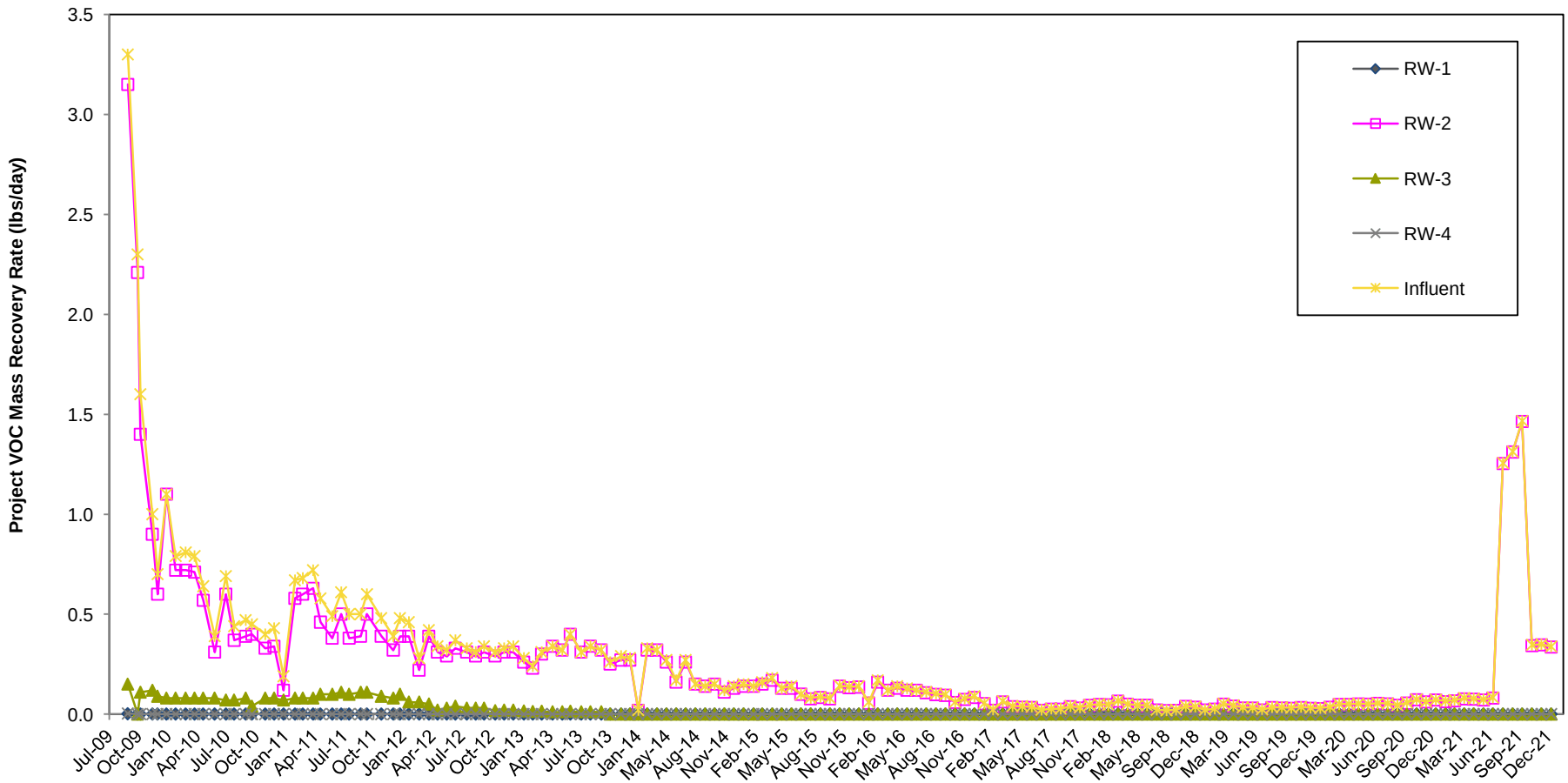
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

TOTAL VOC MASS RECOVERY RATES

ARCADIS

FIGURE
8A

\\arcadis-us.com\OfficeData\Melville-NY\APROJECT\Northrop Grumman Bethpage\OU3.2 Groundwater Containment System\11 Draft Reports-Presentations\Reports\2021 Q4\Tables\Q4_Table 2-8Figure 8A VOC Recovery Rates



Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound

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

lbs/day = pounds per day

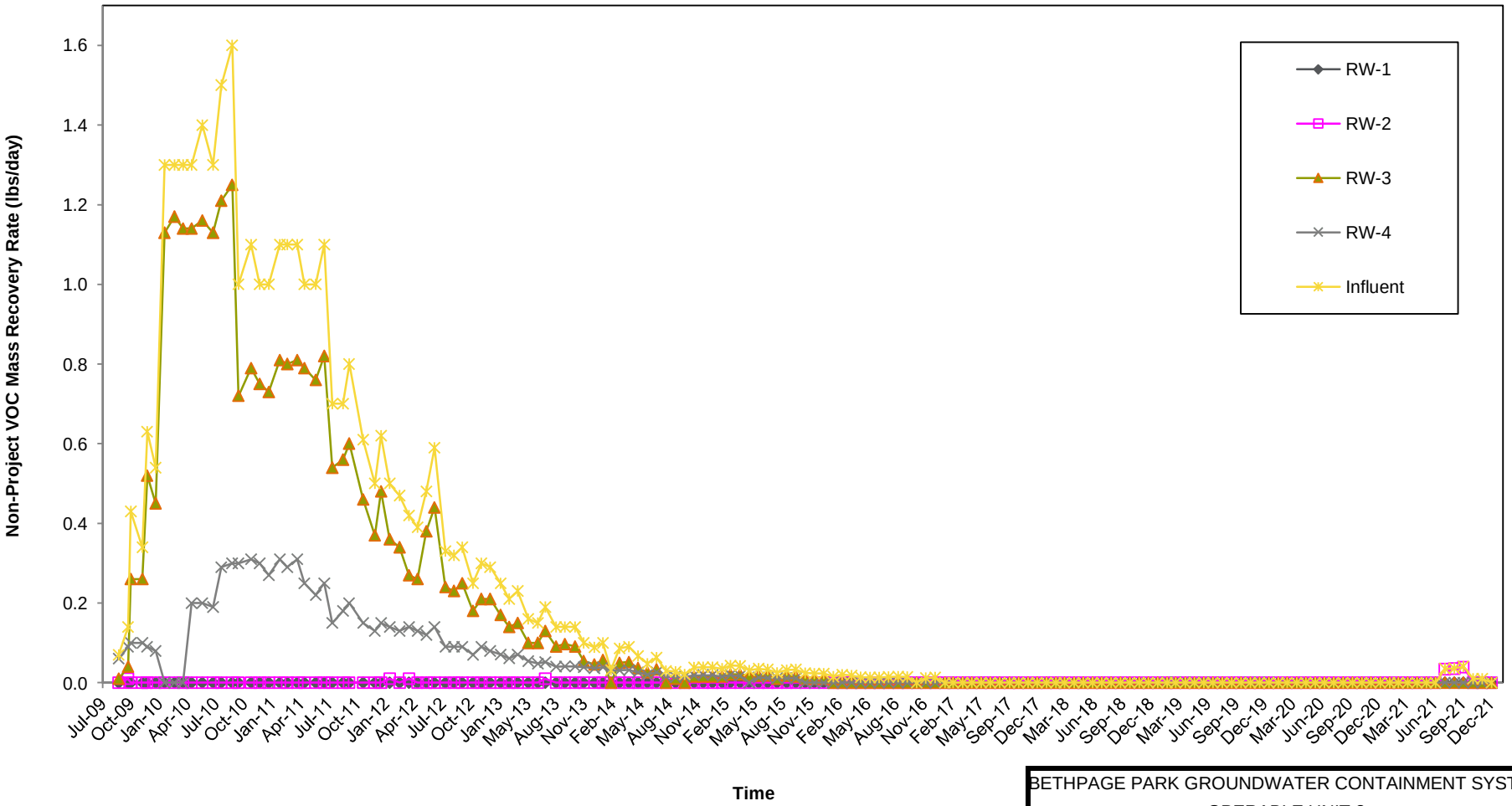
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

PROJECT VOC MASS RECOVERY RATES

ARCADIS

FIGURE
8B

\\arcadis-us.com\OfficeData\Melville-NY\APROJECT\Northrop Grumman Bethpage\OU3.2 Groundwater Containment System\11 Draft Reports-Presentations\Reports\2021 Q4\Tables\Q4_Table 2-8Figure 8B VOC Recovery Rates



Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound

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

lbs/day = pounds per day

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

NON-PROJECT VOC MASS RECOVERY RATES

ARCADIS

FIGURE
8C

\\arcadis-us.com\OfficeData\Melville-NY\APROJECT\Northrop Grumman Bethpage\OU3.2 Groundwater Containment System\11 Draft Reports-Presentations\Reports\2021 Q4\Tables\Q4_Table 2-8Figure 8C VOC Recovery Rates

CHERRY AVENUE EXTENSION/AEROSPACE BOULEVARD

CHERRY AVENUE

STEWART AVE.

FORMER NURSERY AREAS

BALL FIELDS

TENNIS COURTS

PADDLEBALL COURTS

BASKETBALL COURTS

B30MW-1 (73.12)

OU-3 BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM TREATMENT BUILDINGS

OU-3 BETHPAGE PARK SOIL GAS CONTAINMENT SYSTEM TREATMENT BUILDINGS

DRAINAGE SWALE

B24MW-2 (74.16)

RECHARGE BASIN

McKAY FIELD

ACCESS ROAD

SKATE PARK

TOWN STORAGE AREA

STORAGE BUILDING

BCPMW-1

PZ-9A

FORMER TRANSFORMER AREA

ARUMDAUN PRESBYTERIAN CHURCH VISION CENTER (FORMER GRUMMAN PLANT 24)

PZ-10A (72.27)

PARKING LOT

BCPMW-5-1

BASEBALL FIELD

BCPMW-3

PARKING LOT

BCPMW-2

PLAYGROUND

POOL HOUSE

POOL AREA

BETHPAGE HIGH SCHOOL PROPERTY

B24MW-3 (73.47)

(71.91) B-5A

PZ-5C

PZ-5B

RW-1 (70.39)

BCPMW-4-2

BCPMW-4-1 (71.43)

PZ-1A (70.92)

PZ-1B

BCPMW-4-3

PZ-1C

RW-2 (60.83)

PZ-2A (71.25)

PZ-2B

PZ-8B

PZ-8C

PZ-2C

PZ-8A (71.04)

FORMER GRUMMAN PLANT 24 ACCESS ROAD PROPERTY

RW-3 (67.10)

(71.00) PZ-6A

PZ-6B

BCPMW-6-1 (71.26)

BCPMW-6-2

RW-4 (69.75)

PZ-7A (71.31)

PZ-7B

BCPMW-7-1 (71.12)

PZ-4 (71.19)

PZ-3 (71.09)

MW-204-1 (71.55)

MW-205-1 (71.19)

MW-206-1 (71.14)

MW-200-1 (72.88)

MW-201-1 (71.19)

MW-202-1 (71.15)

MW-203-1 (70.95)

MW-207A-1R/MW-207B-1R (70.87)

MW-208-1 (71.11)

EIGHTH ST.

SEVENTH ST.

SIXTH ST.

FIFTH ST.

FOURTH ST.

THIRD ST.

SYCAMORE AVENUE

74

73

72

71

APPROXIMATE DOWNGRADIENT EXTENT OF CAPTURE ZONE (GROUNDWATER DIVIDE)

EXPLANATION:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- BASIN
- bit. BITUMINOUS PAVEMENT
- MW-200-1 MONITORING WELL
- RW-2 REMEDIAL WELL
- PZ-2C PIEZOMETER
- (71.90) WATER-LEVEL ELEVATION (FEET MEAN SEA LEVEL)
- 72 GROUNDWATER ELEVATION CONTOUR IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE LESS CONTROL AVAILABLE)
- DIRECTION OF THE HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- GROUNDWATER DIVIDE

NOTES:

1. MONITORING WELLS, REMEDIAL WELLS, AND PIEZOMETERS SURVEYED TO NORTH AMERICAN HORIZONTAL DATUM (NAD) 83.
2. WATER LEVEL ELEVATIONS CALCULATED FROM DATA COLLECTED ON AUGUST 3, 2021.
3. REFER TO TABLE 7 FOR PUMPING RATES OF REMEDIAL WELLS.

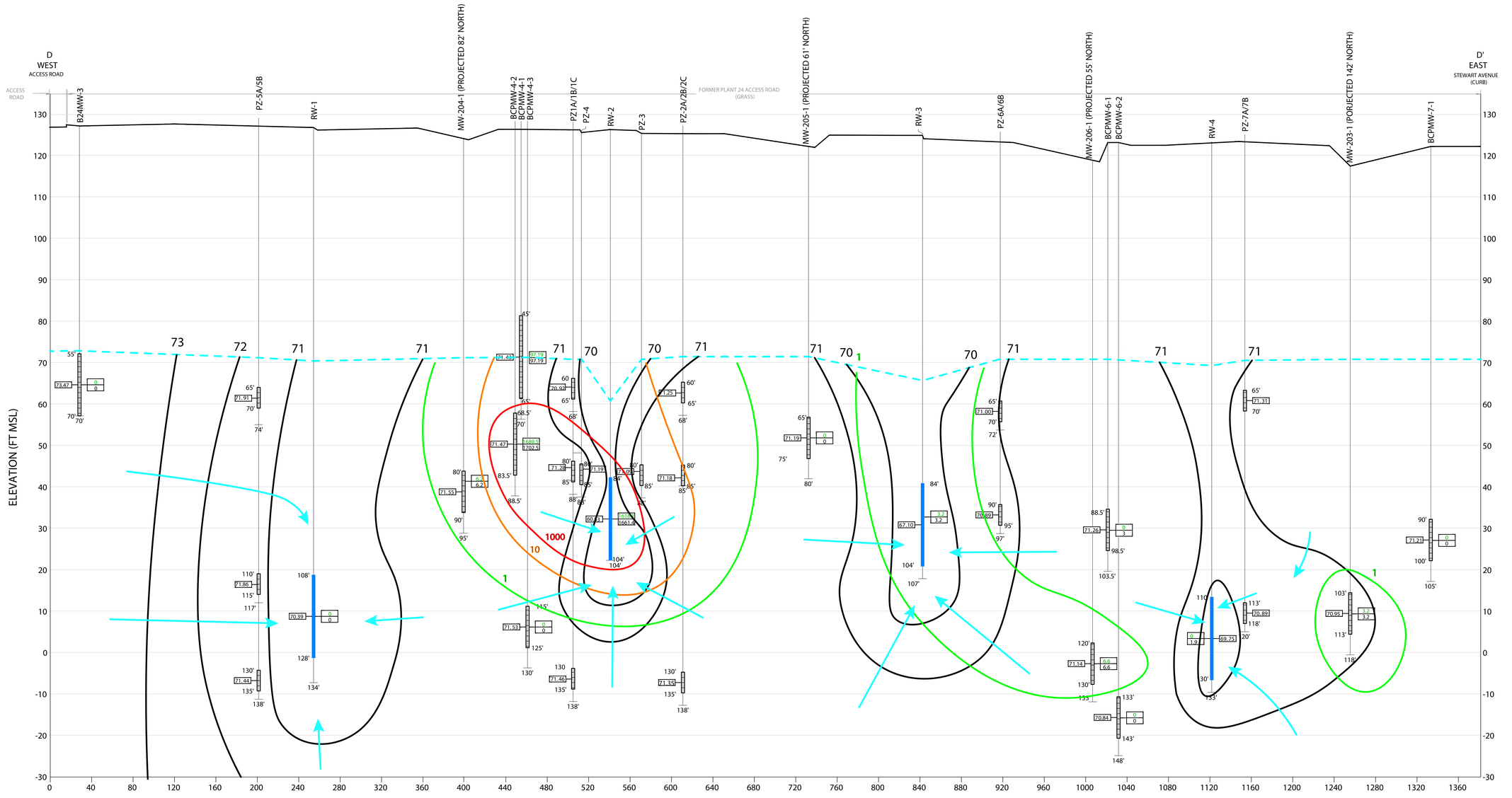
0 100' 200'
SCALE IN FEET

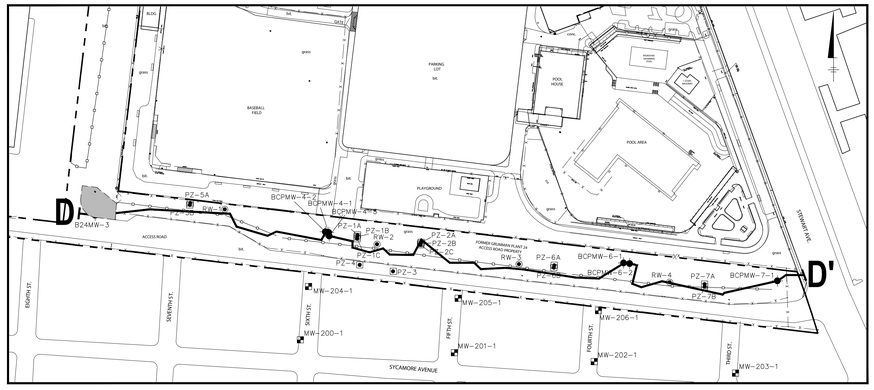
OPERABLE UNIT 3
ONCT SYSTEM
BETHPAGE, NEW YORK

GROUNDWATER MONITORING NETWORK AND CONFIGURATION OF THE SHALLOW POTENTIOMETRIC SURFACE AND GROUNDWATER FLOW DIRECTIONS THIRD QUARTER 2021

ARCADIS Design & Consultancy for natural and built assets

FIGURE 9

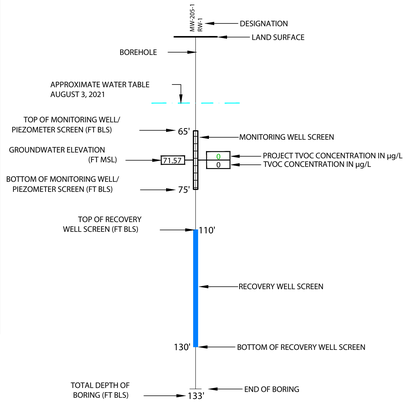


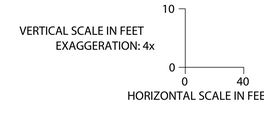


KEY PLAN
SHOWING CROSS SECTION D-D'

0 100' 200'
APPROXIMATE SCALE IN FEET

EXPLANATION





DEFINITIONS:
FT - FEET
MSL - MEAN SEA LEVEL
BLS - BELOW LAND SURFACE
µg/L - MICROGRAMS PER LITER
TVOC - TOTAL VOLATILE ORGANIC COMPOUND
NM - NOT MEASURED

LEGEND:

72 GROUNDWATER ELEVATION CONTOUR IN FEET RELATIVE TO MEAN SEA LEVEL, DASHED WHERE LESS CONTROL AVAILABLE

VERTICAL DIRECTION OF GROUNDWATER FLOW

1 PROJECT TVOC CONTOUR IN µg/L, DASHED WHERE LESS CONTROL AVAILABLE

NOTES:

1. WATER LEVEL ELEVATIONS CALCULATED FROM DATA COLLECTED ON AUGUST 3, 2021.
2. WELL TVOC/PROJECT TVOC DATA FROM THE AUGUST 2021 SAMPLING ROUND. RESULT REPRESENTATIVE OF ENTIRE WELL SCREEN INTERVAL.
3. TVOC CONTOURS ARE BASED ON PROJECT TVOC DATA, SEE NOTES 2 AND 5.
4. APPROXIMATE DOWNGRADIENT EXTENT OF CAPTURE ZONE IS NORTH OF WELLS MW-200-1, MW-201-1, MW-202-1, AND MW-203-1, SEE FIGURE 9.
5. PROJECT VOCS ARE VOCS THAT MAY BE RELATED TO FORMER GRUMMAN HISTORICAL ACTIVITIES. NON-PROJECT VOCS ARE VOCS THAT ARE NOT RELATED TO FORMER GRUMMAN ACTIVITIES BUT HAVE BEEN DETECTED IN THE SITE AREA. PLEASE REFER TO THE REPORT TABLES FOR LISTS OF PROJECT AND NON-PROJECT VOCS.
6. REFER TO TABLE 7 FOR PUMPING RATES OF REMEDIAL WELLS.

OPERABLE UNIT 3
ONCT SYSTEM
BETHPAGE, NEW YORK

CROSS SECTION D-D' SHOWING TVOCs IN GROUNDWATER AND DIRECTION OF VERTICAL GROUNDWATER FLOW THIRD QUARTER 2021

ARCADIS Design & Consultancy for natural and built assets

FIGURE 10

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
LAYOUT: 10. SAVED: 2/28/2022 9:37 AM ACADVER: 23.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 2/28/2022 10:29 AM BY:
C:\Users\samcelli\Desktop\Drive - ARCADIS\IBM 360 Docs\NORTHROP GRUMMAN\OU3 Regional Groundwater\2021\01-DWG\NGC-OU3-31QTR-SECT_DD.dwg
DWG: LTL MODEL:
XREFS: IMAGES: PROJECTNAME:
X-BDR-EL
X-ONSITE-BASE SITE

Appendix A

Well Construction Information and Environmental Effectiveness Monitoring Program

Appendix A
Well Construction Information and Environmental Effectiveness Monitoring Program
Bethpage Park Groundwater Containment System
Operable unit 3 (Former Grumman Settling Ponds)
Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Well ID	Well Diameter (inches)	Depth to Screen		Screen Length (ft)	Well Depth (ft)	Well Materials	Water Levels [3]	MONITORING ACTIVITY			
		Top (ft bls)	Bottom (ft bls)					WATER QUALITY [4]			
								VOC	SVOC	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]	Semiannual	Baseline/Annual	Baseline
BCPMW-4-2	4	68.5	83.5	15	88.5	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Semiannual	Baseline/Annual	Baseline
BCPMW-4-3	4	115	125	10	130	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Semiannual	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]	Semiannual	Baseline/Annual	--
BCPMW-6-2	4	133	143	10	148	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Semiannual	Baseline/Annual	--
BCPMW-7-1	4	90	100	10	105	Sch. 40 PVC	Quarterly	Baseline/Semiannual [5]	Semiannual	Baseline/Annual	--
B24MW-2	2	54	74	20	74	PVC	Quarterly	Baseline/Annual	Annual	Baseline	--
B24MW-3	2	55	70	15	70	PVC	Quarterly	Baseline/Annual	Annual	Baseline	--
B30MW-1	2	57	72	15	72	PVC	Quarterly	Baseline/Annual	Annual	Baseline	--
MW-200-1	4	85	95	10	100	Sch. 40 PVC/ SS	Quarterly	Baseline/Semiannual [5]	Semiannual	Baseline/Annual	--
MW-201-1	4	70	80	10	85	Sch. 40 PVC/ SS	Quarterly	Baseline/Semiannual [5]	Semiannual	Baseline/Annual	--
MW-202-1	4	125	135	10	140	Sch. 40 PVC/ SS	Quarterly	Baseline/Semiannual [5]	Semiannual	Baseline/Annual	--
MW-203-1	4	103	113	10	118	Sch. 40 PVC/ SS	Quarterly	Baseline/Semiannual [5]	Semiannual	Baseline/Annual	--
MW-204-1	4	80	90	10	95	Sch. 40 PVC/ SS	Quarterly	Annual	Annual	--	--
MW-205-1 [6]	4	65	75	10	80	Sch. 40 PVC/ SS	Quarterly	Annual	Annual	--	--
MW-206-1 [6]	4	120	130	10	135	Sch. 40 PVC/ SS	Quarterly	Annual	Annual	--	--
MW-207A-1R [7]	4	120	130	10	135	Sch. 40 PVC/ SS	Quarterly	Annual	Annual	--	--
MW-207B-1R [7]	4	210	220	10	225	Sch. 40 PVC/ SS	Quarterly	Annual	Annual	--	--
MW-208-1 [6]	4	80	90	10	92	Sch. 40 PVC/ SS	Quarterly	Annual	Annual	--	--
Remedial Wells [4]											
RW-01	8	108	128	20	134	Sch. 80 PVC/SS	Quarterly	Baseline/Quarterly	Quarterly	Baseline/Annual	--
RW-02	6	84	104	20	104	Steel/SS	Quarterly	Baseline/Quarterly	Quarterly	Baseline/Annual	--
RW-03	8	84	104	20	107	Sch. 80 PVC/SS	Quarterly	Baseline/Quarterly	Quarterly	Baseline/Annual	--
RW-04	8	110	130	20	133	Sch. 80 PVC/SS	Quarterly	Baseline/Quarterly	Quarterly	Baseline/Annual	--

Notes and Abbreviations on Last Page

Well ID	Well Diameter (inches)	Depth to Screen		Screen Length (ft)	Well Depth (ft)	Well Materials	Water Levels [3]	MONITORING ACTIVITY			
								WATER QUALITY [4]			
		Top (ft bls)	Bottom (ft bls)					VOC	SVOC	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-05c [6]	2	130	135	5	138	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	--	--	--	--
PZ-08a [6]	2	60	65	5	68	Sch. 40 PVC	Quarterly	--	--	--	--
PZ-08b [6]	2	80	85	5	88	Sch. 40 PVC	Quarterly	--	--	--	--
PZ-08c [6]	2	130	135	5	138	Sch. 40 PVC	Quarterly	--	--	--	--
PZ-09a [6]	2	57	62	5	67	Sch. 40 PVC	Quarterly	--	--	--	--
PZ-10a [6]	2	65	70	5	75	Sch. 40 PVC	Quarterly	--	--	--	--

Notes and Abbreviations on Last Page

Notes and Abbreviations:

(1) Water samples will be collected and analyzed in accordance with the method and procedures described in the BPGWCS OM&M Manual (Arcadis 2016) .

(2) Approximate locations of the wells and piezometers in the OU3 BPGWCS Monitoring Program are shown in Figure 4.

(3) Water Levels will be measured in all wells/piezometers during the baseline monitoring event in accordance with the procedures presented in the BPGWCS OM&M Manual (Arcadis 2016) .

(4) See BPGWCS OM&M Manual (Arcadis 2016) for details of water quality analysis.

(5) Semiannual wells will be monitored annually after Year 1.

(7) Wells installed by ERM in 2015.

(8) Wells installed by EMAGIN in 2017.

Sch. 80 PVC: schedule 80 polyvinyl chloride
Sch. 40 PVC: schedule 40 polyvinyl chloride
BPGWCS: Bethpage Park Groundwater Containment System
SS: stainless steel
Steel: low carbon steel
ft: feet
ft bls: feet below land surface

Table 2. Remedial System Monitoring Program, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Northrop Grumman Systems, Corporation, Bethpage, New York. [1]

Sample Location/Instrument [1]	Parameter (Method) [2]	Frequency	
		Long-Term [3]	SCADA Data Acquisition
Water Samples [4]			
Remedial Well 1 (WSP-1)	VOCs (USEPA 8260)	Quarterly	NA
	Iron (USEPA 6010)	Annually	NA
	1,4-Dioxane (USEPA 8270)	Quarterly	NA
Remedial Well 2 (WSP-2)	VOCs (USEPA 8260)	Quarterly	NA
	Iron (USEPA 6010)	Annually	NA
	1,4-Dioxane (USEPA 8270)	Quarterly	NA
Remedial Well 3 (WSP-3)	VOCs (USEPA 8260)	Quarterly	NA
	Iron (USEPA 6010)	Annually	NA
	1,4-Dioxane (USEPA 8270)	Quarterly	NA
Remedial Well 4 (WSP-4)	VOCs (USEPA 8260)	Quarterly	NA
	Iron (USEPA 6010)	Annually	NA
	1,4-Dioxane (USEPA 8270)	Quarterly	NA
Air Stripper Influent (WSP-5)	VOCs (USEPA 8260)	Quarterly	NA
	Iron (USEPA 6010)	Quarterly	NA
	1,4-Dioxane (USEPA 8270)	Quarterly	NA
Air Stripper Effluent (WSP-6)	Iron (USEPA 6010)	As Needed	NA
Plant Effluent (WSP-7)	**VOCs (USEPA 8260)**	**Monthly**	NA
	1,4-Dioxane (USEPA 8270)	**Monthly**	NA
	Iron (USEPA 6010)	**Monthly**	NA
	ph (field)	**Monthly**	NA
	Mercury	**Monthly**	NA
Air Samples [4] [5]			
Air Stripper Effluent/ECU-1 Influent (VSP-1)	VOCs (TO-15 Modified)	Quarterly	NA
ECU-1 Effluent/ECU-2 Influent (VSP-2)	VOCs (TO-15 Modified)	As Needed	NA
ECU-2 Effluent/ECU-3 Influent (VSP-3)	VOCs (TO-15 Modified)	As Needed	NA
ECU-3 Effluent/ECU-4 Influent (VSP-4)	VOCs (TO-15 Modified)	As Needed	NA
Total Effluent (VSP-5)	**VOCs (TO-15 Modified)**	**Quarterly**	NA

Table 2. Remedial System Monitoring Program, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Northrop Grumman Systems, Corporation, Bethpage, New York. [1]

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

Table 2. Remedial System Monitoring Program, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Northrop Grumman Systems, Corporation, Bethpage, New York. (1)

Sample Location/Instrument (1)	Parameter (Method) (2)	Frequency	
		Long-Term (3)	SCADA Data Acquisition
Air Pressure Measurements			
Air Stripper Effluent (PT-500)	Pressure (i.w.g.)	Quarterly	Continuously
ECU #1 Influent (PI-501)	Pressure (i.w.g.)	Quarterly	NA
ECU #2 Influent (PI-502)	Pressure (i.w.g.)	Quarterly	NA
ECU #3 Influent (PI-601)	Pressure (i.w.g.)	Quarterly	NA
ECU #4 Influent (PI-602)	Pressure (i.w.g.)	Quarterly	NA
System Effluent (PI-603)	Pressure (i.w.g.)	Quarterly	NA

Notes:

(1) Refer to Appendix E of the Operation, Maintenance and Monitoring Manual 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) Long-term schedule is tentative. Modification may be required/recommended based on the results of water quality trends.

(4) Samples will be analyzed in accordance with the methods and procedures described in the Sampling and Analysis Plan.

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

Acronyms:

NA	Not applicable	NYSDEC	New York State Department of Environmental Conservation
ECU	Emissions control unit	EPA	U.S. Environmental Protection Agency
VOCs	Volatile organic compounds	SCADA	Supervisory Control And Data Acquisition
gal.	Gallons		
gpm	Gallons per minute		
i.w.g.	Inches water gauge		

Appendix B

Compliance and Performance Program

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

Sample Location/Instrument [1]	Parameter (Method) [2]	Frequency			
		Short-Term [3]		Long-Term [4]	SCADA Data Acquisition
		(First month)	(Five month period following first month)		
Water Samples [5]					
Remedial Well 1 (WSP-1)	VOCs (USEPA Method 8260C)	Bi-Weekly	Quarterly	Quarterly	NA
	Iron (USEPA 6010C)	Bi-Weekly	Annually	Annually	NA
	Cadmium and Chromium (USEPA 6010C)[11]				
	---		Annually	Annually	NA
	1,4-Dioxane (USEPA Method 522)[12]		Quarterly	Quarterly	NA
Remedial Well 2 (WSP-2)	VOCs (USEPA Method 8260C)	Bi-Weekly	Quarterly	Quarterly	NA
	Iron (USEPA 6010C)	Bi-Weekly	Annually	Annually	NA
	Cadmium and Chromium (USEPA 6010C)[11]				
	---		Annually	Annually	NA
	1,4-Dioxane (USEPA Method 522)[12]		Quarterly	Quarterly	NA
Remedial Well 3 (WSP-3)	VOCs (USEPA Method 8260C)	Bi-Weekly	Quarterly	Quarterly	NA
	Iron (USEPA 6010C)	Bi-Weekly	Annually	Annually	NA
	Cadmium and Chromium (USEPA 6010C)[11]				
	---		Annually	Annually	NA
	1,4-Dioxane (USEPA Method 522)		Quarterly	Quarterly	NA
Remedial Well 4 (WSP-4)	VOCs (USEPA Method 8260C)	Bi-Weekly	Quarterly	Quarterly	NA
	Iron (USEPA 6010C)	Bi-Weekly	Annually	Annually	NA
	Cadmium and Chromium (USEPA 6010C)[11]				
	---		Annually	Annually	NA
	1,4-Dioxane (USEPA Method 522)[12]		Quarterly	Quarterly	NA
Air Stripper Influent (WSP-5)	VOCs (USEPA Method 8260C)	1-hr [6]; Days 1, 3, & Weekly	Monthly	Quarterly	NA
	Iron (USEPA 6010C)	1-hr [6]; Days 1, 3, & Weekly	Monthly	Quarterly	NA
	1,4-Dioxane (USEPA Method 522)[12]		Quarterly	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 (USEPA Method 8260C and 624)[13]**	**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
	1,4-Dioxane (USEPA Method 522)[12]		**Monthly**	**Monthly**	NA
	Cadmium and Chromium (USEPA 6010C)[11]				
	---		**Quarterly**	**Quarterly**	NA
	Total Nitrogen, Nitrate + Nitrite (USEPA Method 353.2)[13]		**Monthly**	**Monthly**	NA
	TKN (USEPA Method 351.2)[13]		**Monthly**	**Monthly**	NA
	pH (field) [8]	**1-hr [6]; Days 1, 3, & Weekly**	**Monthly**	**Monthly**	NA
	and		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.

Sample Location/Instrument [1]	Parameter (Method) [2]	Frequency			
		Short-Term [3]		Long-Term [4]	SCADA Data Acquisition
		(First month)	(Five month period following first month)		
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
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.

Abbreviations, Notes and Units:

(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.
(12) As of July 11 2018, 1,4-Dioxane is analyzed per USEPA Method 8270-SIM-CLLE.
(13) As of November 2017, plant effluent was analyzed for permit equivalency Volatile Organic Compounds (VOCs) using USEPA Method 624; Total Nitrogen is calculated as the sum of Nitrogen, (Nitrate+Nitrite) and Total Kjeldahl Nitrogen (TKN), (CAS number: 14797-55-8, 14797-65-0, and 7727-37-9, respectively) by USEPA Methods 353.2 and 351.2, respectively; Total Iron and Manganese using USEPA Method 200.7.

ECU	Emissions Control Unit
EPA	U.S. Environmental Protection Agency
NA	Not Applicable
---	Not Required
NYSDEC	New York State Department of Environmental Conservation
OM&M	Operation, Maintenance and Monitoring
SCADA	Supervisory Control And Data Acquisition
SPDES	State Pollutant Discharge Elimination System
USEPA	United States Environmental Protection Agency
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

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