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2010 Annual Groundwater Monitoring Report

Operable Unit 2
Northrop Grumman Systems Corporation
Bethpage, New York
NYSDEC Site #s 1-30-0003A & B

March 30, 2011

ARCADIS

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2010 Annual Groundwater Monitoring Report

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NYSDEC Site #s 1-30-0003A&B

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2010 Annual Groundwater Monitoring Report

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1. Introduction

This Groundwater Monitoring Report was prepared to document the operation, maintenance, and monitoring (OM&M) activities conducted for the on-site portion of the Operable Unit 2 (OU2) groundwater remedy (i.e., the Tower 96 and Tower 102 remedial systems), Northrop Grumman Systems Corporation (Northrop Grumman), Bethpage, New York facility (Site No. 1-30-003A), the results of ongoing inorganic monitoring near former Northrop Grumman Plants 1 and 2, the results of groundwater monitoring of volatile organic compounds (VOCs) in downgradient (off-site) areas, and results of outpost monitoring of VOCs in peripheral portion of the off-site plume. These activities were conducted by Northrop Grumman, in accordance with the New York State Department of Environmental Conservation (NYSDEC)-approved methodologies and procedures (see Section 2 for details) to meet the remedial objectives set forth in the March 2001 OU2 Record of Decision (ROD) (NYSDEC 2001).

This report describes the performance and effectiveness monitoring of the on-site portion of the OU2 groundwater remedy for the period October 11, 2010 through January 10, 2011, which is referred to in this report as the Fourth Quarter 2010 report period, or the current period. This report also constitutes the 2010 Annual Report, and compares the current data to the previous three 2010 quarterly reports issued by ARCADIS (2010a; 2010b; 2010c) and to longer-term data trends, as applicable.

The monitoring program, as well as the findings, conclusions, and recommendations discussed in this report, will be re-evaluated as additional data become available.

The off-site portion of the OU2 groundwater remedial system (i.e., the GM-38 Area System) was designed, constructed, and is operated, monitored, and maintained by the US Navy. OM&M reports for the GM-38 Area System are prepared by the US Navy and submitted to the NYSDEC, under separate cover.

2. Monitoring Program

The results obtained from monitoring activities conducted during this reporting period are provided in Tables 1 through 10 and are described and discussed in the following report sections: Remedial System Operational Performance (Section 3), Groundwater Flow (Section 4), and Groundwater Quality (Section 5). The locations of the Northrop Grumman site, the OU2 on-site groundwater remedy, the neighboring properties (i.e., the former Bethpage Facility Naval Weapons Industrial Reserve Plant [NWIRP] and

former Occidental Chemical Corporation [OCC]/RUCO Polymer Corporation sites), and existing wells utilized in the monitoring programs are shown on Figure 1.

Except as described in Tables 1 through 10 and in Sections 3, 4, and 5 of this report, the procedures, methodologies, and monitoring network utilized are consistent with those previously used and specified in the NYSDEC-approved OU2 Groundwater Monitoring Plan (ARCADIS Geraghty & Miller, Inc. 2001), as modified in June 2006 (ARCADIS G&M, Inc. 2006), and the Public Water Supply Contingency Plan (PWSCP) (ARCADIS G&M Inc. 2003a).

Appendix A of this report contains the field documentation for monitoring activities performed during 2010 by ARCADIS (i.e., groundwater sampling logs and chain-of-custody records).

3. Remedial System Performance Monitoring

This report section summarizes the routine performance monitoring conducted during the Fourth Quarter and Year 2010 for the on-site portion of the OU2 groundwater remedy, which includes the following:

1. Remedial well water quality monitoring, remedial treatment systems effluent water quality monitoring, remedial treatment system efficiency monitoring, and determination of volatile organic compound (VOC) mass removal, and

2. Monitoring of remedial well pumpage and remedial treatment system treated effluent discharge to on-site recharge basins.

Also summarized in this report section are the remedial treatment system and remedial well troubleshooting and non-routine maintenance activities performed by ARCADIS and Northrop Grumman during the Fourth Quarter 2010.

3.1 Water Quality, Treatment Efficiencies, and Mass Removal

Tables 1 and 7 provide the total VOC (TVOC) concentrations in the remedial wells. Additionally, Table 1 provides remedial well TVOC concentrations and treatment efficiencies for the Tower 96 and Tower 102 remedial treatment system air strippers for the current period, VOC mass removed by the remedial wells for the current period and Year 2010, and cumulative TVOC mass removed since the startup of Tower 102.

TVOC concentrations from the remedial wells ranged from 103 micrograms per liter (µg/L) (Well 18) to 2,900 µg/L (Well 3) during this period (Table 1). The discussion of water quality data and trends for the remedial wells is provided in Section 5.1.4 of this report.

A total of approximately 2,613 pounds of VOCs were removed from the aquifer by the remedial wells and treated during the current period. For Year 2010, approximately 8,729 lbs of VOC mass were removed from the aquifer and treated by the OU2 remedial systems. Since full-time startup of Tower 102 in November 1998, approximately 155,640 lbs of VOCs have been removed from the aquifer and treated by the Tower 96 and Tower 102 remedial systems.

Northrop Grumman's State Pollutant Discharge Elimination System (SPDES) discharge monitoring results (for Permit No. NY0096792) are representative of treated water quality and are used in calculating remedial system treatment efficiency and determining the quality of water returned to the aquifer. SPDES discharge monitoring data are documented on a monthly basis by Northrop Grumman and transmitted to the NYSDEC, under separate cover, in Discharge Monitoring Reports (DMRs). Northrop Grumman Outfalls 006 and 005, respectively, represent the termini of the Tower 102 and Tower 96 system effluent water (i.e., the inlets to the South Recharge Basins and West Recharge Basins). Based on VOC concentrations in the remedial wells and the SPDES discharge for the current period, the remedial system treatment efficiencies for the Tower 96 and Tower 102 components were calculated to be greater than 99.9 percent and 99.8 percent, respectively.

3.2 Remedial System Pumpage and Discharge

Table 1 summarizes the remedial well pumpage (with comparison to design criteria) for the current period and Year 2010. For the current period, Remedial Wells 1, 3, 17, 18, and 19 collectively pumped approximately 392 million gallons (MG) of groundwater, which is equivalent to 79 percent of the design remedial well pumpage volume (498 MG). For Year 2010, the remedial system pumped approximately 1,810 MG, equivalent to 89 percent of the total design remedial well pumpage volume (2,030 MG). Redevelopment of two of the five on-site remedial wells in 2010 resulted in longer periods of downtime than typical; therefore the total pumpage for the year was calculated to be less than the design values for these wells this year. Additional details are provided in Table 1 and in Section 3.3.

Based on measurements collected by ARCADIS for the current period, the South Recharge Basins collectively received the treated effluent discharge from Tower 102 along with incidental stormwater runoff and minor contribution of treated effluent from Tower 96 for a total average of approximately 3,559 gpm, equivalent to 466.3 MG.

Based on raw water consumption information provided by Calpine Energy (Calpine) to Northrop Grumman, the weighted average facility demand by Calpine for this period was 48 gpm. Subtraction of the flows to Tower 102 and to Calpine Energy from the total flow to Tower 96(from Wells 1 and 3) resulted in the calculation that the West Recharge Basins received an average treated effluent discharge rate from the Tower 96 of approximately 1,174 gpm this period, equivalent to 153.8 MG.

3.3 Troubleshooting/Maintenance Activities

During 2010, the specific capacities of Remedial Wells 1 and 3 decreased to a degree where re-development of the wells was required to continue long-term operation. The wells individually were taken off-line for redevelopment. Remedial Wells 3 and 1 were redeveloped during the Third and Fourth Quarters of 2010, respectively (Well 1 redevelopment was completed in February 2011). As with prior events, the wells were video logged prior to and following re-development. Standing and first draw well water was sampled and analyzed by Water Systems Engineering, Inc. to identify the cause of the loss of efficiency and determine the best approach to chemical and physical redevelopment. Re-development of the wells was performed by Delta Well and Pump Co., Inc. with oversight/coordination provided by ARCADIS. With prior approval, development waters were sampled and discharged to the Nassau County sanitary sewer. Both re-development efforts resulted in significant improvement in specific capacity. For Well 3, as an additional precaution, the setting of the submersible pump was deepened. Additionally, the submersible pump was replaced in Well 1.

Other minor short-term repairs, testing of new component systems, and temporary power outages were noted pertaining to the on-site portion of the OU2 Groundwater Remedy in 2010, no non-routine shut down activities took place.

4. Groundwater Flow

During 2010, hydraulic monitoring was performed semi-annually, specifically on January 20, 2010 and September 21, 2010. Tables 2 and 3 provide the First and Third Quarter 2010 water-level measurement data, respectively. Table 4 summarizes vertical hydraulic gradients for key monitoring well pairs, which were calculated using

the September 2010 water-level measurements, and compares these gradients to model-predicted gradients. Figures 2, 3, and 4 depict groundwater elevations and flow directions in the shallow (water table), intermediate, and deep2 (D2) zones, respectively.

Based on the hydraulic monitoring results obtained from the 2010 semi-annual events, groundwater flow conditions are consistent with prior years during which the OU2 remedial system was determined to be providing hydraulic containment of VOCs in groundwater on the Northrop Grumman and NWIRP sites. Specifically, the data indicate vertical hydraulic gradients in the shallow-intermediate wells pairs are oriented downward and are generally close to or greater than model-predicted values (Table 4). As shown on Figures 2 and 3, mounding of the water table and potentiometric surface exists in the shallow and intermediate zones, respectively, extending beneath the South Recharge Basins and across the Northrop Grumman site southern boundary. Downward vertical gradients were also present in the intermediate-deep and deep-deep2 well pairs; supporting the conclusion that groundwater is flowing in a predominantly vertical direction in these zones along the Northrop Grumman site southern boundary. Data obtained in Year 2010 indicates that the combination of shallow recharge at the South Recharge Basins coupled with pumpage of the remedial wells in the D2 zone forms a hydraulic barrier to groundwater flow that is preventing the off-site migration of VOC-impacted groundwater. The capture zone formed by the combined pumpage of OU2 remedial wells extends approximately 600 feet downgradient of Remedial Well 17 (Figure 4).

As part of the ongoing evaluation of the regional plume, the groundwater flow model was recently updated. Simulated pumping rates for public supply wells and remedial wells represented in the model were updated to reflect average pumping rates for the period of 2004 to 2007. In future reports, Table 4 will be updated to compare observed vertical gradient to those predicted by the updated groundwater flow model.

5. Groundwater Quality

This report section describes the analytical results of the various groundwater quality monitoring activities conducted during the Fourth Quarter 2010. Analytical results are summarized in Tables 5 through 10.

5.1 Volatile Organic Compounds

The evaluation of VOC concentrations is presented herein in consideration of the following factors: (1) proximity to the hydraulic barrier formed by the on-site portion of the OU2 groundwater remedy (i.e., upgradient, along the Northrop Grumman site southern boundary, and downgradient of the hydraulic barrier), (2) hydrogeologic zone (i.e., shallow, intermediate, deep, and D2 zones), and (3) NYSDEC Standards, Criteria, and Guidance (SCGs) Values.

Tables 5 through 10 provide the complete analytical results of samples collected for VOC analysis from monitoring wells, remedial wells, outpost wells, and remedial treatment systems for this period. Time-concentration graphs depicting the long-term VOC concentration trends are shown on Figures 5 through 11.

5.1.1 Shallow Zone

The analytical results of monitoring in the shallow zone in during 2010 are provided in prior quarterly reports (ARCADIS 2010a; 2010b, and 2010c) and these data are incorporated herein by reference. Shallow wells sampled during the First and Third Quarters of 2010 (i.e., Wells FW-03, N-10631, GM-15S, GM-21S, GM-78S, HN-40S, and HN-42S) exhibited no exceedances of VOCs, with the exceptions of Wells FW-03 (tetrachloroethene [PCE]) and GM-15S (trichloroethene [TCE]), which exhibited VOC concentrations slightly above NYSDEC SCGs. Well FW-03 is located on the former NWIRP site, upgradient of the OU2 Groundwater Remedy. Well GM-15S is located at the Northrop Grumman southeastern boundary. These monitoring wells are within the capture zone of the OU2 remedial system; therefore, groundwater in this area is hydraulically contained and, over time, will be extracted and treated.

Shallow wells located near or immediately downgradient of the Northrop Grumman site southern boundary (i.e., Wells N-10631, GM-21S and GM-78S) continue to exhibit results similar to data collected since the start up of the OU2 Groundwater Remedy in November 1998, confirming that the operation of the on-site portion of the OU2 groundwater remedy has formed an effective hydraulic barrier that prevents the off-site migration of VOC-impacted groundwater in the shallow zone.

5.1.2 Intermediate Zone

Fourth Quarter 2010 analytical data for the intermediate monitoring wells are provided in Table 5. Intermediate wells sampled during this period (i.e., Wells GM-20I, GM-21I,

and GM-79I) are located immediately downgradient of the Northrop Grumman site southern boundary.

Laboratory results indicated no detections of VOCs along the Northrop Grumman site southern boundary during this period or Year 2010 (acetone detected in Well GM-79I is not considered site-related). These analytical results confirm that the operation of the on-site portion of the OU2 groundwater remedy has formed an effective hydraulic barrier that prevents the off-site migration of VOC-impacted groundwater in the intermediate zone.

5.1.3 Deep Zone

Groundwater monitoring data from the deep zone for the Fourth Quarter 2010 are summarized in Table 6 and data trends for key wells are shown on Figures 6, 7, 8, 10, and 11. Data trend graphs include key wells with detectable concentrations of VOCs that were sampled in Year 2010.

Well GM-13D, which was last sampled during the Third Quarter 2010 (ARCADIS 2010c) and is located on-site and upgradient of the OU2 Groundwater Remedy, continues to exhibit an overall downward trend in TVOC concentrations (Figure 7).

Wells GM-15D and GM-74D, which were also last sampled during the Third Quarter 2010 (ARCADIS 2010c) and are located on-site along the Northrop Grumman site southern and southeastern boundaries (respectively) and upgradient of the remedial wells, did not exhibit exceedances in the Year 2010. The other four deep monitoring wells (i.e., Wells GM-39D_A, GM-39D_B, and GM-73D), also last sampled during the Third Quarter 2010 (ARCADIS 2010c), are located on-site, along the Northrop Grumman site southern boundary and upgradient of the remedial wells (Figure 1), exhibited SCG exceedances in the Year 2010. These monitoring wells are within the capture zone of the remedial wells; therefore, groundwater in this area horizontally and vertically is hydraulically contained and, over time, and will be extracted and treated.

Groundwater quality data (Table 6) from off-site wells immediately downgradient of the Northrop Grumman site (i.e., Wells GM-20D and GM-21D) exhibited no VOC exceedances during this period and Year 2010; Well GM-79D continues to exhibit a downward trend (Figure 8).

Other off-site wells located further downgradient of the hydraulic barrier in the portions of the groundwater VOC plume not actively remediated exhibited TVOC concentrations

consistent with the previously observed concentrations. Well GM-34D, a deep well located within the GM-75 Area, has historically, and for the current period, exhibited VOCs exceeding SCGs. Since December 2006, Well GM-34D has exhibited a decreasing trend in VOC concentrations (Figure 10). Well GM-34D is located south of Well GM-75D2 (Figure 1 – see Section 5.1.4 for additional detail). The Navy completed drilling of vertical profile borings as part of an additional investigation of the GM-75 Area in 2009; a report for this drilling program was submitted separately to NYSDEC.

In the off-site GM-38 Area, located southeast of the Site, Well GM-38D shows significant decrease in TVOC concentrations since the Navy GM-38 Area Remedy started up in September 2009, with the Fourth Quarter 2010 concentration representing the lowest level observed for the period of record (Figure 11). Refer to reports prepared by the Navy for additional details on the OM&M of the GM-38 Groundwater Remedy.

Groundwater quality data from the deep zone continues to support the previous observation that the bifurcation of the VOC plume (i.e., development and growth of a zone of groundwater with no detectable VOCs downgradient of the Northrop Grumman southern boundary that separates the on-site and off-site plumes and that results from the hydraulic containment of the on-site plume at the Northrop Grumman southern boundary) is occurring as shown by no VOC detections in wells located within the capture zone immediately off site. SCG exceedances continue to persist in wells screened in the off-site portion of the groundwater VOC plume not actively remediated.

In general, the water quality data from the deep wells sampled during the current period and Year 2010 continue to support the interpretation of the hydraulic data and confirm that the operation of the on-site portion of the OU2 groundwater remedy has formed an effective hydraulic barrier that prevents the off-site migration of VOC-impacted groundwater in the deep zone.

5.1.4 Deep2 Zone and Remedial Wells

Groundwater monitoring data from the D2 zone are summarized in Table 7 and data trends are presented on Figures 5, 6, 9, 10, and 11. The data trend graphs were prepared for key wells with detectable VOC concentrations that were sampled this period; the data trend graphs are discussed below.

Well GM-33D2 located along the southwestern boundary of the Northrop Grumman site, exhibited three VOCs (i.e., Freon 113, TCE, and PCE, see Table 7) that exceeded SCGs in this period, with similar exceedances occurring the first three quarters of Year 2010. The overall trend in TVOC concentrations in Well GM-33D2 remains downward, consistent with the long-term trend (Figure 5). Well GM-73D2 located along the Northrop Grumman site southern property boundary, exhibits a overall downward trend, with the recent (since 2008) trend being stable with VOC concentrations at or close to 60 ug/L (Figure 5). The other Northrop Grumman site boundary D2 wells (i.e., Wells GM-15D2 [located along the southeastern property boundary] and GM-74D2[located along the southern property boundary]) continue to exhibit stable VOC trends, with concentrations less than 60 µg/L (Figure 6). Wells GM-15D2, GM-33D2, GM-73D2, and GM-74D2 are located within the capture zone of the remedial wells (which are screened in the D2 zone) and, therefore, groundwater in this area vertically and horizontally is hydraulically contained and over time will be extracted and treated by the on-site portion of the OU2 groundwater remedy.

Off-site Wells GM-34D2, GM-35D2 and GM-75D2, located within the off-site GM-75 Area, had one or more SCG exceedances each during this period, with TVOC concentrations of 270 µg/L, 162 µg/L and 139 µg/L, respectively (Table 7). These data are consistent with concentrations expected in the off-site portion of the VOC plume not actively remediated. TVOC concentrations in Well GM-75D2 (Figure 10) have shown a decreasing trend since the Year 2002. Well GM-34D2 continues to exhibit an increasing trend in TVOC concentrations. The data indicate that TVOC concentrations in Well GM-35D2 (Figure 10) exhibit a slight downward trend since 2002. Section 5.1.3 of this report provides information on Navy activity in the GM-75 Area.

The off-site GM-38 Area monitoring results for Year 2010 were provided in prior reports (ARCADIS 2010 a; 2010c). TVOC concentrations in Well GM-38D2 have decreased since Year 2002 (Figure 11). Concentrations have decreased more rapidly since the startup of the GM-38 Area remedial system in September 2009, with the current concentration representing the lowest level observed through the period of record. Section 5.1.3 of this report provides information on Navy activity in the GM-38 Area.

The other off-site D2 zone monitoring wells continue to exhibit stable to decreasing TVOC concentration trends.

For the remedial wells, TVOC concentrations ranged from103 µg/L (Well 18) to 2,900 µg/L (Well 3) in the current period (Table 7). With the exception of Well 19, the remedial wells exhibit overall stable to decreasing trends since mid-2006 (Figures 5

and 6). Well 3 continues to exhibit the highest TVOC concentrations. Well 19 has exhibited an increasing trend for the period of record. Refer to Section 3 of this report for a discussion of remedial well performance and VOC mass removed.

In general, the water quality data from the D2 wells sampled during the current period and Year 2010 continue to support the previous conclusion that the observed bifurcation of the VOC plume is occurring along the Northrop Grumman site southern boundary and interpretation of the hydraulic data and confirm that the operation of the on-site portion of the OU2 groundwater remedy has formed an effective hydraulic barrier that prevents the off-site migration of VOC-impacted groundwater in the D2 zone.

5.2 Outpost Monitoring

The results of the current outpost well monitoring round are provided in Table 8. The complete description of the procedures to collect groundwater samples from the outpost wells and evaluate and document the results is provided in the PWSCP (ARCADIS G&M, Inc., 2003b).

VOCs were not detected in Outpost Wells OW1-2, OW1-3, OW2-1, OW3-1, and OW3-2 during this period. Outpost Well OW1-1exhibited detections of site-related VOCs below their respective SCGs, but above the TVOC outpost trigger values this period. Freon 113 was detected in Wells OW4-1 and OW4-2 but at concentrations less than its respective SCG and trigger value. As no new exceedances of outpost trigger values occurred in Year 2010, no new notification/reporting of the initial trigger value exceedances, as outlined in the PWSCP (ARCADIS G&M, Inc., 2003b), were needed. Navy completed repairs to Outpost Wells OW1-3, OW2-1, and OW2-2 in 2010 and is in the process of re-installing the dedicated sampling systems (pumps/packers) in these wells.

Navy is currently drilling and sampling groundwater from vertical profile borings and installing additional outpost wells near Aqua New York Water District's Seaman's Neck Road wellfield and South Farmingdale Water District's Plant No. 1 wellfield to provide additional data delineating the vertical and horizontal extent of VOCs in groundwater in these areas.

5.3 Vinyl Chloride Monomer

Vinyl chloride monomer (VCM) was detected in Well 3 during this period and the Year 2010, but was not detected in the other remedial wells or monitoring wells sampled this period. Implementation of remediation of groundwater to address VCM upgradient (northwest) of Well 3 is currently underway by Occidental Chemical Corporation (OCC) under USEPA oversight.

5.4 GM-38 Area Groundwater Remedial Action

In 2009, the Navy commenced operation of the GM-38 Area Groundwater Remedy, consisting of two remedial wells, Wells RW-1 and RW-3, pumping at a combined rate of 1,100 gpm. Periodic OM&M reports are being prepared under separate cover by the Navy describing the environmental effectiveness and operational compliance sampling activities of the GM-38 Area system.

5.5 Cadmium and Chromium

Cadmium and chromium analytical results for Year 2010 are provided in prior reports (ARCADIS 2010a; 2010c). Cadmium trends are shown on Figure 12 and total chromium trends are shown on Figures 13 and 14. No cadmium exceedances were detected in Wells N-10631, GM-78S and GM-78I, downgradient of former Northrop Grumman Plant 2 in Year 2010.

Chromium concentrations in wells near the former Northrop Grumman Plant 2 were below the SCG in 2010 (Figure 13)

Since 2006, the chromium concentration trends in the wells near the former Northrop Grumman Plant 1 have been stable to decreasing over time. Notably, the Cr concentration in Well MW-05 has decreased by a factor of three since late 2005 (Figure 14), however data collected in 2010 indicated an increase in Cr concentrations in Wells GM-15S (two most recent rounds) and PLTMW-05 (most recent round).

5.6 Tentatively Identified Compounds

Tentatively Identified Compounds (TICs) detected during Year 2010 are provided in Table 9. Three TICs were detected in samples collected during Year 2010. A review of the cumulative TIC data shows no discernable trends in concentrations or consistency in TIC detections.

5.7 QA/QC Samples and Data Validation

The results of analysis of QA/QC (field blank and trip blank) samples from the current period are provided in Table 10.

ARCADIS performed validation of all groundwater quality data collected (including TICs) by following the contract laboratory program national functional guidelines for organic and inorganic data review (USEPA 1999). The quality of the data is considered acceptable with the qualifications indicated on Tables 5 through 10.

6. Conclusions

ARCADIS has evaluated the hydraulic monitoring and the groundwater quality data collected during 2010, and concludes that the on-site portion of the OU2 Groundwater Remedy is operating as expected and hydraulic containment of the on-site portion of TVOCs in groundwater continues in a manner consistent with previous years. Additionally, the off-site water quality data from wells immediately downgradient of the hydraulic barrier have demonstrated discernable trends over time and continue to show no or trace VOC concentrations or decreasing VOC concentration trends. Groundwater quality data indicates that bifurcation of the VOC plume is continuing in the deep and D2 zones south of the hydraulic barrier.

7. Recommendations

1. ARCADIS recommends that the frequency of sampling of select monitoring wells be decreased. ARCADIS has prepared a recommendation to NYSDEC on February 1, 2011 that describes the specific recommendations.

8. References

ARCADIS of New York, Inc. (ARCADIS). 2010a. Results for First Quarter 2010 Groundwater Monitoring, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

ARCADIS of New York, Inc. (ARCADIS). 2010b. Results for Second Quarter 2010 Groundwater Monitoring, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

ARCADIS of New York, Inc. (ARCADIS). 2010c. Results for Third Quarter 2010 Groundwater Monitoring, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

ARCADIS G&M, Inc. 2006. Petition for Recommended Modifications to the Operable Unit 2 Groundwater Monitoring Plan, Northrop Grumman Corporation, Bethpage, New York. June 2006.

ARCADIS G&M, Inc. 2003a. Public Water Supply Contingency Plan, Naval Facilities Engineering Command. July 22, 2003.

ARCADIS G&M, Inc. 2003b. 2002 Annual Groundwater Monitoring Report, Northrop Grumman Corporation, Bethpage, New York. August 14, 2003.

ARCADIS Geraghty & Miller, Inc. 2001. Operable Unit 2 Groundwater Monitoring Plan. Northrop Grumman Corporation, Bethpage, New York. May 11, 2001.

U.S. Environmental Protection Agency (USEPA). 1999. Contract Laboratory Program National Functional Guidelines for Organic Data Review. October 1999.

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Table 1. Operational Summary for the On-Site Portion of the Operable Unit 2 Groundwater Remedy, Fourth Quarter 2010, Year 2010, and Period of Record, Northrop Grumman Systems Corporation, Bethpage, New York.

Identification	Design Pumping/ Recharge Rate [a] (gpm)	4th Quarter Actual Average Pumping/Recharge Rate [b] (gpm)	4th Quarter Design Total Pumpage/Recharge (MG)	4th Quarter Actual Total Pumpage/ Recharge (MG)	4th Quarter Percent of Total Design Pumpage/ Recharge	Annual 2010 Design Total Pumpage/Recharge (MG)	Cumulative Year-to-Date Actual Total Pumpage [b] (MG)	Annual 2010 Percent of Total Design Pumpage/ Recharge	Current TCE Concentration (ug/L)	Current TVOC Concentration [c] (ug/L)	4th Quarter 2010 VOC Mass Removed [d] (lbs)	Annual 2010 VOC Mass Removed [e,f] (lbs)	Cumulative VOC Mass Removed [b] (lbs)
Remedial Wells		**Groundwater Removed from Aquifer**											
Well 1	800	640	104.8	28.0	27%	427.4	354.2	83%	540	623	145	1,385	32,538
Well 3	700	655	91.7	81.9	89%	374.0	260.9	70%	2,600	2,900	1,978	5,356	67,342
Well 17	1,000	995	131.0	116.0	89%	534.2	519.0	97%	230	273	264	1,039	46,491
Well 18	600	625	78.6	78.6	100%	320.5	317.3	99%	81	103	67	285	4,813
Well 19	700	692	91.7	87.0	95%	374.0	358.1	96%	190	219	159	664	4,456
Rounded Totals:	**3,800**	**3,607**	**498**	**392**	**79%**	**2,030**	**1,810**	**89%**	**--**	**--**	**2,613**	**8,729**	**155,640**
Recharge Basins [a]		**Treated Water Recharged to Aquifer**											
West Recharge Basins	0	1,174	0	153.8	--	0	596.2	--	--	--	--	--	--
South Recharge Basins	2,231	2,385	292.4	312.5	107%	1,191.9	1,011.1	85%	--	--	--	--	--
Rounded Totals:	**2,231**	**3,559**	**292**	**466**	**160%**	**1,192**	**1,607**	**135%**	**--**	**--**	**--**	**--**	**--**
Treated Water Sent to Calpine													
Calpine Demand	100-400	48	13-53	6.3	--	53-214	80[g]	--	--	--	--	--	--
Treatment Efficiencies		**Average SPDES Outfall TVOC Concentrations Fourth Quarter 2010 (ug/L) [f]**											
Tower 96 System Efficiency [e] :		**>99.9%**	--	**0.8**	--	--	--	--	--	--	--	--	--
Tower 102 System Efficiency [e] :		**99.8%**	--	**0.5**	--	--	--	--	--	--	--	--	--

see footnotes on last page

Table 1. Operational Summary for the On-Site Portion of the Operable Unit 2 Groundwater Remedy, Fourth Quarter 2010, Year 2010, and Period of Record, Northrop Grumman Systems Corporation, Bethpage, New York.

(a) - Design remedial well pumping rates based on computer modeling (ARCADIS G& M, Inc. 2003c). Acceptable design recharge rates based on computer modeling. Design pumping and recharge rates were modified in April, 2005. Recharge includes remedial well pumpage (minus Calpine demand, Oxy biosparge system demand, incidental irrigation use, and pipe loss), plus incidental runoff from precipitation. Current average recharge rates have been determined using the entire 91-day span of time as opposed to current average pumping rates, which account for varying amounts of downtime, as indicated below.

(b) - OU2 wells were operational during the Fourth Quarter 2010, at the following percentages: Well-1 (33.4%), Well-3 (95.4%); Well-17 (89%), Well-18 (96%), and Well-19 (96%). The Actual Average Pumping Rates and rate of treated water sent to Calpine are for when the wells are pumping. "Cumulative" represents data obtained since system startup through December 2010.
- Based on water-level and pumping data presented in Table 3, OU2 remedial well specific capacities remain above the minimum required to sustain the design pumping rates. However, a decrease in specific capacity of Remedial Well 3 was identified, so the well was re-developed in the Second and Third Quarters of 2010. Remedial Well 1 also exhibited a decline specific capacity as well as in pumping rate. Well 1 was also re-developed and the pump replaced during the Fourth Quarter 2010.

(c) - The TVOC concentration for each well was calculated based on Fourth Quarter 2010 groundwater monitoring data (Table 7).

(d) - TVOC mass removed is based on the TVOC data given above and the following formula:

(TVOC concentration in ug/L) X (gallons pumped) X (3.785 L/gal) X (1 x 10^{-6} g/ug) X (2.2 x 10^{-3} lb/g)

(e) Air Stripping Efficiency calculated from values above and in Table 2 using the following formula:

$$1 - \left[\left(\frac{\text{Average SPDES TVOC Concentration at Outfall}}{\frac{[(TVOC_{Well\ 1} \times Q_{Well\ 1}) + (TVOC_{Well\ 2} \times Q_{Well\ 2}) \text{ etc...}]}{(Q_{Well\ 1} + Q_{Well\ 2} \text{ etc..})}} \right) \right]$$

-When non-detectable levels of VOCs are found in the effluent, a value of zero is used to estimate the efficiency of the air stripper.

(f) -Towers 102 and 96 outfalls are identified as Outfalls 005 and 006, respectively (commonly known as the South Recharge Basins and Plant 5 Recharge Basins, respectively). Complete SPDES reporting provided to NYSDEC by NG under separate cover.

(g) -A portion of the treated water from the Tower 96 remedial treatment system is provided on demand to the Calpine Energy facility for consumptive use. The demand rate is controlled by a “Cla-Val” located within a subsurface transmission pipeline between Tower 96 and the Calpine Energy facility. Cumulative Year-to-Date Actual Total Pumpage for Treated Water to Calpine based on totalizer values taken January 5, 2010 and January 3, 2011.

--	Not Available or Not Applicable	lb/g	pounds per gram
TVOC	Total Volatile Organic Compounds	lbs	pounds
g/ug	grams per microgram	MG	Million Gallons
gpm	gallons per minute	ug/L	micrograms per liter
L/gal	Liters per gallon	OU2	Operable Unit 2
SPDES	State Pollutant Discharge Elimination System	Q	Pumping Rate
NGC	Northrop Grumman Corporation	NYSDEC	New York State Department of Environmental Conservation

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Table 2. Water-Level Measurement Data, January 20, 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water (ft bmp)	Water-Level Elevation (ft msl)
Shallow Wells			
FW-03	124.30	53.89	70.41
N-9921	94.23	30.40	63.83
N-10597	109.85	39.20	70.65
N-10600	102.41	36.96	65.45
N-10631	103.47	36.24	67.23
N-10633	103.80	37.75	66.05
N-10634	101.20	36.00	65.20
N-10821	91.58	32.41	59.17
GM-15S	109.44	42.99	66.45
GM-16SR	115.86	45.40	70.46
GM-17SR	115.79	43.15	72.64
GM-18S	107.60	39.11	68.49
GM-19S	109.86	40.57	69.29
GM-21S	105.81	34.54	71.27
GM-78S	104.94	38.93	66.01
GM-79S (N-10628)	100.88	37.98	62.90
HN-24S	120.32	49.90	70.42
HN-40S	116.35	47.07	69.28
HN-42S	120.32	49.47	70.85
MW-3R	101.45	32.45	69.00
Intermediate Wells			
N-10624	93.61	29.98	63.63
GM-15I	109.25	42.83	66.42
GM-16I	115.81	45.25	70.56
GM-17I	115.83	43.45	72.38
GM-18I	109.03	40.25	68.78
GM-19I	109.86	41.55	68.31
GM-20I	103.88	34.50	69.38
GM-21I	105.72	36.40	69.32
GM-74I [(5)]	107.42	38.42	69.00
GM-78I	105.06	39.22	65.84
GM-79I	100.88	38.34	62.54
HN-24I	125.80	53.42	72.38
HN-40I	115.91	46.82	69.09
HN-42I	119.61	48.77	70.84

See notes on last page

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Table 2. Water-Level Measurement Data, January 20, 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water (ft bmp)	Water-Level Elevation (ft msl)
Deep Wells			
N-10627	93.70	30.42	63.28
GM-13D	113.97	44.03	69.94
GM-15D	109.84	45.09	64.75
GM-17D	115.68	47.38	68.30
GM-18D	108.88	43.10	65.78
GM-20D	103.92	36.46	67.46
GM-21D	105.66	41.12	64.54
GM-34D	71.19	12.55	58.64
GM-36D	91.63	32.89	58.74
GM-37D	97.26	37.06	60.20
GM-38D	91.75	35.95	55.80
$GM\text{-}39D_A$ (1)	102.23	36.80	65.43
$GM\text{-}39D_B$ (1)	102.08	39.65	62.43
GM-73D(5)	104.87	41.98	62.89
GM-74D(5)	107.43	43.27	64.16
GM-79D	101.25	39.62	61.63
HN-29D	115.11	44.78	70.33
Deep2 Wells			
GM-15D2	109.78	47.65	62.13
GM-33D2	106.85	47.20	59.65
GM-34D2	71.19	14.05	57.14
GM-35D2	96.28	37.68	58.60
GM-36D2	91.60	35.14	56.46
GM-37D2	97.17	37.58	59.59
GM-38D2	91.56	37.76	53.80
GM-70D2	99.58	39.06	60.52
GM-71D2	98.45	39.28	59.17
GM-73D2 (5)	104.62	43.95	60.67
GM-74D2 (5)	107.36	49.55	57.81
GM-75D2	93.63	33.32	60.31
Well 1 (2,5)	116.78	NM	--
Well 3 (3,5)	117.78	125.00	-7.22
Well 17 (4,5)	104.10	76.00	28.10
Well 18 (5)	110.00	63.51	46.49
Well 19 (5)	108.70	64.15	44.55

See notes on last page

ARCADIS

Table 2. Water-Level Measurement Data, January 20, 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water (ft bmp)	Water-Level Elevation (ft msl)
Outpost Wells			
BPOW1-1	73.65	27.60	46.05
BPOW1-2	73.54	28.80	44.74
BPOW1-3	73.37	28.78	44.59
BPOW2-1	60.06	NM	--
BPOW2-2	59.96	NM	--
BPOW3-1	63.19	24.29	38.90
BPOW3-2	63.72	25.55	38.17
BPOW4-1	67.34	23.30	44.04
BPOW4-2	67.18	23.00	44.18

(1) Wells GM-39_A and GM-39_B are screened at the approximate midpoint and basal portion of the deep zone, respectively.
(2) Water level measurement not recorded due to problems with the airline that in Well 1
(3) Water level was measured by inflating airline set at 150 ft bmp (gauge at wellhead) and subtracting the reading on the gauge from 150 to obtain the depth to water in ft bmp.
(4) Water level was measured by inflating airline set at 110 ft bmp (gauge at wellhead) and subtracting the reading on the gauge from 110 to obtain the depth to water in ft bmp.
(5) Water level measurement was collected on January 21, 2010.

ft msl feet relative to mean sea level
ft bmp feet below measuring point
-- Not Measured

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Table 3. Water-Level Measurement Data and Remedial Well Specific Capacities, September 21, 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water (ft bmp)	Water-Level Elevation (ft msl)
Shallow Wells			
FW-03	124.30	52.82	71.48
N-9921	94.23	30.73	63.50
N-10597	109.85	38.10	71.75
N-10600	102.41	37.05	65.36
N-10631	103.47	36.59	66.88
N-10633	103.80	38.46	65.34
N-10634	101.20	38.82	62.38
N-10821	91.58	32.86	58.72
GM-15S	109.44	43.16	66.28
GM-16SR	115.86	44.66	71.20
GM-17SR	115.79	42.83	72.96
GM-18S	107.60	39.06	68.54
GM-19S	109.86	40.81	69.05
GM-21S	105.81	35.10	70.71
GM-78S	104.94	39.18	65.76
GM-79S (N-10628)	100.88	37.73	63.15
HN-24S	120.32	48.91	71.41
HN-40S	116.35	46.52	69.83
HN-42S	120.32	48.52	71.80
MW-3R	101.45	32.91	68.54
Intermediate Wells			
N-10624	93.61	30.37	63.24
GM-15I	109.25	43.00	66.25
GM-16I	115.81	44.70	71.11
GM-17I	115.83	42.98	72.85
GM-18I	109.03	40.31	68.72
GM-19I	109.86	41.77	68.09
GM-20I	103.88	35.13	68.75
GM-21I	105.72	36.93	68.79
GM-74I	107.42	39.07	68.35
GM-78I	105.06	39.45	65.61
GM-79I	100.88	39.24	61.64
HN-24I	125.80	52.50	73.30
HN-40I	115.91	46.35	69.56
HN-42I	119.61	47.81	71.80

See notes on last page

ARCADIS

Table 3. Water-Level Measurement Data and Remedial Well Specific Capacities, September 21, 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water (ft bmp)	Water-Level Elevation (ft msl)
Deep Wells			
N-10627	93.70	31.06	62.64
GM-13D	113.97	43.41	70.56
GM-15D	109.84	45.65	64.19
GM-17D	115.68	46.80	68.88
GM-18D	108.88	43.33	65.55
GM-20D	103.92	37.11	66.81
GM-21D	105.66	41.79	63.87
GM-34D	71.19	13.70	57.49
GM-36D	91.63	34.42	57.21
GM-37D	97.26	38.30	58.96
GM-38D	91.75	38.86	52.89
GM-39D$_A$ (1)	102.23	37.17	65.06
GM-39D$_B$ (1)	102.08	39.97	62.11
GM-73D	104.87	42.45	62.42
GM-74D	107.43	43.90	63.53
GM-79D	101.25	40.90	60.35
HN-29D	115.11	44.02	71.09
Deep2 Wells			
GM-15D2	109.78	48.48	61.30
GM-33D2	106.85	47.58	59.27
GM-34D2	71.19	16.55	54.64
GM-35D2	96.28	40.04	56.24
GM-36D2	91.60	39.18	52.42
GM-37D2	97.17	39.48	57.69
GM-38D2	91.56	42.69	48.87
GM-70D2	99.58	40.30	59.28
GM-71D2	98.45	41.83	56.62
GM-73D2	104.62	44.48	60.14
GM-74D2	107.36	50.56	56.80
GM-75D2	93.63	34.70	58.93
Well 1 (2)	116.78	107.50	9.28
Well 3	117.78	143.92	-26.14
Well 17 (3)	104.10	91.25	12.85
Well 18	110.00	64.15	45.85
Well 19	108.70	64.25	44.45

See notes on last page

ARCADIS

Table 3. Water-Level Measurement Data and Remedial Well Specific Capacities, September 21, 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water (ft bmp)	Water-Level Elevation (ft msl)
Outpost Wells			
BPOW1-1	73.65	29.98	43.67
BPOW1-2	73.54	30.95	42.59
BPOW1-3	73.37	30.99	42.38
BPOW2-1	60.06	Not taken	--
BPOW2-2	59.96	Not taken	--
BPOW3-1	63.19	29.22	33.97
BPOW3-2	63.72	31.05	32.67
BPOW4-1	67.34	28.05	39.29
BPOW4-2	67.18	27.62	39.56

Remedial Well Specific Capacities [4]

Well ID	Pumping Depth to Water (ft bls)	Static Depth to Water (ft bls) [5]	Drawdown (s) (ft)	Third Quarter 2010 Pumping Rate (Q)(gpm) [6]	Specific Capacity (Q/s)(gpm/ft)
Well 1	107.50	50.00	57.50	848	14.75
Well 3	143.92	50.35	93.57	732	7.82
Well 17	91.25	44.12	47.13	1168	24.78
Well 18	64.15	50.15	14.00	637	45.50
Well 19	64.25	49.13	15.12	675	44.64

Notes

(1) Wells GM-39$_A$ and GM-39$_B$ are screened at the approximate midpoint and basal portion of the deep zone, respectively.

(2) Water level was measured by inflating airline set at 119 ft bmp (gauge at wellhead) and subtracting the reading on the gauge from 119 to obtain the depth to water in ft bmp.

(3) Water level was measured by inflating an airline set at 110 ft bmp (gauge at well head) and subtracting the reading on the gauge from 110 to obtain the depth to water in ft bmp.

(4) Specific capacity values are qualitative in nature, due to fluctuations in static water levels. Sharp declines in specific capacity could indicate the need for well redevelopment.

(5) For Wells 17, 18, and 19 baseline static depth to water measurements were collected in 1997 prior to OU2 system start-up; baseline pumping depth to water and rate measurements (not shown) used with baseline static depth to water measurements to calculate baseline specific capacities, were collected in 1999 during OU2 system operation.
For Well 1, baseline static depth to water was collected in 2010, during pump maintenance.
For Well 3, baseline static depth to water measurement was collected in 2010, during re-development activities.
For Well 3, baseline static depth to water measurement was collected in 2010, during re-development activities.

(6) Pumping rate determined at time of pumping depth to water measurement.

ft msl feet relative to mean sea level
ft bmp feet below measuring point
-- Not Measured

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Table 4. Comparison of September 21, 2010 Vertical Hydraulic Gradients to Model-Predicted Gradients, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Well Pair ID	Well Screen Midpoint Elevation (ft msl)	Water-Level Elevation (ft msl)	Vertical Gradient [(2)] (ft/ft) * 10^{-3}	Model-Predicted, OU2 Steady-State Vertical Gradient (ft/ft) * 10^{-3}	Increase Compared to Model-Predicted, Steady-State Vertical Gradient
Shallow-Intermediate Wells					
GM-15S	34.53	66.28			
GM-15I	9.29	66.25	1.19	4.20	-3.01
GM-16SR	66.77	71.20			
GM-16I	-24.19	71.11	0.99	1.11	-0.12
GM-17SR	50.79	72.96			
GM-17I	5.83	72.85	2.45	4.50	-2.05
GM-19S	59.36	69.05			
GM-19I	-25.14	68.09	11.36	2.44	8.92
GM-21S	40.81	70.71			
GM-21I	-29.28	68.79	27.39	18.44	8.95
GM-78S	39.94	65.76			
GM-78I	5.56	65.61	4.36	8.73	-4.37
GM-79S	35.88	63.15			
GM-79I	-73.91	61.64	13.75	0.91	12.84
Intermediate-Deep Wells					
GM-15I	9.29	66.25			
GM-15D	-227.34	64.19	8.71	6.52	2.19
GM-17I	5.83	72.85			
GM-17D	-172.32	68.88	22.28	7.86	14.42
GM-18I	9.03	68.72			
GM-18D	-186.12	65.55	16.24	7.74	8.50
GM-20I	3.88	68.75			
GM-20D	-117.08	66.81	16.04	18.22	-2.18
GM-21I	-29.28	68.79			
GM-21D	-177.34	63.87	33.23	43.97	-10.74
GM-74I	8.42	68.35			
GM-74D	-192.57	63.53	23.98	20.17	3.81
GM-79I	-73.91	61.64			
GM-79D	-183.75	60.35	11.74	15.48	-3.74

See notes on last page

ARCADIS

Table 4. Comparison of September 21, 2010 Vertical Hydraulic Gradients to Model-Predicted Gradients, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Well Pair ID	Well Screen Midpoint Elevation (ft msl)	Water-Level Elevation (ft msl)	Vertical Gradient [2] (ft/ft) * 10^{-3}	Model-Predicted, OU2 Steady-State Vertical Gradient (ft/ft) * 10^{-3}	Increase Compared to Model-Predicted, Steady-State Vertical Gradient
Deep-Deep 2 Wells					
GM-15D	-227.34	64.19			
GM-15D2	-436.41	61.30	13.82	14.19	-0.37
GM-18D	-186.12	65.55			
GM-33D2	-403.15	59.27	28.94	12.30	16.64
GM-34D	-242.81	57.49			
GM-34D2	-443.81	54.64	14.18	2.33	11.85
GM-36D	-117.37	57.21			
GM-36D2	-443.40	52.42	14.69	2.75	11.94
GM-37D	-154.74	58.96			
GM-37D2	-282.83	57.69	9.91	3.88	6.03
GM-38D	-238.25	52.89			
GM-38D2	-393.44	48.87	25.90	6.08	19.82
GM-39D_A [1]	-169.77	65.06			
GM-39D_B [1]	-312.92	62.11	20.61	13.46	7.15
GM-73D	-301.13	62.42			
GM-73D2	-437.38	60.14	16.73	18.78	-2.05
GM-74D	-192.57	63.53			
GM-74D2	-444.64	56.80	26.70	28.26	-1.56
N-10627	-198.80	62.64			
GM-75D2	-421.37	58.93	16.67	2.25	14.42

Notes

[1] Wells GM-39D_A and GM-39D_B are screened at the approximate midpoint and basal portion of the deep zone, respectively.

[2] Vertical hydraulic gradients are calculated as follows:

$$\frac{(\text{Water-Level Elevation}_1 - \text{Water-Level Elevation}_2)}{(\text{Screen Midpoint Elevation}_1 - \text{Screen Midpoint Elevation}_2)}$$

$_1$ - Shallower well of pairing
$_2$ - Deeper well of pairing
A positive "+" gradient value indicates a downward hydraulic gradient.
A negative "-" gradient value indicates an upward hydraulic gradient.

ft msl feet relative to mean sea level

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Table 5. Concentration of Volatile Organic Compounds Detected in Intermediate Monitoring Wells, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria[1] and Guidance Values (ug/l)	Well:	GM-20I	GM-21I	GM-79I
		Sample ID:	GM-20I	GM-21I	GM-79I
		Date:	12/14/2010	12/14/2010	12/13/2010
1,1,1-Trichloroethane	5		< 5 U	< 5 U	< 5 U
1,1,2,2-Tetrachloroethane	5		< 5 U	< 5 U	< 5 U
1,1,2-Trichloroethane	5		< 5 U	< 5 U	< 5 U
1,1-Dichloroethane	5		< 5 U	< 5 U	< 5 U
1,1-Dichloroethene	5		< 5 U	< 5 U	< 5 U
1,2-Dichloroethane	5		< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	5		< 5 U	< 5 U	< 5 U
2-Butanone	50		< 50 U	< 50 U	< 50 U
2-Hexanone	50		< 50 U	< 50 U	< 50 U
4-methyl-2-pentanone	50		< 50 U	< 50 U	< 50 U
Acetone	50		< 50 U	< 50 UB	**1.4 J**
Benzene	0.7		< 0.7 U	< 0.7 U	< 0.7 U
Bromodichloromethane	50		< 5 U	< 5 U	< 5 U
Bromoform	50		< 5 U	< 5 U	< 5 U
Bromomethane	5		< 5 U	< 5 U	< 5 U
Carbon Disulfide	50		< 5 U	< 5 U	< 5 U
Carbon tetrachloride	5		< 5 U	< 5 U	< 5 U
Chlorobenzene	5		< 5 U	< 5 U	< 5 U
Chloroethane	5		< 5 U	< 5 U	< 5 U
Chloroform	7		< 5 U	< 5 U	< 5 U
Chloromethane	5		< 5 U	< 5 U	< 5 U
cis-1,2-dichloroethene	5		< 5 U	< 5 U	< 5 U
cis-1,3-dichloropropene	5		< 5 U	< 5 U	< 5 U
Dibromochloromethane	5		< 5 U	< 5 U	< 5 U
Ethylbenzene	5		< 5 U	< 5 U	< 5 U
Methylene Chloride	5		< 5 U	< 5 U	< 5 U
Styrene	5		< 5 U	< 5 U	< 5 U
Tetrachloroethene	5		< 5 U	< 5 U	< 5 U
Toluene	5		< 5 U	< 5 U	< 5 U
trans-1,2-dichloroethene	5		< 5 U	< 5 U	< 5 U
trans-1,3-dichloropropene	5		< 5 U	< 5 U	< 5 U
Trichloroethylene	5		< 5 U	< 5 U	< 5 U
Trichlorotrifluoroethane (Freon 113)	5		< 5 U	< 5 U	< 5 U
Vinyl Chloride	2		< 2 U	< 2 U	< 2 U
Xylene-o	5		< 5 U	< 5 U	< 5 U
Xylenes - m,p	5		< 5 U	< 5 U	< 5 U
Total VOCs			0	0	**1.4**

(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller, Inc. 2000) that are based on the NYSDEC TOGs (NYSDEC 1998); most stringent value listed.

NYSDEC New York State Department of Environmental Conservation

TOGs Technical and Operational Guidance Series

ug/L Micrograms per liter

VOCs Volatile Organic Compounds

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Table 6. Concentration of Volatile Organic Compounds Detected in Deep Monitoring Wells, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria[1] and Guidance Values (ug/l)	Well:	GM-20D	GM-21D	GM-34D	GM-79D	GM-79D
		Sample ID:	GM-20D	GM-21D	GM-34D	REP121310	GM-79D
		Date:	12/14/2010	12/13/2010	12/16/2010	12/13/2010	12/13/2010
1,1,1-Trichloroethane	5		< 5	< 5	< 13	< 5	< 5
1,1,2,2-Tetrachloroethane	5		< 5	< 5	< 13	< 5	< 5
1,1,2-Trichloroethane	5		< 5	< 5	< 13	< 5	< 5
1,1-Dichloroethane	5		< 5	< 5	**1.1 J**	< 5	< 5
1,1-Dichloroethene	5		< 5	< 5	**6.5 J**	< 5	< 5
1,2-Dichloroethane	5		< 5	< 5	< 13	< 5	< 5
1,2-Dichloropropane	5		< 5	< 5	< 13	< 5	< 5
2-Butanone	50		< 50	< 50	< 130	< 50	< 50
2-Hexanone	50		< 50	< 50	< 130	< 50	< 50
4-methyl-2-pentanone	50		< 50	< 50	< 130	< 50	< 50
Acetone	50		< 50	< 50	**2.8 J**	**1.6 J**	**2.7 J**
Benzene	0.7		< 0.7	< 0.7	< 1.8	< 0.7	< 0.7
Bromodichloromethane	50		< 5	< 5	< 13	< 5	< 5
Bromoform	50		< 5	< 5	< 13	< 5	< 5
Bromomethane	5		< 5	< 5	< 13	< 5	< 5
Carbon Disulfide	50		< 5	< 5	< 13	< 5	< 5
Carbon tetrachloride	5		< 5	< 5	< 13	< 5	< 5
Chlorobenzene	5		< 5	< 5	< 13	< 5	< 5
Chloroethane	5		< 5	< 5	< 13	< 5	< 5
Chloroform	7		< 5	< 5	< 13	< 5	< 5
Chloromethane	5		< 5	< 5	< 13	< 5	< 5
cis-1,2-dichloroethene	5		< 5	< 5	**5.9 J**	< 5	**0.32 J**
cis-1,3-dichloropropene	5		< 5	< 5	< 13	< 5	< 5
Dibromochloromethane	5		< 5	< 5	< 13	< 5	< 5
Ethylbenzene	5		< 5	< 5	< 13	< 5	< 5
Methylene Chloride	5		< 5	< 5	< 13	< 5	< 5
Styrene	5		< 5	< 5	< 13	< 5	< 5
Tetrachloroethene	5		< 5	< 5	**7.9 J**	**0.74 J**	**0.65 J**
Toluene	5		< 5	< 5	< 13	< 5	< 5
trans-1,2-dichloroethene	5		< 5	< 5	< 13	< 5	< 5
trans-1,3-dichloropropene	5		< 5	< 5	< 13	< 5	< 5
Trichloroethylene	5		< 5	**1.7 J**	**500 D**	**30**	**31**
Trichlorotrifluoroethane (Freon 113)	5		< 5	< 5	**12 J**	**0.46 J**	**0.49 J**
Vinyl Chloride	2		< 2	< 2	< 5	< 2	< 2
Xylene-o	5		< 5	< 5	< 13	< 5	< 5
Xylenes - m,p	5		< 5	< 5	< 13	< 5	< 5
Total VOCs			0	**1.7**	**537**	**33**	**35**

[1] Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller, Inc. 2000) that are based on the NYSDEC TOGs (NYSDEC 1998); most stringent value listed.

Bold **Constituent detected**

Constituent exceeds SCG value

NYSDEC New York State Department of Environmental Conservation

TOGs Technical and Operational Guidance Series

ug/L Micrograms per liter

VOCs Volatile Organic Compounds

J Value is estimated

D Value is from secondary dilution

Table 7. Concentration of Volatile Organic Compounds Detected in Deep2 Monitoring Wells, and Groundwater Remedial Wells and Treatment Systems, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria[1] and Guidance Values (ug/l)	Well:	GM-33D2	GM-34D2	GM-35D2	GM-75D2	WELL 17	WELL 18
		Sample ID:	GM-33D2	GM-34D2	GM-35D2	GM-75D2	WELL 17	WELL 18
		Date:	12/15/2010	12/16/2010	12/15/2010	12/15/2010	12/13/2010	12/13/2010
1,1,1-Trichloroethane	5		< 5	< 10	< 5	< 5	**0.58 J**	**1.3 J**
1,1,2,2-Tetrachloroethane	5		< 5	< 10	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	5		< 5	< 10	< 5	< 5	< 5	< 5
1,1-Dichloroethane	5		< 5	< 10	< 5	< 5	**1.1 J**	**1.2 J**
1,1-Dichloroethene	5		< 5	**1.4 J**	**0.41 J**	**1.8 J**	**2.6 J**	**4.2 J**
1,2-Dichloroethane	5		< 5	< 10	< 5	< 5	< 5	< 5
1,2-Dichloropropane	5		< 5	< 10	< 5	< 5	< 5	< 5
2-Butanone	50		< 50	< 100	< 50	< 50	< 50	< 50
2-Hexanone	50		< 50	< 100	< 50	< 50	< 50	< 50
4-methyl-2-pentanone	50		< 50	< 100	< 50	< 50	< 50	< 50
Acetone	50		**1.3 J**	< 100	< 50	**2 J**	< 50	< 50
Benzene	0.7		< 0.7	< 1.4	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane	50		< 5	< 10	< 5	< 5	< 5	< 5
Bromoform	50		< 5	< 10	< 5	< 5	< 5	< 5
Bromomethane	5		< 5	< 10	< 5	< 5	< 5	< 5
Carbon Disulfide	50		< 5	< 10	< 5	< 5	< 5	< 5
Carbon tetrachloride	5		< 5	< 10	< 5	< 5	< 5	< 5
Chlorobenzene	5		< 5	< 10	< 5	< 5	< 5	< 5
Chloroethane	5		< 5	< 10	< 5	< 5	< 5	< 5
Chloroform	7		< 5	< 10	< 5	< 5	< 5	< 5
Chloromethane	5		< 5	< 10	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene	5		**0.33 J**	**5.2 J**	**0.8 J**	**0.42 J**	**3.4 J**	**1.6 J**
cis-1,3-dichloropropene	5		< 5	< 10	< 5	< 5	< 5	< 5
Dibromochloromethane	5		< 5	< 10	< 5	< 5	< 5	< 5
Ethylbenzene	5		< 5	< 10	< 5	< 5	< 5	< 5
Methylene Chloride	5		< 5	< 10	< 5	< 5	< 5	< 5
Styrene	5		< 5	< 10	< 5	< 5	< 5	< 5
Tetrachloroethene	5		**6.4**	**11**	**8**	**2.8 J**	**29**	**12**
Toluene	5		< 5	< 10	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene	5		< 5	< 10	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene	5		< 5	< 10	< 5	< 5	< 5	< 5
Trichloroethylene	5		**58**	**250**	**150**	**130**	**230 D**	**81**
Trichlorotrifluoroethane (Freon 113)	5		**6.3**	**2.7 J**	**2.4 J**	**1.6 J**	**6.7**	**1.6 J**
Vinyl Chloride	2		< 2	< 4	< 2	< 2	< 2	< 2
Xylene-o	5		< 5	< 10	< 5	< 5	< 5	< 5
Xylenes - m,p	5		< 5	< 10	< 5	< 5	< 5	< 5
Total VOCs			**72**	**270**	**162**	**139**	**273**	**103**

See last page for notes

Table 7. Concentration of Volatile Organic Compounds Detected in Deep2 Monitoring Wells, and Groundwater Remedial Wells and Treatment Systems, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria[1] and Guidance Values (ug/l)	Well:	WELL 19	102 EFFLUENT	WELL 1	WELL 3	96 EFFLUENT
		Sample ID:	WELL 19	102 EFFLUENT	WELL 1	WELL 3	96 EFFLUENT
		Date:	12/13/2010	12/13/2010	12/17/2010	12/13/2010	12/13/2010
1,1,1-Trichloroethane	5		**0.54 J**	< 5	< 25	< 100	< 5
1,1,2,2-Tetrachloroethane	5		< 5	< 5	< 25	< 100	< 5
1,1,2-Trichloroethane	5		< 5	< 5	< 25	< 100	< 5
1,1-Dichloroethane	5		**0.89 J**	< 5	< 25	< 100	< 5
1,1-Dichloroethene	5		**1.5 J**	< 5	**3.4 J**	**10 J**	< 5
1,2-Dichloroethane	5		**0.54 J**	< 5	< 25	< 100	< 5
1,2-Dichloropropane	5		< 5	< 5	**5 J**	< 100	< 5
2-Btanone	50		< 50	< 50	< 250	< 1000	< 50
2-Hexanone	50		< 50	< 50	< 250	< 1000	< 50
4-methyl-2-pentanone	50		< 50	< 50	< 250	< 1000	< 50
Acetone	50		< 50	< 50	< 250	< 1000	< 50 B
Benzene	0.7		< 0.7	< 0.7	< 3.5	< 14	< 0.7
Bromodichloromethane	50		< 5	< 5	< 25	< 100	< 5
Bromoform	50		< 5	< 5	< 25	< 100	< 5
Bromomethane	5		< 5	< 5	< 25	< 100	< 5
Carbon Dislfide	50		< 5	< 5	< 25	< 100	< 5
Carbon tetrachloride	5		< 5	< 5	< 25	< 100	< 5
Chlorobenzene	5		< 5	< 5	< 25	< 100	< 5
Chloroethane	5		< 5	< 5	< 25	< 100	< 5
Chloroform	7		**0.56 J**	< 5	< 25	< 100	< 5
Chloromethane	5		< 5	< 5	< 25	< 100	< 5
cis-1,2-dichloroethene	5		**16**	< 5	**3.5 J**	**12 J**	< 5
cis-1,3-dichloropropene	5		< 5	< 5	< 25	< 100	< 5
Dibromochloromethane	5		< 5	< 5	< 25	< 100	< 5
Ethylbenzene	5		< 5	< 5	< 25	< 100	< 5
Methylene Chloride	5		< 5	< 5	< 25	< 100	< 5
Styrene	5		< 5	< 5	< 25	< 100	< 5
Tetrachloroethene	5		**7.8**	< 5	**58**	**74 J**	< 5
Tolene	5		< 5	< 5	< 25	< 100	< 5
trans-1,2-dichloroethene	5		< 5	< 5	< 25	< 100	< 5
trans-1,3-dichloropropene	5		< 5	< 5	< 25	< 100	< 5
Trichloroethylene	5		**190**	< 5	**540**	**2,600**	< 5
Trichlorotrifloroethane (Freon 113)	5		**0.82 J**	< 5	**4.6 J**	**11 J**	< 5
Vinyl Chloride	2		< 2	< 2	**8.1**	**190**	< 2
Xylene-o	5		< 5	< 5	< 25	< 100	< 5
Xylenes - m,p	5		< 5	< 5	< 25	< 100	< 5
Total VOCs			**219**	**0**	**623**	**2,900**	**0**

[1] Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller, Inc. 2000) that are based on the NYSDEC TOGs (NYSDEC 1998); most stringent value listed.

Bold **Constituent detected**

Constituent exceeds SCG value

NYSDEC New York State Department of Environmental Conservation

TOGs Technical and Operational Guidance Series

ug/L Micrograms per liter

VOCs Volatile Organic Compounds

J Value is estimated

D Value is from a secondary dilution.

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Table 8. Concentrations of Site-Related Volatile Organic Compounds Detected in Outpost Wells, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values [1] (ug/L)	Well: / Sample ID: / Date:	BPOW 1-1 / BPOW 1-1 / 12/16/2010	BPOW 1-2 / BPOW 1-2 / 12/16/2010	BPOW 1-3 / BPOW 1-3 / 12/8/2010	BPOW 2-1[5] / BPOW 2-1 / 12/8/2010	BPOW 2-2 / BPOW 2-2 / 12/8/2010	BPOW 3-1 / BPOW 3-1 / 12/21/2010	BPOW 3-2 / BPOW 3-2 / 12/21/2010	BPOW 4-1 / BPOW 4-1 / 12/20/2010	BPOW 4-1 / REP122010 / 12/20/2010	BPOW 4-2 / BPOW 4-2 / 12/20/2010
1,1,1-Trichloroethane	5		**0.31 J**	< 0.5	< 0.5	< 0.5	0.22 J	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachlroethane	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	5		< 0.5	< 0.5	< 0.5	< 0.5	**0.82**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene	5		< 0.5	< 0.5	< 0.5	< 0.5	**0.32 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	7		< 0.5	< 0.5	< 0.5	< 0.5	**0.22 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethene	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorotrifluoroethane (Freon 113)	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.84**	**0.49 J**	**0.45 J**
Tetrachloroethene	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloroethene	5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	5		**0.89**	< 0.5	< 0.5	< 0.5	**0.68**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Site-Related VOCs [2] :			**1.2** [3]	**0**	**0**	**0**	**2.26**	**0**	**0**	**0.84**	**0.49**	**0.45**
TVOC Trigger Value [4]:			**0.6**	**0.6**	**0.6**	**NE**	**NE**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**

Note: Outpost Wells OW2-1 and OW2-2 results were obtained from split samples collected when Navy sampled the wells this round.

(1) Standards Critieria and Guidance (SCGs) values based on the Groundwater Feasibility Study Report (ARCADIS Geraherty & Miller, Inc. 2000) are based on the NYSDEC TOGs (NYSDEC 1998); most stringent values listed.

(2) Site-related VOCs were established in the Public Water Supply Contingency Plan (PWSCP) (ARCADIS G&M, Inc. 2003).

(3) The TVOC Trigger Value for Cluster 1 was initially exceeded on April 23, 2004; confirmatory sampling and reporting was conducted as per the PWSCP (ARCADIS G&M, Inc. 2003).

(4) TVOC Trigger Values were established in the PWSCP (ARCADIS G&M, Inc. 2003).

(5) Benzene, which is not site-related VOC, was detected in Outpost Well OW 2-1 on 12/8/10 at 0.25 ug/L.

NYSDEC New York State Department of Environmental Conservation
TOGs Technical and Operational Guidance Series
ug/L Micrograms per liter
Bold Constituent detected
VOC Volatile organic compounds
TVOC Total volatile organic compounds
NE Not Established
J Value is estimated
REP Field replicate sample

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Table 9. Concentration of Tentatively Identified Compounds (TICs) Detectected in Groundwater and Trip Blank Samples in Year 2010
Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Constituent (units in ug/L)	Well:	GM-34D	HN-24I	TB	TB
	Sample ID:	GM-34D	HN-24I	TB121410	TB121510
	Sample Date:	4/12/2010	8/6/2010	12/14/2010	12/15/2010
1,1,1,2-Tetrafluoroethane		--	--	**6.2 JN**	**5.2 JN**
2-Ethyl- 1-Hexanol		**160 JN**	--	--	--
Trichlorofluoromethane (CFC-11)		--	**27 JN**	--	--

Notes

TICs are identified based on the review of mass spectrometry results via a comprehensive library search of all organic compounds

ug/L	Micrograms per liter
N	Presumptive evidence of this constituent. Calibration was not ran for this constituent; therefore the results should be used for qualitative purposes only.
J	Estimated value
--	Not identified as a TIC for this sample.
TB	Trip Blank

Table 10. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Constituent (units in ug/L)	Location ID: / Sample ID: / Sample Date:	Field Blank (1) FB121610 12/16/2010	Trip Blank (1) TB120810 12/8/2010	Trip Blank (1) TB121610 12/16/2010	Trip Blank (1) TB122010 12/20/2010	Trip Blank (1) TB122110 12/21/2010
1,1,1,2-Tetrachloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloropropene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2,3-Trichlorobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2,3-Trichloropropane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2,4,Trichlorobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2,4-Trimethylbenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromo-3-Chloropropane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane (EDB)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichlorobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3,5-Trimethylbenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichloropropane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2,2-Dichloropropane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Butanone		--	--	--	--	--
2-Chlorotoluene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Hexanone		--	--	--	--	--
2-Phenylbutane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Isopropyltoluene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-methyl-2-pentanone		--	--	--	--	--
Acetone		--	--	--	--	--
Benzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Disulfide		--	--	--	--	--
Carbon tetrachloride		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobromomethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorodifluoromethane (Freon 22)		--	--	--	--	--
Chloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloromethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-dichloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,3-dichloropropene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane (Freon 12)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachloro-1,3-butadiene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes on last page

Table 10. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Constituent (units in ug/L)	Location ID: / Sample ID: / Sample Date:	Field Blank [1] FB121610 12/16/2010	Trip Blank [1] TB120810 12/8/2010	Trip Blank [1] TB121610 12/16/2010	Trip Blank [1] TB122010 12/20/2010	Trip Blank [1] TB122110 12/21/2010
Isopropylbenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methyl tert-Butyl Ether		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Methylene Chloride		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
n-Butylbenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
n-Propylbenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Styrene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tert-butyl Alcohol		< 20	< 20	< 20	< 20	< 20
tert-Butylbenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene		**0.25 J**	< 0.5	< 0.5	**0.23 J**	< 0.5
trans-1,2-dichloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,3-dichloropropene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane (CFC-11)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorotrifluoroethane (Freon 113)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl Chloride		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylene-o		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - m,p		< 1	< 1	< 1	< 1	< 1
Total VOCs		**0.25**	0	0	**0.23**	**0**

Notes on last page

Table 10. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Constituent (units in ug/L)	Well ID: / Sample ID: / Sample Date:	Trip Blank [2] TRIP BLANK-20101213 12/13/2010	Trip Blank [2] TB121310 12/13/2010	Trip Blank [2] TB121410 12/14/2010	Trip Blank [2] TB121510 12/15/2010
1,1,1,2-Tetrachloroethane		< 5	< 5	< 5	< 5
1,1,1-Trichloroethane		< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	< 5	< 5
1,1-Dichloroethene		--	--	--	--
1,1-Dichloropropene		--	--	--	--
1,2,3-Trichlorobenzene		--	--	--	--
1,2,3-Trichloropropane		--	--	--	--
1,2,4,Trichlorobenzene		--	--	--	--
1,2,4-Trimethylbenzene		--	--	--	--
1,2-Dibromo-3-Chloropropane		--	--	--	--
1,2-Dibromoethane (EDB)		--	--	--	--
1,2-Dichlorobenzene		< 5	< 5	< 5	< 5
1,2-Dichloroethane		< 5	< 5	< 5	< 5
1,2-Dichloropropane		--	--	--	--
1,3,5-Trimethylbenzene		--	--	--	--
1,3-Dichloropropane		--	--	--	--
1,4-Dichlorobenzene		--	--	--	--
2,2-Dichloropropane		< 50	< 50	< 50	< 50
2-Butanone		--	--	--	--
2-Chlorotoluene		< 50	< 50	< 50	< 50
2-Hexanone		--	--	--	--
2-Phenylbutane		--	--	--	--
4-Chlorotoluene		--	--	--	--
4-Isopropyltoluene		< 50	< 50	< 50	< 50
4-methyl-2-pentanone		**2 J**	< 50	**1 J**	< 50
Acetone		< 0.7	< 0.7	< 0.7	< 0.7
Benzene		--	--	--	--
Bromobenzene		< 5	< 5	< 5	< 5
Bromodichloromethane		< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 5
Carbon Disulfide		< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 5
Chlorobenzene		--	--	--	--
Chlorobromomethane		< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 5	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 5
Chloroform		< 5	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	< 5	< 5	< 5
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5
Dibromochloromethane		--	--	--	--
Dibromomethane		< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 5	< 5	< 5
Ethylbenzene		--	--	--	--
Hexachloro-1,3-butadiene		--	--	--	--

Notes on last page

Table 10. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Constituent (units in ug/L)	Well ID: / Sample ID: / Sample Date:	Trip Blank [2] TRIP BLANK-20101213 12/13/2010	Trip Blank [2] TB121310 12/13/2010	Trip Blank [2] TB121410 12/14/2010	Trip Blank [2] TB121510 12/15/2010
Isopropylbenzene		--	--	--	--
1,3-Dichlorobenzene		--	--	--	--
Methyl tert-Butyl Ether		< 5	< 5	< 5	**0.31 BJ**
Methylene Chloride		< 5	--	--	--
Naphthalene		--	--	--	--
n-Butylbenzene		--	--	--	--
n-Propylbenzene		< 5	< 5	< 5	< 5
Styrene		--	--	--	--
Tert-butyl Alcohol		--	--	--	--
tert-Butylbenzene		< 5	< 5	< 5	< 5
Tetrachloroethene		< 5	< 5	< 5	< 5
Toluene		< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5
Trichloroethylene		--	--	--	--
Trichlorofluoromethane (CFC-11)		< 5	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)		< 5	< 2	< 2	< 2
Vinyl Chloride		< 2	< 5	< 5	< 5
Xylene-o		< 5	< 5	< 5	< 5
Xylenes - m,p		--	--	--	--
Total VOCs		**2**	0	**1**	**0.31**

Notes

(1) Sample analysis by CLP Method OLM 4.2.

(2) Sample analysis by USEPA Method 524.2.

Bold constituent detected

CLP Contract Laboratory Procedure

USEPA United States Environmental Protection Agency

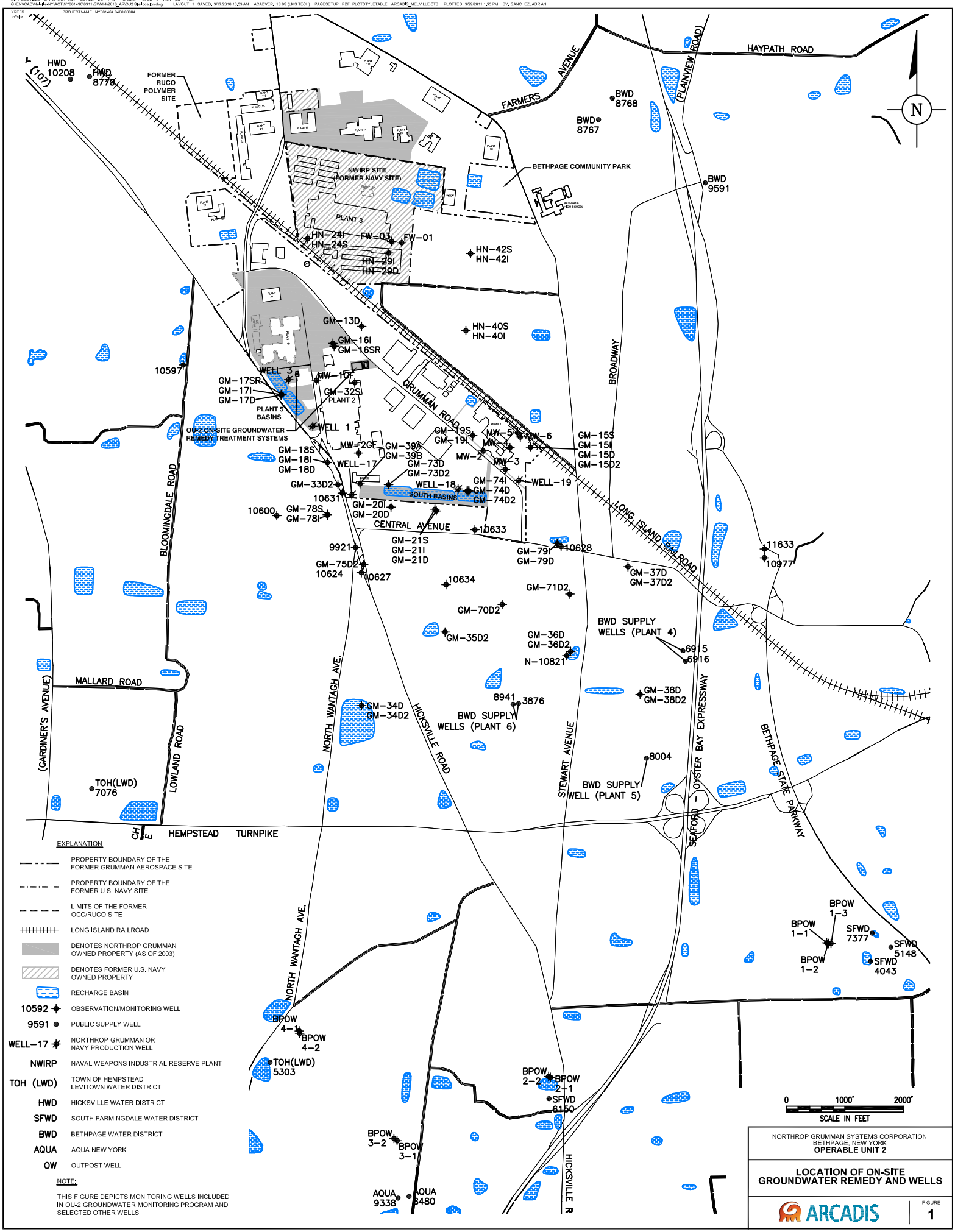
-- Not Analyzed

ug/L Micrograms per liter

VOCs Volatile organic compounds

J Estimated value

B Compound detected in associated laboratory blank sample



EXPLANATION

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
- LIMITS OF THE FORMER OCC/RUCO SITE
- LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2003)
- DENOTES FORMER U.S. NAVY OWNED PROPERTY
- RECHARGE BASIN
- 10592 OBSERVATION/MONITORING WELL
- 9591 PUBLIC SUPPLY WELL
- WELL-17 NORTHROP GRUMMAN OR NAVY PRODUCTION WELL
- NWIRP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- TOH (LWD) TOWN OF HEMPSTEAD LEVITOWN WATER DISTRICT
- HWD HICKSVILLE WATER DISTRICT
- SFWD SOUTH FARMINGDALE WATER DISTRICT
- BWD BETHPAGE WATER DISTRICT
- AQUA AQUA NEW YORK
- OW OUTPOST WELL

NOTE:

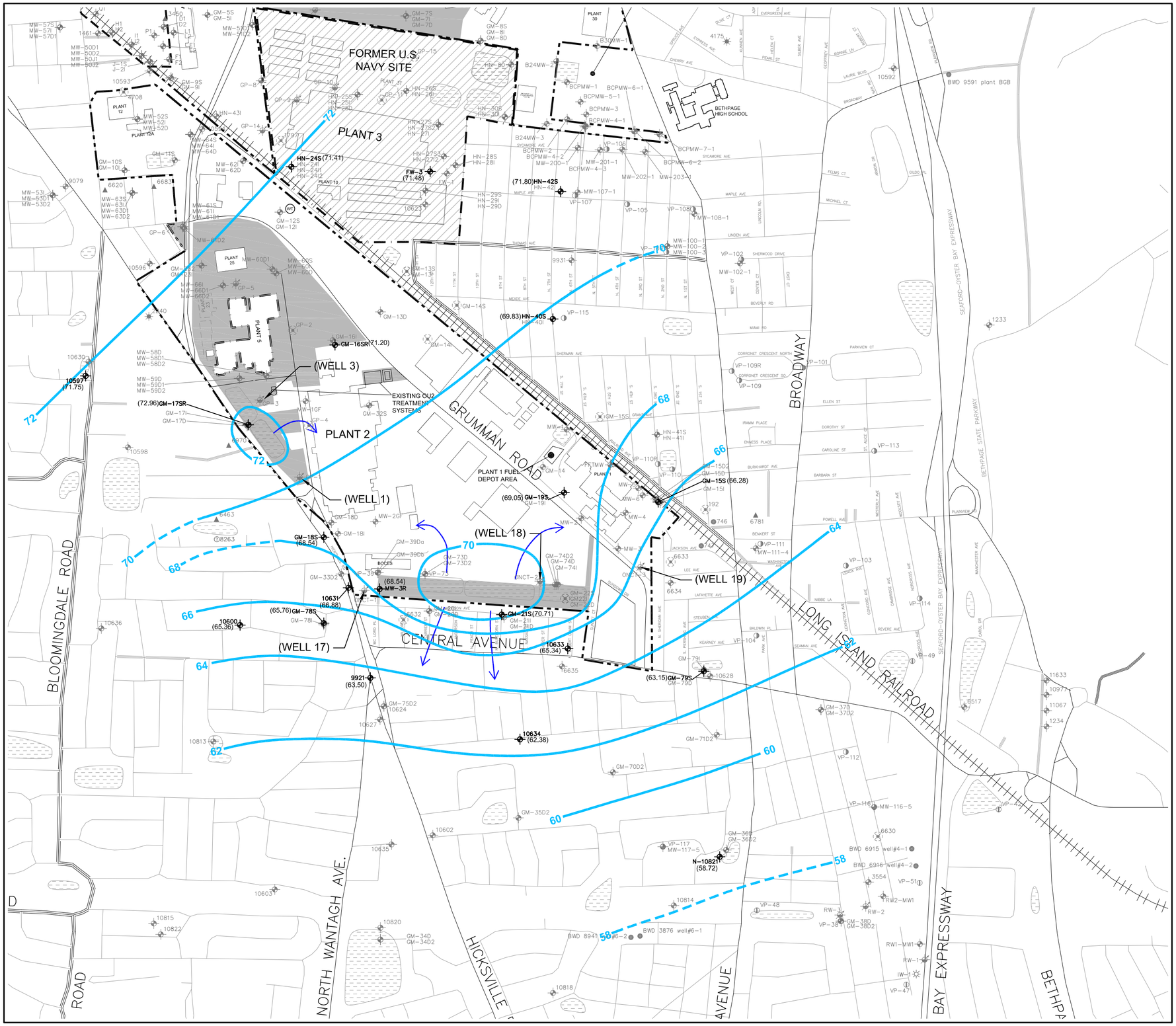
THIS FIGURE DEPICTS MONITORING WELLS INCLUDED IN OU-2 GROUNDWATER MONITORING PROGRAM AND SELECTED OTHER WELLS.

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK
OPERABLE UNIT 2

LOCATION OF ON-SITE GROUNDWATER REMEDY AND WELLS

ARCADIS

FIGURE 1



EXPLANATION:

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
- LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2003)
- DENOTES FORMER U.S. NAVY OWNED PROPERTY
- RECHARGE BASIN
- (WT) WATER TOWER
- OBSERVATION/MONITORING WELL
- INDUSTRIAL WELL
- PUBLIC SUPPLY WELL
- IRRIGATION WELL
- NORTHROP GRUMMAN OR NAVY PRODUCTION WELL
- ABANDONED WELL
- COMPLETED OU-2 VERTICAL PROFILE BORING
- COMPLETED OU-3 VERTICAL PROFILE BORING
- 66 — LINE OF EQUAL POTENTIOMETRIC SURFACE ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE INFERRED)
- (59.37) WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- OU-2 OPERABLE UNIT 2
- OU-3 OPERABLE UNIT 3

0 800' 1600'
SCALE IN FEET

NOTES:

1. NORTHROP GRUMMAN REMEDIAL WELLS 1, 3, 17, 18 AND 19 SCREENED IN DEEP 2 ZONE.
2. BETHPAGE WATER DISTRICT WELL 3876 SCREENED IN DEEP ZONE.
3. BETHPAGE WATER DISTRICT WELLS 6915, 6916 AND 8941 SCREENED IN DEEP 2 ZONE.

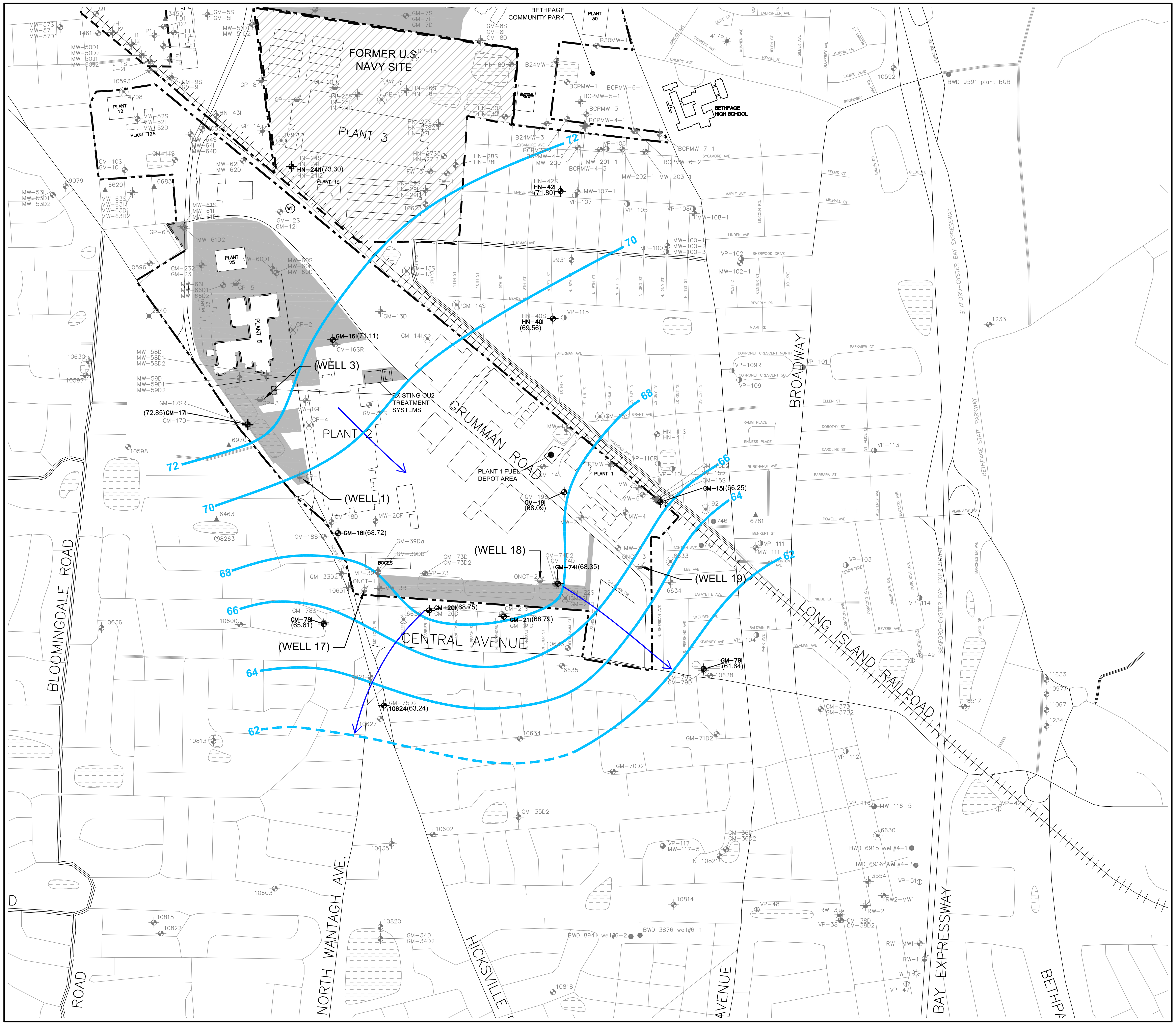
ALL COORDINATES REFERENCED TO NORTH AMERICAN DATUM 1983

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK
OPERABLE UNIT 2

WATER-TABLE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTION IN THE SHALLOW ZONE, SEPTEMBER 21, 2010

ARCADIS

FIGURE 2



0 800' 1600'

SCALE IN FEET

EXPLANATION:

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
- LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2003)
- DENOTES FORMER U.S. NAVY OWNED PROPERTY
- RECHARGE BASIN
- WATER TOWER
- OBSERVATION/MONITORING WELL
- INDUSTRIAL WELL
- PUBLIC SUPPLY WELL
- IRRIGATION WELL
- NORTHROP GRUMMAN OR NAVY PRODUCTION WELL
- ABANDONED WELL
- COMPLETED OU-2 VERTICAL PROFILE BORING
- COMPLETED OU-3 VERTICAL PROFILE BORING
- 66 — LINE OF EQUAL POTENTIOMETRIC SURFACE ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE INFERRED)
- (69.15) WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- OU-2 OPERABLE UNIT 2
- OU-3 OPERABLE UNIT 3

NOTES:

1. NORTHROP GRUMMAN REMEDIAL WELLS 1, 3, 17, 18 AND 19 SCREENED IN DEEP 2 ZONE.
2. BETHPAGE WATER DISTRICT WELL 3876 SCREENED IN DEEP ZONE.
3. BETHPAGE WATER DISTRICT WELLS 6915, 6916 AND 8941 SCREENED IN DEEP 2 ZONE.

ALL COORDINATES REFERENCED TO NORTH AMERICAN DATUM 1983

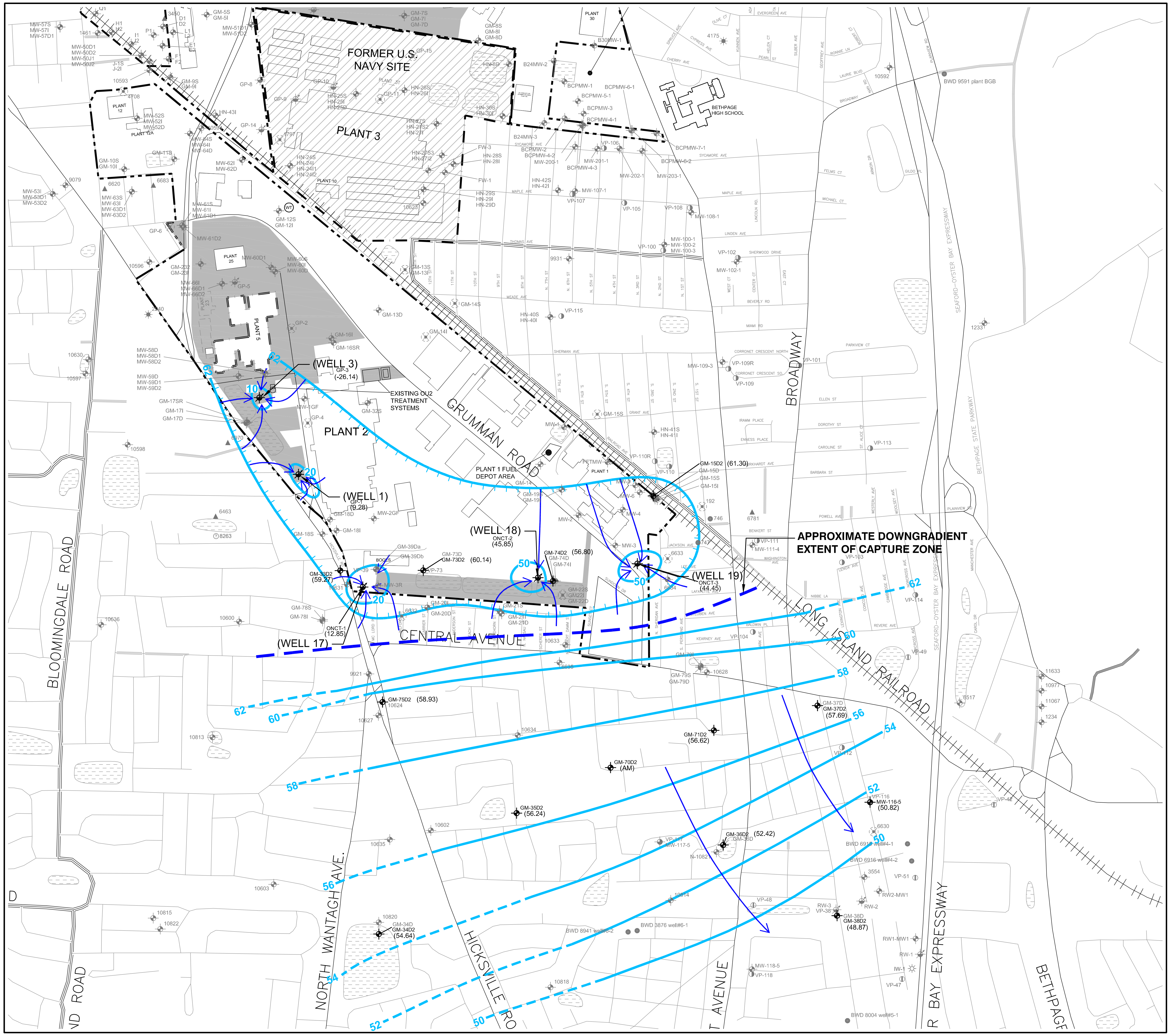
NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK
OPERABLE UNIT 2

POTENTIOMETRIC SURFACE ELEVATION AND HORIZONTAL GROUNDWATER FLOW DIRECTION IN THE INTERMEDIATE ZONE, SEPTEMBER 21, 2010

ARCADIS

FIGURE
3

CITY:Melville/NY DIV/GROUP:ENV/IM DB:A.Sanchez LD: PIC: PM:C.Sanbeyers TM:D.Stern LYR:ON=*;OFF=*REF* G:\ENVCAD\Melville-NY\ACT\NY001492\0000\2010_AR003\DWG\OU2-IW.dwg LAYOUT: 3 SAVED: 3/14/2011 11:57 AM ACADVER: 18.0S (LMS TECH) PAGESETUP: PDF PLOTSTYLETABLE: ARCADIS_MELVILLE.CTB PLOTTED: 3/14/2011 11:58 AM BY: SANCHEZ, ADRIAN PROJECTNAME: NY001492.0409.00004 XREFS: offsite



N

EXPLANATION:

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
- LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2003)
- DENOTES FORMER U.S. NAVY OWNED PROPERTY
- RECHARGE BASIN
- OBSERVATION/MONITORING WELL
- INDUSTRIAL WELL
- PUBLIC SUPPLY WELL
- IRRIGATION WELL
- NORTHROP GRUMMAN OR NAVY PRODUCTION WELL
- ABANDONED WELL
- COMPLETED OU-2 VERTICAL PROFILE BORING
- COMPLETED OU-3 VERTICAL PROFILE BORING
- 62 — LINE OF EQUAL POTENTIOMETRIC SURFACE ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL, DENOTES LOWER WATER-LEVEL ELEVATION WITHIN CONTOUR
- 58 — LINE OF EQUAL POTENTIOMETRIC SURFACE ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE LESS CONTROL)
- (51.73) WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- (AM) ANOMALOUS MEASUREMENT
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- OU-2 OPERABLE UNIT 2
- OU-3 OPERABLE UNIT 3

0 800' 1600'
SCALE IN FEET

NOTES:

1. NORTHROP GRUMMAN REMEDIAL WELLS 1, 3, 17, 18 AND 19 SCREENED IN DEEP 2 ZONE.
2. BETHPAGE WATER DISTRICT WELL 3876 SCREENED IN DEEP ZONE.
3. BETHPAGE WATER DISTRICT WELLS 6915, 6916 AND 8941 SCREENED IN DEEP 2 ZONE.

ALL COORDINATES REFERENCED TO NORTH AMERICAN DATUM 1983

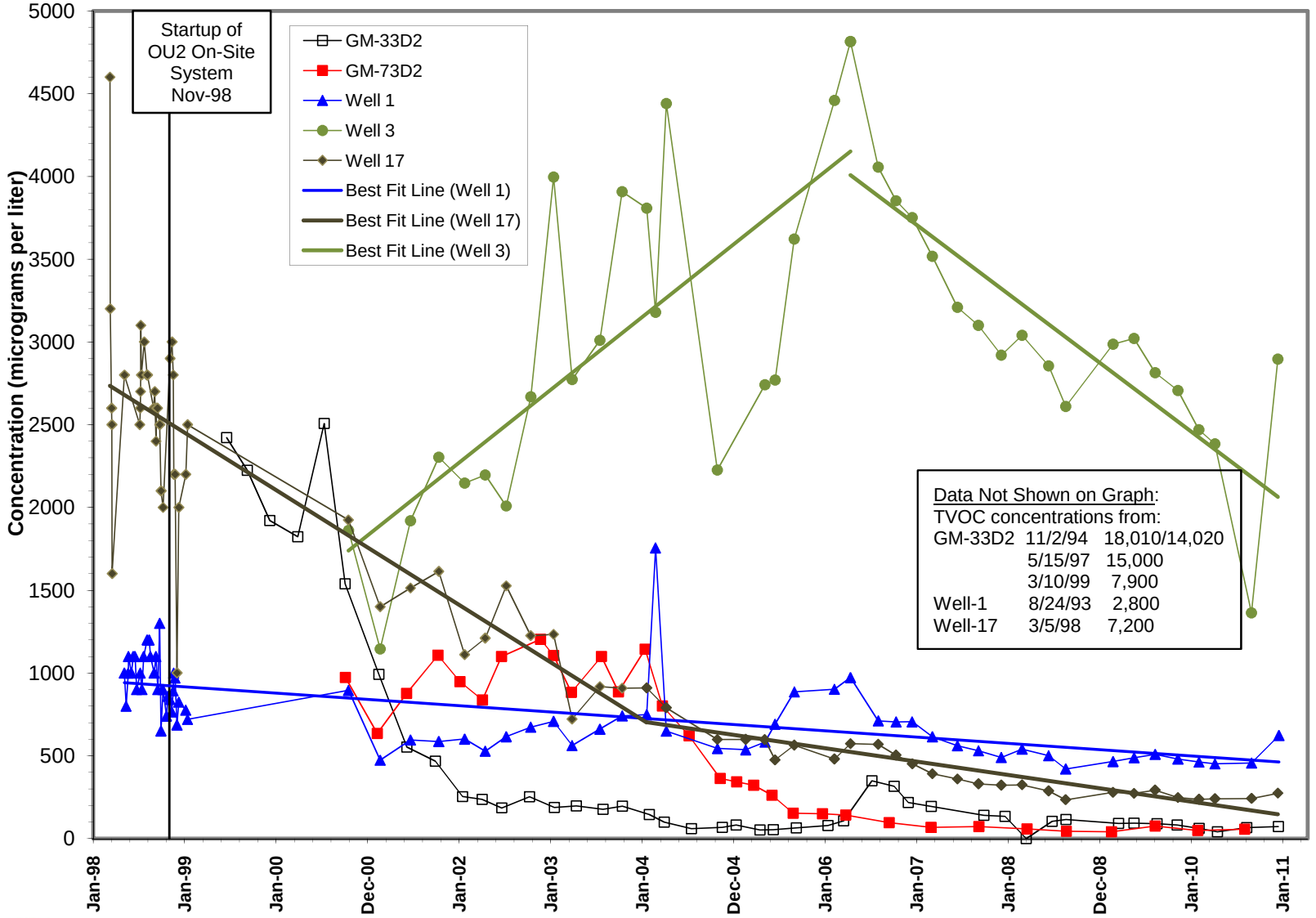
NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK
OPERABLE UNIT 2

POTENTIOMETRIC SURFACE ELEVATION AND HORIZONTAL GROUNDWATER FLOW DIRECTION IN THE DEEP 2 ZONE, SEPTEMBER 21, 2010

ARCADIS

FIGURE
4

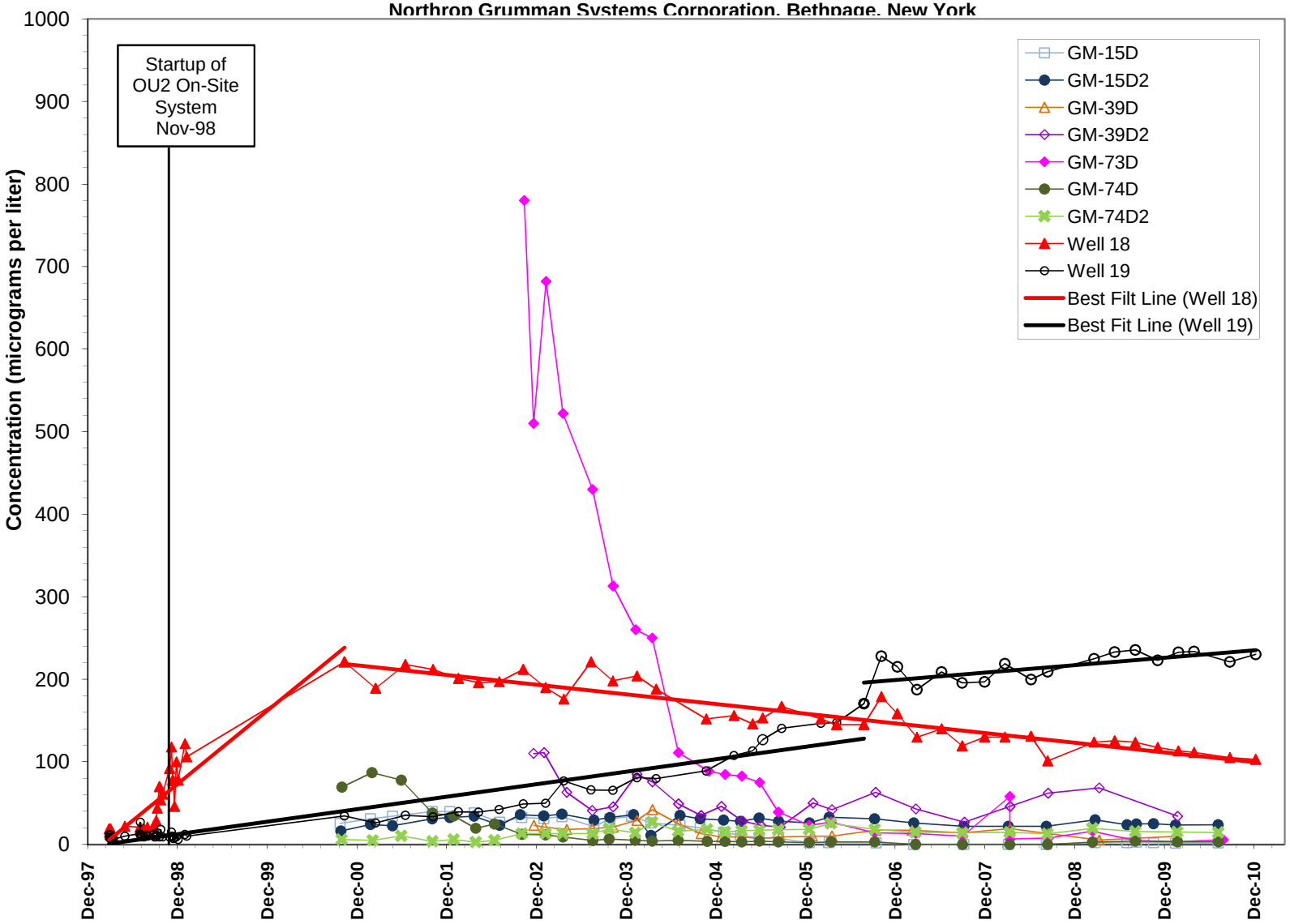
Total Volatile Organic Compound Concentrations (Southern and Southwestern Site Boundary) in OU2 Remedial Wells and Monitoring Wells GM-33D2 and GM-73D2
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 5

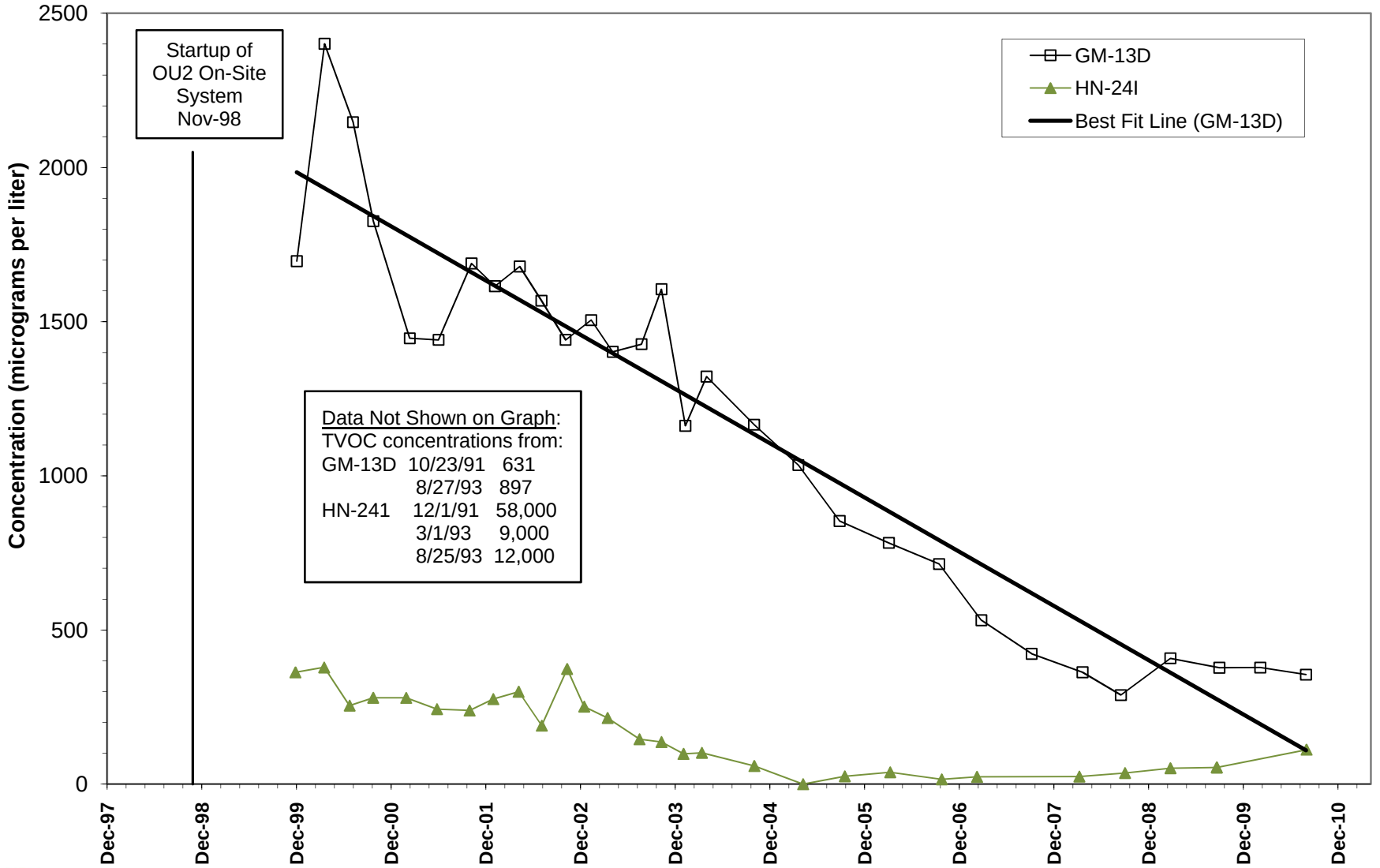
Total Volatile Organic Compound Concentrations
(Southeastern Site Boundary) in On-Site Deep and Deep2
Monitoring Wells and OU2 Remedial Wells 18 and 19
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 6

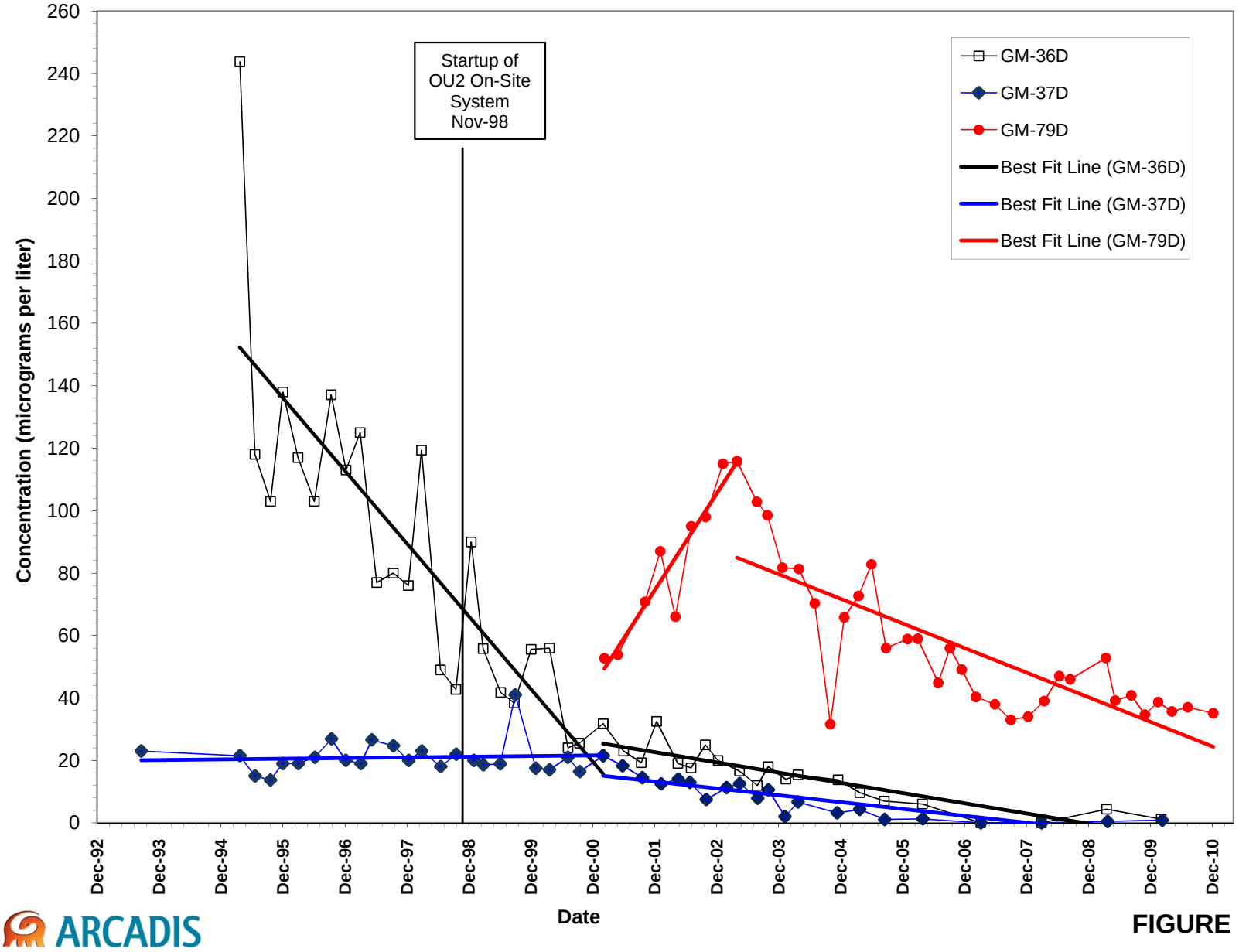
Total Volatile Organic Compound Concentrations in
On-Site Intermediate and Deep Monitoring Wells
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 7

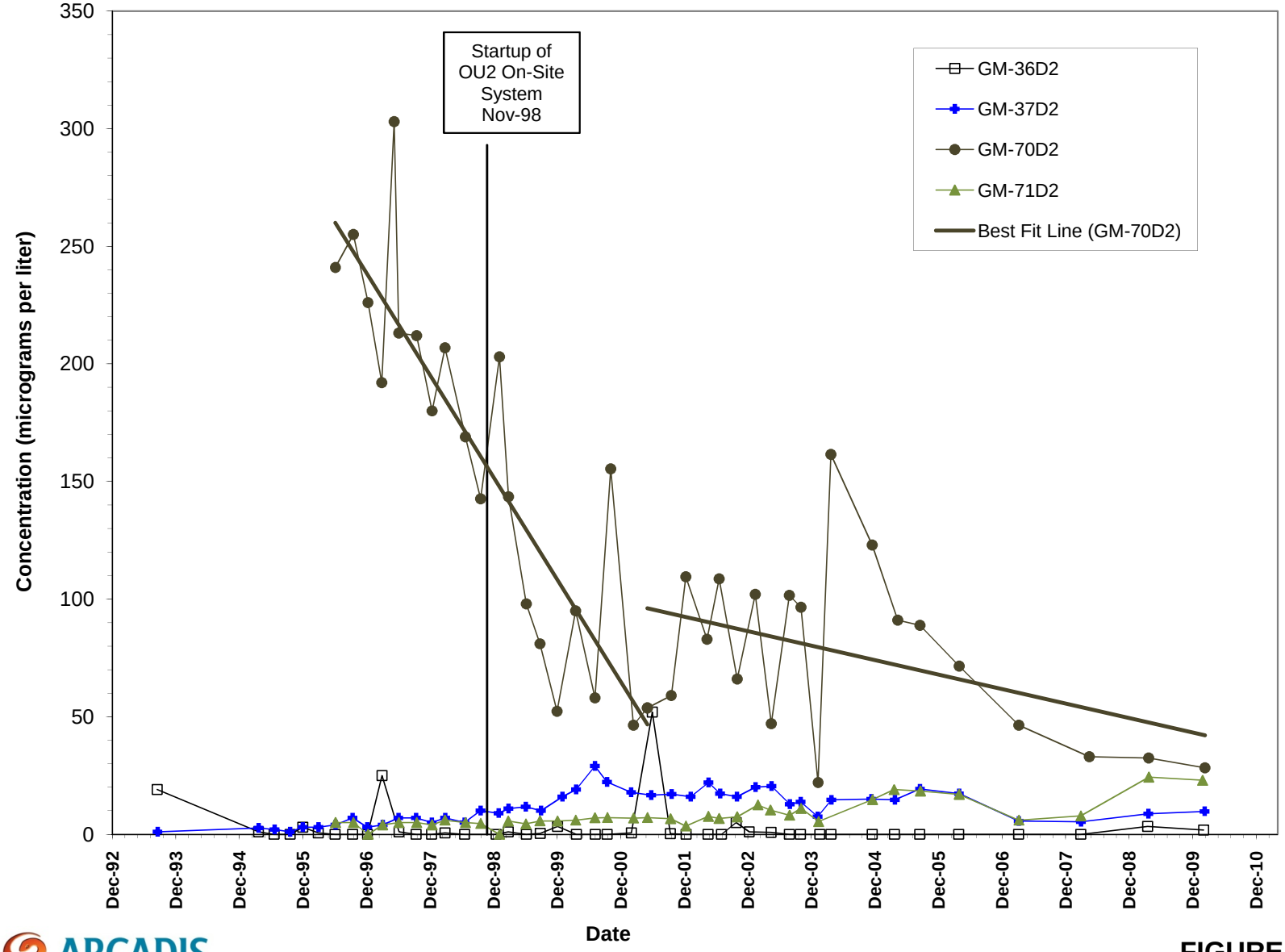
Total Volatile Organic Compound Concentrations in
Off-Site Deep Monitoring Wells (Southeast of the Site)
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 8

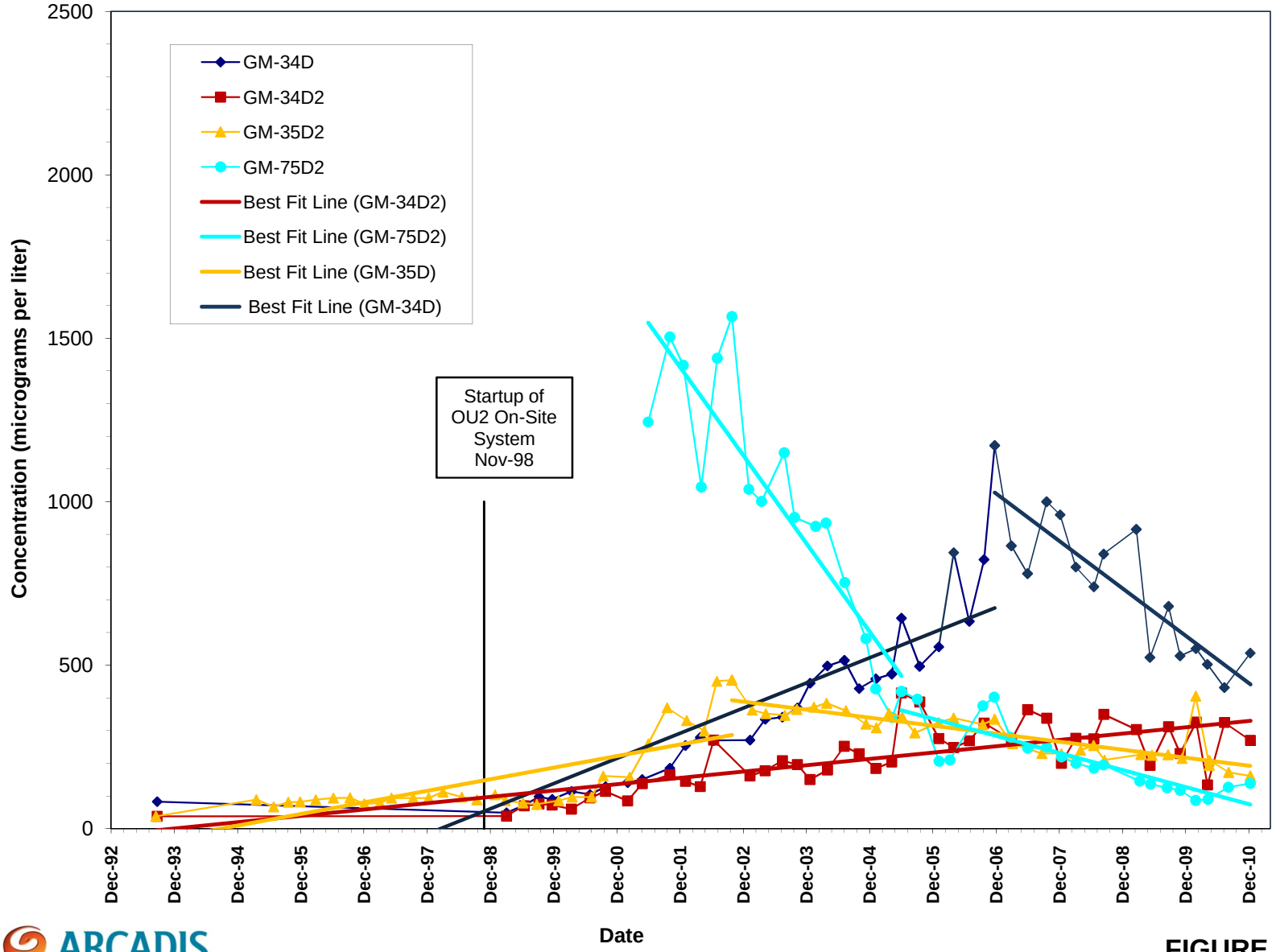
Total Volatile Organic Compound Concentrations in
Off-Site Deep2 Monitoring Wells (Southeast of the Site)
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 9

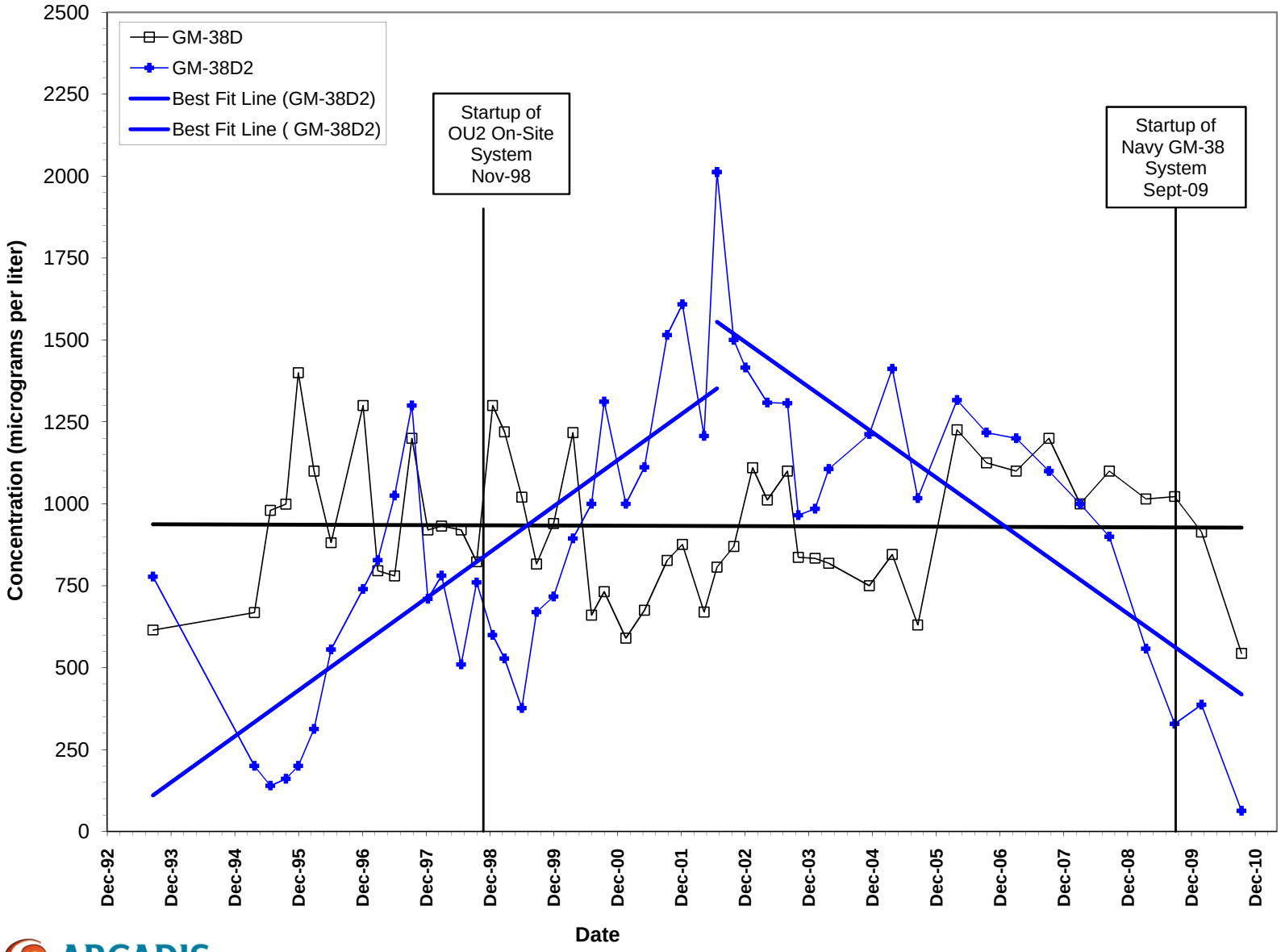
Total Volatile Organic Compound Concentrations in
Off-Site Deep and Deep2 Monitoring Wells (South of the Site)
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 10

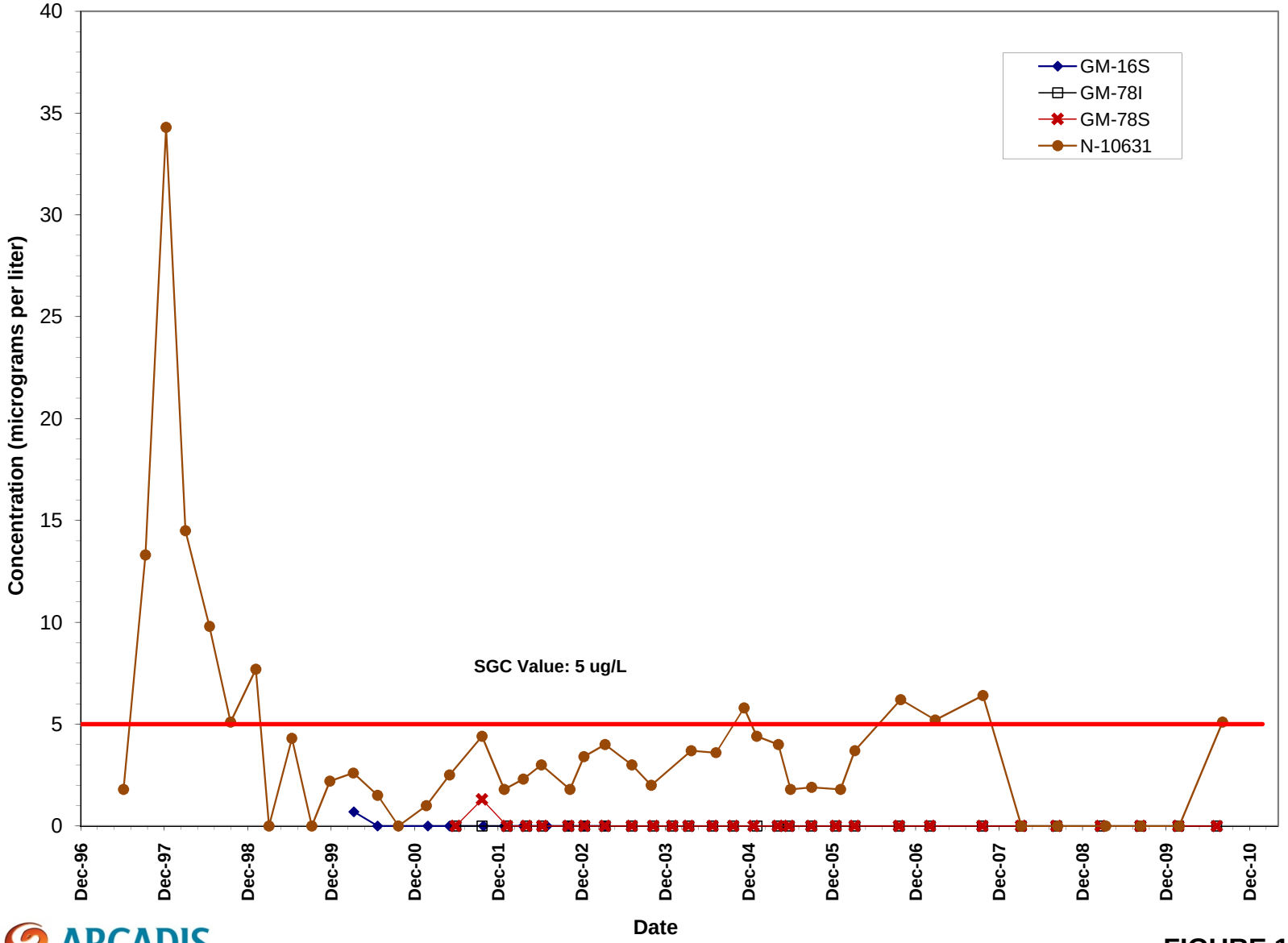
Total Volatile Organic Compound Concentrations in
GM-38 Area Deep and Deep2 Monitoring Wells
Northrop Grumman System Corporation, Bethpage, New York



ARCADIS

FIGURE 11

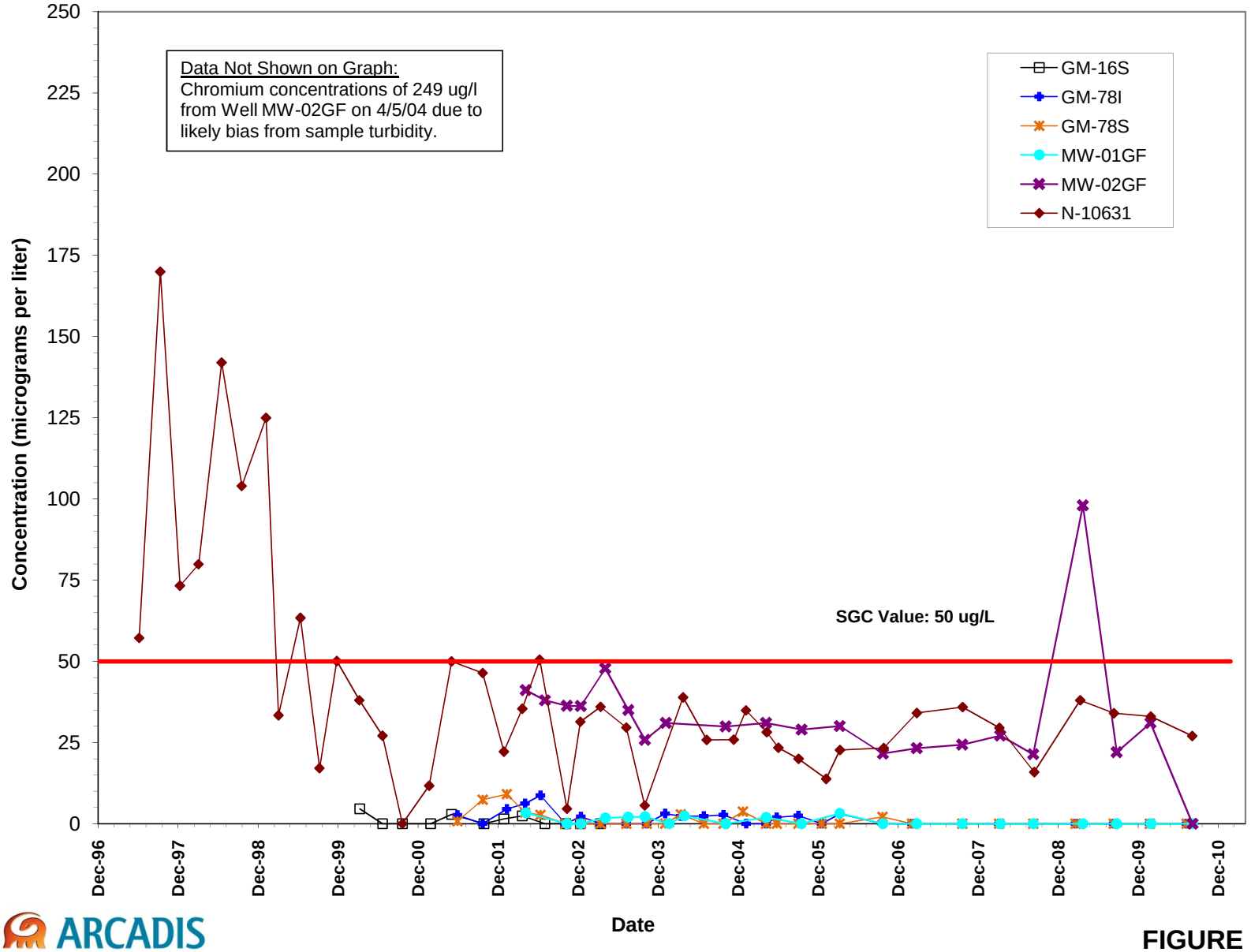
Total Cadmium Concentrations in Monitoring Wells
Near Former Plant 2
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 12

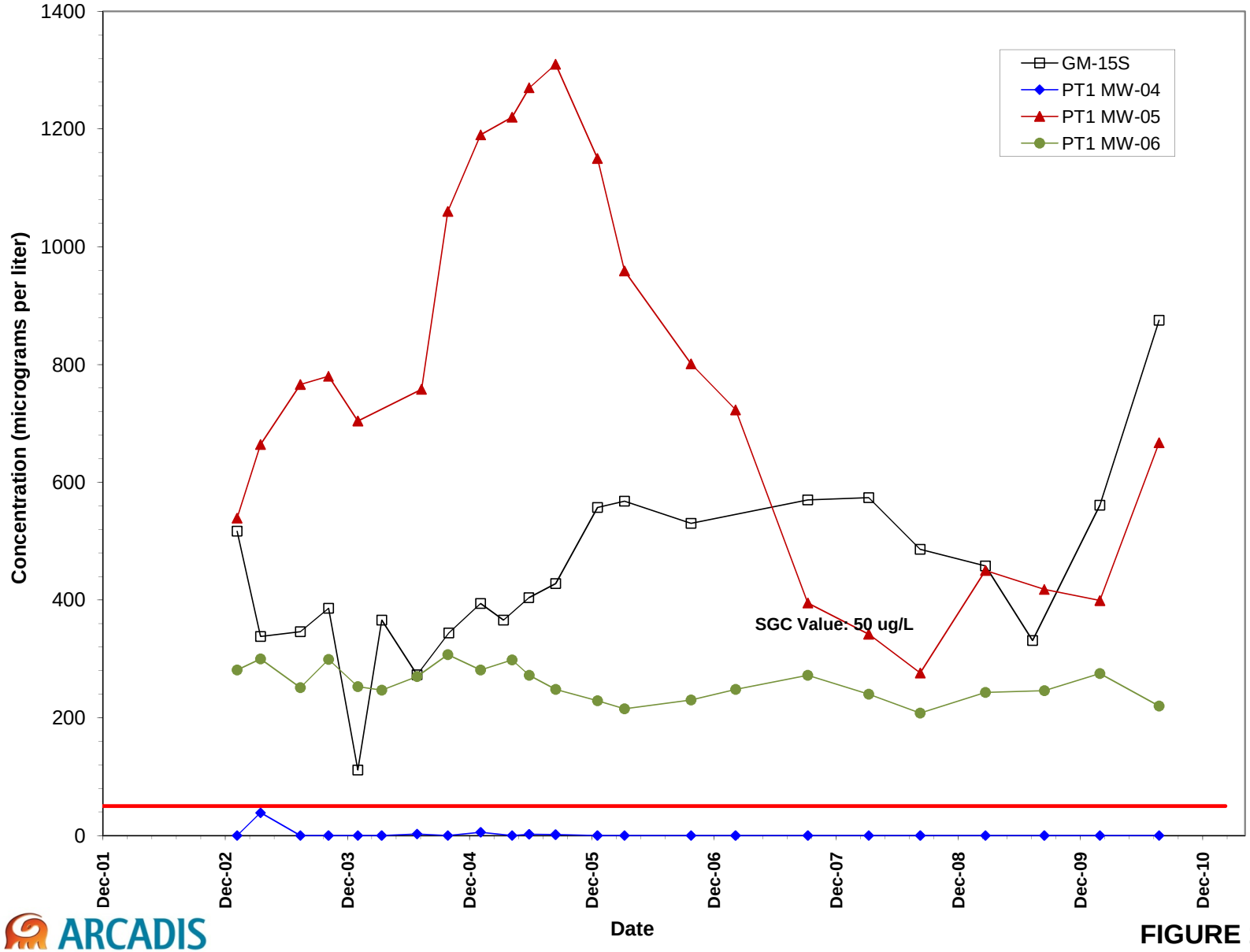
Total Chromium Concentrations in Monitoring Wells
Near Former Plant 2
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 13

Total Chromium Concentrations in Monitoring Wells
Near Former Plant 1
Northrop Grumman Systems Corporation, Bethpage, New York



ARCADIS

FIGURE 14

ARCADIS

Appendix **A**

Appendix A: Groundwater Sampling Logs and Chain of Custody Records

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU2 | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 01/21/10
Well No.: BPOW 1-1 | Replicate No.: — | Weather: Sunny 40°
Sampling Personnel: G. Williams / J. Oerthing | Sampling Time: Begin 14:48 End 14:50

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	— 241
Depth to Water (ft bmp)	27.60 ~~169~~
Depth to Packer (ft bmp)	169
Water Column in Well (ft)	72 below packer
Casing Diameter	4" (0.65)
Gallons in Well	46.8 (below packer)
Gallons Purged Prior to Sampling	140 gallons
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	85 psi
Pumping Rate (gpm)	3.2 → 6.0 gpm
Evacuation Method	Red. cable Red. flow
Sampling Method	Volume
Purge Time	Begin 14:15 End 14:50

Field Parameters

	I	1V	2V	3V
Color	clear	clear	clear	clear
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	4.98	4.65	4.44	4.50
Conductivity (~~mS/cm~~) or µS/cm (~~µmhos/cm~~) [1]	265	170	152	155
	—	—	—	—
Temperature (°C)	11.4	11.2	12.4	12.4
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	3.44	3.17	3.01	3.12
Time	14:16	14:30	14:38	14:47
DTW (ft bmp)	27.78	28.05	27.95	27.80

Remarks: 169 − 27.6 = 141.4 × .43 = 60.80 + 25 = 85 psi

Parameter	Container	No.	Preservative
VOC OLM 5.2	40ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NORTHROP-GRUMMAN N400149G.0410.00002 Project No. N400149G.0410.00002

Site Location BETHPAGE NY Date 1-21-10

Well No. BPOW1-2 Replicate No. N/A Weather CLOUDY 40°

Sampling Personnel GW JD Sampling Time: Begin 3:30 End —

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	335
Depth to Water (ft bmp)	28.18
Depth to Packer (ft bmp)	294
Water Column in Well (ft)	41
Casing Diameter	4 (0.65)
Gallons in Well	26.65 x 3
Gallons Purged Prior to Sampling	80+
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	DED SUB PUMP/PACKER
Purge Time	Begin — End —

Field Parameters

	Color	Odor	Appearance
	COLORLESS	—	

	I	1V	2V	3V
pH (s.u.)	4.05	3.99	4.03	3.94
Conductivity (mS/cm) or (µmhos/cm) [1]	107.1	129.9	102.3	103.0
Temperature (°C)	11.4	11.5	11.6	11.4
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	—	—	—	3.16
Time	—	—	—	—
DTW (ft bmp)	—	—	—	—

Remarks: Packer pressure → (294 − 28.18 x .43 + 50) = ≈175 psig

Parameter	Container	No.	Preservative
TVOC OLM 524.2	40 mlVOA	3	HCl

PID Reading ✓

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman | Project No.: N40014936.0410.00002
Site Location: Bethpage, NY | Date: 1/29/10
Well No.: BPOW 1-3 | Replicate No.: N/A | Weather: Cloudy, 35°F
Sampling Personnel: Jerome & Soma | Sampling Time: Begin 1041 | End 1042

Purge Data

Measuring Point (describe)	Toc
Sounded Well Depth (ft bmp)	419
Depth to Water (ft bmp)	~~344~~ –
Depth to Packer (ft bmp)	344
Water Column in Well (ft)	75
Casing Diameter	4" (0.65)
Gallons in Well	48.75
Gallons Purged Prior to Sampling	48.754 3 = 146.25
Pump Intake Setting (ft bmp)	–
Packer Pressure (psi)	180 psi
Pumping Rate (gpm)	
Evacuation Method	–
Sampling Method	Dedicated Submercible Pump / Packer
Purge Time	Begin 1021 End

Field Parameters

Color: Colorless
Odor: odorless
Appearance: Clear

	1	1V	2V	3V
pH (s.u.)	4.82	5.05	4.99	5.01
Conductivity (~~mS/cm~~) or (µmhos/cm) [1]	159	200	185	166
Temperature (°C)	11.C	9.7	10.6	11.1
DO (mg/L)	–	–	–	–
ORP (mV)	–	–	–	–
Turbidity (NTU)	15.78	3.24	5.84	5.00
Time	1021	1029	1038	1045
DTW (ft bmp)	30.02	30.40	30.40	30.40

Remarks: DTW = 28.14
344 - 28.14 x 0.43 + 25 = 160.82

Parameter	Container	No.	Preservative
VOC Ocm 524.2	40ml VOA	3	HCl

PID Reading: N/A

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman
Project No.: NY001496.0110.00002
Site Location: Bethpage, NY
Date: 01/26/10
Well No.: BPOW-3
Replicate No.:
Weather:

Sampling Personnel: GW/SD
Sampling Time: Begin 1348 End 1350

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	516
Depth to Water (ft bmp)	
Depth to Packer (ft bmp)	414
Water Column in Well (ft)	102
Casing Diameter	4" (0.65)
Gallons in Well	66.3
Gallons Purged	x3
Prior to Sampling	= 198.9
Pump Intake Setting (ft bmp)	—
Packer Pressure (psi)	220
Pumping Rate (gpm)	
Evacuation Method	—
Sampling Method	—
Purge Time	Begin 1148 End 1348

Field Parameters

Color: Colorless
Odor: None
Appearance: Clear, transparent

	1	1V	2V	3V
pH (s.u.)	3.82	3.88	4.05	4.02
Conductivity (mS/cm) or (µmhos/cm)[1]	169	170	182	178.2
Temperature (°C)	12.4	99	14.2	12.1
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	<50	<50	<50	<50
Time	1148	1210	1338	1348
DTW (ft bmp)	—	—	—	—

Remarks: Turbidity vials broken. Visual estimate of turbidity done
Pump turned off @ 12:30. Resumed @ 1336 ✓

Parameter	Container	No.	Preservative
TVOC	40 mL VOA	3	HCl

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Project No.: NY001496.0410.00002

Site Location: Bethpage, NY Date: 1/22/10

Well No.: BPOW 3-2A Replicate No.: N/A Weather: Clear, Sunny 40°F

Sampling Personnel: J.O / S.D Sampling Time: Begin 1545 End 1547

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	647
Depth to Water (ft bmp)	-
Depth to Packer (ft bmp)	503
Water Column in Well (ft)	144
Casing Diameter	4" (0.65)
Gallons in Well	93.6 x 3
Gallons Purged	= 280
Prior to Sampling	
Pump Intake Setting (ft bmp)	-
Packer Pressure (psi)	230
Pumping Rate (gpm)	
Evacuation Method	-
Sampling Method	Dedicated Submersible pump / packer
Purge Time	Begin 1309 End 1545

Field Parameters

Color: Colorless

Odor: Moderate

Appearance: Clear

	1	1V	2V	3V
pH (s.u.)	5.61	5.50	5.25	5.27
Conductivity (mS/cm) or (µmhos/cm) [1]	137.8	165	177	181
Temperature (°C)	13.6	11.9	12.6	12.5
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)	5.43	5.50	6.31	6.11
Time	1309	1320	1530	1545
DTW (ft bmp)	26.25	26.30	26.54	26.57

Remarks:
DTW = 27.74
503 - 27.74 x 0.43 + 25 = 230
Turned off @ 1345 ; Turned on @ 1525

Parameter	Container	No.	Preservative
VOC 524.2	40ml VOA	3	HCl

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: North of Grumman / NY001496.0410.00002 — Project No.: NY001496.0000.00002
Site Location: Bethpage, NY — Date: 1/25/10
Well No.: BPOW4-1 — Replicate No.: N/A — Weather: Rainy
Sampling Personnel: G.W / S.D — Sampling Time: Begin 1445 — End 1427

Purge Data

Measuring Point (describe)	TOC	
Sounded Well Depth (ft bmp)	652 (Sf Pipe)	Screen
Depth to Water (ft bmp)		
Depth to Packer (ft bmp)	503	652
Water Column in Well (ft)	149	40
Casing Diameter	4" (0.65)	2" (0.16)
Gallons in Well	96.85 x 3	6.4 x 3
Gallons Purged	290	19.2
Prior to Sampling	309 (290 + 19.2)	
Pump Intake		
Setting (ft bmp)	-	
Packer Pressure (psi)	250	
Pumping Rate (gpm)	-	
Evacuation Method	-	
Sampling Method	-	
Purge Time	Begin 1210	End 1430

Field Parameters

Color: Colorless
Odor: None
Appearance: Clear

	I	1V	2V	3V
pH (s.u.)	5.44	4.82	4.77	4.87
Conductivity (mS/cm) or (µmhos/cm) 1)	230.4	236	214	200
Temperature (°C)	10	14.4	13.5	14.0
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	<50*	<20	<20	<50
Time	1210	1220	1250	1430
DTW (ft bmp)	—	—	—	—

Remarks: * Turbidity vial is broken.
Turned off 1350
Turned on 1400

Parameter	Container	No.	Preservative
TVOC	40ml/voa	3	HCl

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman — Project No.: NY001493C.0410.00002

Site Location: Bethpage, NY — Date: 01/27/10

Well No.: BPOW 4-2 — Replicate No.: BPOW4-3 (MS/MSD Samples taken) — Weather: Clear

Sampling Personnel: Pat P/Shea Day — Sampling ~~Time~~: Begin 1520 — End 1522

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	764
Depth to Water (ft bmp)	23.38
Depth to Packer (ft bmp)	503
Water Column in Well (ft)	261
Casing Diameter	4" (0.65)
Gallons in Well	169.65 x 3 = 509
Gallons Purged	
Prior to Sampling	—
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	255 PSI
Pumping Rate (gpm)	—
Evacuation Method	—
Sampling Method	Dedicated submersible pump
Purge Time	Begin 1210 End 1510

Field Parameters

Color: Colorless

Odor: None

Appearance: Clear, transparent

	I	1V	2V	3V
pH (s.u.)	4.2	4.17	3.88	3.74
Conductivity (mS/cm) or (µmhos/cm) [1]	215	167	152	141
Temperature (°C)	11.2	11.7	12.3	9.8
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	<50	<50	<50	<50
Time	1210	1835	1445	1510
DTW (ft bmp)	23.38	23.34	23.35	23.35

Remarks: 503 − 23.38 X 1.43 + 50 =
Pump turned off @ 1240. Pump turned on @ 1320
Turbidity vials broken. Pump off @ 1340. Pump on @ 1445

Parameter	Container	No.	Preservative
SD 40ml VOA TVOC OLM524.2	40ml VOA	3	HCl

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001496.0410.0002
Site Location: Bethpage, NY | Date: 01/28/10
Well No.: HN-40S | Replicate No.: N/A | Weather:
Sampling Personnel: J. Ourkling/S. Das | Sampling Time: Begin 1508 End 1510

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	59
Depth to Water (ft bmp)	47
Depth to Packer (ft bmp)	–
Water Column in Well (ft)	12
Casing Diameter	4
Gallons in Well	23.4
Gallons Purged Prior to Sampling	(59 - 47) x 0.65 = 7.8 x 3 = 23.4
Pump Intake Setting (ft bmp)	–
Packer Pressure (psi)	–
Pumping Rate (gpm)	0.75 gpm
Evacuation Method	–
Sampling Method	Rediflow/3 SWV
Purge Time	Begin 1440 End 1504

Field Parameters

Color: Colorless
Odor: None
Appearance: Clear, transparent

	I	1V	2V	3V
pH (s.u.)	5.76	5.70	5.65	5.64
Conductivity (mS/cm) or (µmhos/cm) [1]	253	238	230	214
Temperature (°C)	16.4	16.5	16.5	16.5
DO (mg/L)	–	–	–	–
ORP (mV)	–	–	–	–
Turbidity (NTU)	3.23	6.06	6.43	6.10
Time	1540	1548	1556	1504
DTW (ft bmp)	47	47.06	47.06	47.0

Remarks:

Parameter	Container	No.	Preservative
TVOC, OLM 4.3	40ml VOA	3	HCl

PID Reading: –

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman (NBC OU-2)
Project Number: NY001436.0410.00002
Site Location: Bethpage, NY
Well ID: HN-40I
Date: 01/28/10
Sampled By: Jessamet Oertling, Soma Das
Sampling Time: 1420
Recorded By: Soma Das
Weather: Cloudy, 35°F
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: See calibration log

Casing Material: PVC
Casing Diameter: 4"
Sounded Depth (ft bmp): 118
Depth to Water (ft bmp): 46.5

Purge Method: Rediflow Pump / 1000 flow
Screen Interval (ft bmp): Top 108 Bottom 118
Pump Intake Depth (ft bmp): 113
Purge Time: Start 1325 Finish 1410

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1325		500 mL/min		15.3	6.98	312	-35.2	98.3	—	—
1330				15.3	6.99	300	-36.3	98.2	6.62	46.91
1335				15.8	6.35	298	-24.5	89.4	—	—
1340				16.7	6.16	299	-23.3	89.5	6.17	46.90
1345				16.8	6.18	295	-26.7	89.4	—	—
1350				16.8	6.33	297	-31.9	88.2	6.23	46.98
1355				16.1	6.13	301	-33.1	85.5	—	—
1400				16.8	6.45	301	-33.6	85.9	5.58	46.98
1405				16.8	6.33	295	-33.8	84.3	—	47.01
1410				16.8	6.34	291	-33.9	85.0	3.05	47.03

Collected Sample Condition
Color: Colorless
Odor: None
Appearance: Clear

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml voa	3	HCl

PID Reading: —

Comments

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001496.0410.00002

Site Location: Bethpage, NY | Date: 01/28/10

Well No.: ~~MW42S~~ A | Replicate No.: NA | Weather: Cloudy, 34°F

Sampling Personnel: S. Das / J. Oerthling | Sampling Time: Begin 1120 End 1122

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	60
Depth to Water (ft bmp)	49.24
Depth to Packer (ft bmp)	–
Water Column in Well (ft)	10.76
Casing Diameter	4"
Gallons in Well	21 ~~28~~ ~~80~~
Gallons Purged	7 x 3 = 21
Prior to Sampling	
Pump Intake	–
Setting (ft bmp)	
Packer Pressure (psi)	–
Pumping Rate (gpm)	–
Evacuation Method	–
Sampling Method	Rediflo (3SHV)
Purge Time	Begin 1100 End ~~1118~~ SD 1118

Field Parameters

Color	Colorless
Odor	None
Appearance	Clear, transparent

	1	1V	2V	3V
pH (s.u.)	6.28	6.32	6.19	6.15
Conductivity (~~mS/cm~~) or ~~µS/cm~~ (~~µmhos/cm~~) [1]	420	409	384	384
Temperature (°C)	12.2	12.1	15.7	16.1
DO (mg/L)	–	–	–	
ORP (mV)	–	–	–	–
Turbidity (NTU)	1.84	9.48	3.81	4.03
Time	11:00	11:07	11:10	1118
DTW (ft bmp)	49.24	49.35	49.38	49.39

Remarks: (60 − 49.24) × 0.05 = 7 x 3 = (Gallons purged = 21 gallons)

Parameter	Container	No.	Preservative
40 TVOC OLM 4.3	40ml voa	3	HCl

PID Reading: –

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman (NBVC-002)
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: HN-42T
Date: 01/28/10
Sampled By: Jerome Oerthing, Soma Das
Sampling Time: 1225
Recorded By: Soma Das
Weather: Cloudy, 35°F
Coded Replicate No.: N/A

Instrument Identification: Hanna HI(9025); Oakton pH meter
Water Quality Meter(s): YSI 550A
Serial #: 197765, 08896 (YSI)

Casing Material: PVC
Casing Diameter: 4"
Sounded Depth (ft bmp): 110
Depth to Water (ft bmp): 49.00

Purge Method:
Screen Interval (ft bmp): Top 100 Bottom 110
Pump Intake Depth (ft bmp): 105
Purge Time: Start 1135 Finish 1220

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1135		500mL/min		15.5	11.17	498	-33.7	64.5	-	-
1140				15.4	11.15	489	-29.1	70.7	-	-
1145				15.9	11.15	477	-29.2	70.4	-	49.05
1150				16.1	11.13	429	-27.9	71.0	-	-
1155				16.2	11.07	414	-26.4	71.3	-	49.05
1200		500mL/min		16.2	11.05	415	-26.6	71.0	-	-
1205				16.3	11.01	399	-25.3	70.7	5.07	49.03
1210				16.5	10.97	396	-23.6	71.7	-	-
1215				16.5	10.98	386	-24.4	71.1	3.76	49.03
1220				16.6	10.93	383	-24.3	71.4	3.82	-

Collected Sample Condition
Color: Colorless
Odor: None
Appearance: Clear

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml voa	3	HCl

PID Reading: -

Comments: Turbidity = 3.82 (@ 1220)

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: N. Hugo Grammar Sch. Loop — Project No.: NY001496.0910.00002
Site Location: Bethpage, NY — Date: 1/29/10
Well No.: FW-03 — Replicate No.: N/A — Weather: Sunny, 18°F
Sampling Personnel: S. Das, J. Oerthing — Sampling Time: Begin 1110 — End 1112

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	64
Depth to Water (ft bmp)	53.80
Depth to Packer (ft bmp)	—
Water Column in Well (ft)	10.2
Casing Diameter	2" (.16)
Gallons in Well	1.63
Gallons Purged	x3 =
Prior to Sampling	4.896 gall
Pump Intake	
Setting (ft bmp)	—
Packer Pressure (psi)	—
Pumping Rate (gpm)	—
Evacuation Method	—
Sampling Method	Rediflo
Purge Time	Begin 1100 End 1110

Field Parameters

Color: Tan → v. l. brown
Odor: none
Appearance: slightly turbid

	1	1V	2V	3V
pH (s.u.)	~~5.58~~ 7.53	7.57	7.39	7.67
Conductivity (mS/cm) or	—	—	—	—
(µmhos/cm) [1]	185	186	180	194
Temperature (°C)	13	11.4	14.2	9.8
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	551	451	349	151
Time	1100	1105	1108	1110
DTW (ft bmp)	53.88	53.88	53.88	53.88

Remarks: Turbidity. 68.2 @ sampling time @ 1112

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml voa	3	HCl

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project Northrop Grumman — Project No. NY001496.0410.00002

Site Location Bethpage, NY — Date 02/01/10

Well No. PTIMW-04 — Replicate No. — — Weather Sunny 35°

Sampling Personnel S. Das / J. Overbay — Sampling Time: Begin 12:40 — End 12:42

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	56.5
Depth to Water (ft bmp)	42.21
Depth to Packer (ft bmp)	NA
Water Column in Well (ft)	14.29
Casing Diameter	2" (16)
Gallons in Well	2.28
Gallons Purged Prior to Sampling	6.86
Pump Intake Setting (ft bmp)	51.5
Packer Pressure (psi)	—
Pumping Rate (gpm)	0.6
Evacuation Method	Non Ded.
Sampling Method	Low Flow
Purge Time	Begin 12:28 End 12:42

Field Parameters

Color: clear

Odor: none

Appearance: clear

	I	1V	2V	3V
pH (s.u.)	6.68	6.08	5.90	5.85
Conductivity (~~mS/cm~~) or ~~µS/cm~~ (~~µmhos/cm~~) [1]	414	426	402	402
Temperature (°C)	11.6	12.2	14.7	15.6
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	19.6	4.22	4.30	4.29
Time	12:28	12:31	12:36	12:39
DTW (ft bmp)	42.30	42.45	42.50	42.51

Remarks:

Parameter	Container	No.	Preservative
Total Cr	8oz Plastic	1	HNO3

PID Reading —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 02/01/10
Well No.: PTI MW-05 | Replicate No.: — | Weather: Sunny 35
Sampling Personnel: J. Oerthing/S. Das | Sampling Time: Begin 11-33 | End 11-35

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	58.00
Depth to Water (ft bmp)	40.04
Depth to Packer (ft bmp)	NA
Water Column in Well (ft)	17.96
Casing Diameter	2" (0.16)
Gallons in Well	2.87
Gallons Purged	
Prior to Sampling	8.62
Pump Intake	
Setting (ft bmp)	57'
Packer Pressure (psi)	N/A
Pumping Rate (gpm)	0.7
Evacuation Method	Redi-flo pump
Sampling Method	3S sample volume
Purge Time	Begin 11:16 End —

Field Parameters

	I	1V	2V	3V
Color	dark grey	cloudy	cloudy	slightly cloudy
Odor	slight	none	none	none
Appearance	murky	cloudy	cloudy	trace sand particles
pH (s.u.)	6.92	6.95	6.94	6.94
Conductivity (~~mS~~/cm) or ~~µS~~/cm (µmhos/cm) 1)	379	355	332	329
Temperature (°C)	18.92	14.80	11.4	16.4
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	289	262	34.6	16.7
Time	11:16	11:20	11:25	11:29
DTW (ft bmp)	39.25	39.30	39.40	39.41

Remarks: dirt + sand in manhole
no bolts no lock
Turbidity = 11.2 @ 11-35

Parameter	Container	No.	Preservative
Total Cr	8oz plastic	1	HNO3

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Corp | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 02/01/10
Well No.: PT1 MW-06 | Replicate No.: — | Weather: sunny 35
Sampling Personnel: J. Oertling / S. Dal | Sampling Time: Begin 1208 End 1210

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	62
Depth to Water (ft bmp)	43.00
Depth to Packer (ft bmp)	N/A
Water Column in Well (ft)	19
Casing Diameter	2"(0.16)
Gallons in Well	9.12
Gallons Purged	3.04x3
Prior to Sampling	=9.12
Pump Intake	
Setting (ft bmp)	57
Packer Pressure (psi)	N/A
Pumping Rate (gpm)	
Evacuation Method	Redi-flow
Sampling Method	3 well volume
Purge Time	Begin 1155 End 1200

Field Parameters

	1	1V	2V	3V
Color	l. tan	cloudy	s. cloudy	s. cloudy
Odor	none	none	none	none
Appearance	cloudy	cloudy	s. cloudy	s. cloudy
pH (s.u.)	6.4	6.57	6.75	6.7
Conductivity (~~mS/cm~~) or ~~mS/cm~~ (µmhos/cm) [1]	232	240	235	233
Temperature (°C)	13.6	14.1	14.7	15.7
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	>400	297	80	38.8 / 27.7
Time	11:55	11:59	12:02	12:06
DTW (ft bmp)	43.19	43.19	43.20	43.20

SAMP

Remarks: * no manhole cover
broken manhole

Parameter	Container	No.	Preservative
Total Cr	2oz Plastic	1	HNO3

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Corp. Project No. NY001490.0410.00002

Site Location: Bethpage Date: 2/3/10

Well No.: MW-1GFA Replicate No.: — Weather: Cloudy, 35

Sampling Personnel: Jeerling / S. Das Sampling Time: Begin 14:50 End 14:52

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	58.0
Depth to Water (ft bmp)	42.12
Depth to Packer (ft bmp)	NA
Water Column in Well (ft)	15.88
Casing Diameter	4
Gallons in Well	10.33
Gallons Purged	10.33 x 3
Prior to Sampling	= 31.00
Pump Intake	
Setting (ft bmp)	53'
Packer Pressure (psi)	NA
Pumping Rate (gpm)	2
Evacuation Method	non-dedicated / peristaltic
Sampling Method	3 volume
Purge Time	Begin 14:31 End 14:50

Field Parameters

Color: clear

Odor: none

Appearance: clear

	I	1V	2V	3V
pH (s.u.)	6.24	6.36	6.52	6.30
Conductivity (~~mS/cm~~) or ~~µS/cm~~ (~~µmhos/cm~~)[1]	142.6	142.9	143.2	143.1
	—	—	—	—
Temperature (°C)	10.7	13.1	14.9	15.8
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	5.44	3.29	3.36	3.10
Time	14:32	14:37	14:42	14:50
DTW (ft bmp)	40.35	40.40	40.51	40.53

Remarks: manhole needs 3 bolts
— no locks

Parameter	Container	No.	Preservative
Total Cd/Cr	8oz Plastic	1	HNO_3
Dissolved Cd/Cr	8oz Plastic	1	HNO_3

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Corp. | Project No.: NY001495.0410.00002
Site Location: Bethpage, NY | Date: 02/01/10
Well No.: MW-26H | Replicate No.: — | Weather: sunny 35°
Sampling Personnel: J. Oerthling, S. Pas | Sampling Time: Begin 1455 | End 1458

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	59
Depth to Water (ft bmp)	42.24
Depth to Packer (ft bmp)	NA
Water Column in Well (ft)	15.76
Casing Diameter	4"
Gallons in Well	10.9
Gallons Purged Prior to Sampling	32.7
Pump Intake Setting (ft bmp)	55
Packer Pressure (psi)	NA
Pumping Rate (gpm)	1.1
Evacuation Method	Rediflow
Sampling Method	3 SAVV
Purge Time	Begin 1426 End 1455

Field Parameters

Color: clear
Odor: none
Appearance: clear

	1	1V	2V	3V
pH (s.u.)	5.08	4.91	4.71	4.77
Conductivity (mS/cm) or (µmhos/cm) [1]	170.6	172	173	172
	—	—	—	—
Temperature (°C)	11.9	14.7	14.2	14.3
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	12.2	13.7	10.70	4.92
Time	14:26	14:35	14:45	14:55
DTW (ft bmp)	42.30	42.54	42.50	—

Remarks: 2 bailers in well – taken out and replaced after sampling

Parameter	Container	No.	Preservative
Total Cd/Cr	Sp plastic	1	HNO3
Dissolved Cd/Cr	Sp plastic	1	HNO3

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Corp
Project Number: N/001496.0410.00002
Site Location: Bethpage, NY
Well ID: N-10624
Date: 02/03/10
Sampled By: J. Oerting / S. Das
Sampling Time: See pages
Recorded By: S. Das / J. Oerting
Weather: Cloudy, 35°F
Coded Replicate No.: N/A

Instrument Identification: Oakton pH Pond # 197765
Water Quality Meter(s): Lamotte WQ # 2095-4200
Serial #: Hanna HI 9828 # A01812 / YSI 600 - #0FF96

Casing Material: Steel
Casing Diameter: 2"
Sounded Depth (ft bmp): 194
Depth to Water (ft bmp): 29.00

Purge Method: Non-dedicated bladder pump
Screen Interval (ft bmp): Top 190 Bottom 194
Pump Intake Depth (ft bmp): 190
Purge Time: Start 1100 Finish 1230

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1100	0	450	—	5.7	6.6	308	-10.3	6.44		37.55
11:05	5	↓	—	—	—	—	—	—	—	
11:10	10		—	11.1	7.23	204	-71.4	1.90	60.5	38.60
11:15	15		—	11.7	7.47	274	-91.4	1.45	—	—
11:20	20		—	10.8	7.75	270	-126.9	1.02	48.7	38.75
11:25	25		—	10.8	7.85	266	-134.2	0.87	—	—
11:30	30		—	10.9	7.90	282	-144.3	0.80	48.6	40.10
11:35	35		—	10.9	7.98	258	-152.6	0.71	—	—
11:40	40		—	10.7	8.06	252	-163.4	0.64	45.4	41.18
11:45	45		—	10.7	8.10	250	-173.7	0.58	—	—
11:50	50		—	10.8	8.11	248	-174.2	0.55	52.7	41.40
11:55	55		—	11.0	8.13	246	-178.9	0.52	—	—
12:00	60		—	11.3	8.12	242	-183.1	0.50		41.85
12:05	65			11.4	8.14	242	-183.0	0.50	—	62.8

Collected Sample Condition
Color: Colorless
Odor: None
Appearance: Clear Cloudy

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml voa	3	HCl

PID Reading: —

Comments: ~~Turbidity @ 1205~~ =

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Corp
Project Number: N70014956.0410.0002
Site Location: Bethpage, NY
Well ID: N-1062 4
Date: 02/03/10
Sampled By: J. Oerthag / S. Das
Sampling Time: 12:16
Recorded By: J. Oerthag / S. Das
Weather: Cloudy, 35°F
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s):
Serial #: —

Casing Material: Steel
Casing Diameter: 4
Sounded Depth (ft bmp): 194
Depth to Water (ft bmp): —

Purge Method: Non-dedicated bladder pump
Screen Interval (ft bmp): Top 190 Bottom 194
Pump Intake Depth (ft bmp): —
Purge Time: Start — Finish

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~µS/cm~~ mS/cm)	ORP (mV)	DO (mg/L)	*Turbidity (NTU)	Depth to Water (ft bmp)
1210	70	450		11.4	8.07	215	-170.0	0.60	61.3	—
1215	75			11.2	8.10	211	-181.2	0.58	—	42.55
1220	80			11.0	8.14	209	-193.8	0.55	71.7	
1225				11.1	8.16	204	-188.3	0.52		
1230				SAMPLE TOC DUP 4.3					450*	
				*turbidity meter seems to be						
				reading higher than actual value						
				not calibrating well.						
				actual turb. est 250 NTU.						

Collected Sample Condition
Color: v. light green
Odor: slight
Appearance: cloudy

Parameter	Container	No.	Preservative
TOC SLM 4.3	40ml voa	3	HCl

PID Reading:

Comments: tint - not sediment

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Corp (NGC-002)
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: N-10627
Date: 02/02/10
Sampled By: J. Oerthing / S. Das
Sampling Time: 1500
Recorded By: S. Das / J. Oerthing
Weather: Cloudy, 30°F
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): grey Van meter
Serial #: —

Casing Material: ~~PVC~~ Steel
Purge Method: Non-dedicated bladder pump
Casing Diameter: 4"
Screen Interval (ft bmp): Top 290 Bottom 295
Sounded Depth (ft bmp): 295
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 30.35
Purge Time: Start 1355 Finish 1455

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (~~umhos~~ or ~~mS/cm~~)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1355	—	400	—	8.5	5.01	111.9	-14.3	44.5	—	30.35
1400	—		—	11.0	5.06	128.1	-34	32.8	21.9	30.50
1405	—		—	11.1	5.03	143.7	-25	13.0	—	—
1410	—		—	11.4	5.05	156.9	-31.3	0.75	7.42	31.9
1415	—		—	11.4	5.14	157.8	-40.1	0.66	—	—
1420	—		—	12.1	5.16	156.3	-35.8	0.55	9.66	32.05
1425	—		—	12.9	5.14	158.7	-41.3	0.53	—	—
1430	—		—	13.1	5.19	159.6	-47.5	0.51	8.84	32.65
1435	—		—	13.1	5.23	158.8	-46.7	0.48	—	—
1440	—		—	13.4	5.21	157.1	-47.7	0.48	6.72	32.67
1445				13.3	5.23	157.4	-48.5	0.47	—	—
1450				13.3	5.20	157.4	-48.8	0.49	9.33	32.87
1455				13.1	5.25	155.9	-48.7	0.52	9.34	—

Collected Sample Condition
Color: Colorless
Odor: None
Appearance: Clear

Parameter	Container	No.	Preservative
TVOC 8LM 4.3	40ml VOA	3	HCl

PID Reading: —

Comments: Screen @ the bottom is missing.

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman | Project No.: N Y001496.0013.00002

Site Location: Bethpage, NY | Date: 02/02/10

Well No.: N-10631 | Replicate No.: — | Weather: cloudy 30°

Sampling Personnel: J. Oerthling, S. Das | Sampling Time: Begin 1118 | End 1120

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	67
Depth to Water (ft bmp)	36.35
Depth to Packer (ft bmp)	N/A
Water Column in Well (ft)	30.65
Casing Diameter	2" (0.16)
Gallons in Well	4.9
Gallons Purged Prior to Sampling	14.71
Pump Intake Setting (ft bmp)	62'
Packer Pressure (psi)	NA
Pumping Rate (gpm)	1.0
Evacuation Method	Non Ped. Reds flow
Sampling Method	3 Volume purge
Purge Time	Begin 11:00 End 11:20

Field Parameters

Color	cloudy → clear
Odor	none
Appearance	cloudy → clear

	I	1V	2V	3V
pH (s.u.)	4.52	4.27	4.18	4.48
Conductivity (~~mS/cm~~) or ~~µS/cm~~ (~~µmhos/cm~~) [1]	313	218	214	213
	—	—	—	—
Temperature (°C)	12.2	15.0	15.3	14.9
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	29.4	26.7	25.1	16.9
Time	1100	1105	1110	1115
DTW (ft bmp)	—	41.50	—	—

Remarks:

Parameter	Container	No.	Preservative
TVOC	40 ml VOA	3	HCl
Total Cd/Cr	8 oz Plastic	1	HNO3
Diss Cd/Cr	8 oz Plastic	1	HNO3

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-13D
Date: 02/09/10
Sampled By: E.W
Sampling Time: —
Recorded By: E.W
Weather: —
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Casing Diameter: 4"
Sounded Depth (ft bmp): 210
Depth to Water (ft bmp): 43.98

Purge Method: Dedicated bladder/low-flow
Screen Interval (ft bmp): Top 200 Bottom 210
Pump Intake Depth (ft bmp):
Purge Time: Start 2:40 Finish 3:40

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
2:40	—	—	—	11.9	5.56	167.5	210	2.08	—	43.98
2:45	—	—	—	11.7	5.58	166.2	215	1.80	—	—
2:50	—	—	—	11.3	5.51	165.5	223	1.43	—	44.02
2:55	—	—	—	11.3	5.52	164.9	225	1.41	—	—
3:00	—	—	—	11.1	5.50	163.1	229	1.29	—	—
3:05	—	—	—	11.1	5.50	163.1	231	1.12	—	—
3:10	—	—	—	11.1	5.48	163.1	231	1.12	—	43.98
3:15	—	—	—	11.1	5.46	163.1	236	1.11	—	—
3:20	—	—	—	11.1	5.44	162.7	239	.95	—	—
3:25	—	—	—	10.7	5.46	165.4	240	.97	—	—
3:30	—	—	—	10.7	5.46	165.2	243	.96	—	—
3:35	—	—	—	10.8	5.47	166.0	242	.88	—	—
3:40	—	—	—	11.2	5.47	166.3	243	.73	—	—

Collected Sample Condition
Color: Colorless
Odor: None
Appearance: Clear

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml Voa	3	HCl

PID Reading: —

Comments

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Corp Project No.: NY001498.0410.00002
Site Location: Bethpage, NY Date: 02/01/10
Well No.: GM-15S Replicate No.: N/A Weather: Sunny 30°
Sampling Personnel: S. Pas, J. Oertling Sampling Time: Begin 1010 End 1012

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	80
Depth to Water (ft bmp)	43.01
Depth to Packer (ft bmp)	NA
Water Column in Well (ft)	37 ft
Casing Diameter	4" (.65)
Gallons in Well	24
Gallons Purged Prior to Sampling	72 gallons
Pump Intake Setting (ft bmp)	75 Ft
Packer Pressure (psi)	NA
Pumping Rate (gpm)	.65-3
Evacuation Method	3V drum
Sampling Method	Redi-flow (Non Ded.)
Purge Time	Begin 9-25 End 1006

Field Parameters

Color: Colorless
Odor: None
Appearance: Clear

	I	1V	2V	3V
pH (s.u.)	6.73	6.31	6.25	6.16
Conductivity (~~mS/cm~~) or ~~µS/cm~~ (~~µmhos/cm~~) [1]	100.6	157.8	163.4	169.2
Temperature (°C)	12.5	15.9	16.4	16.0
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	11.9	6.02	5.6	6.0
Time	9-25	9-41	9-58	10-16
DTW (ft bmp)	43.57	43.58	43.77	43.62

Remarks: small puddle of oil approx 5' from well from backhoe plow truck.

Parameter	Container	No.	Preservative
VOC OLM 4.3	40-ml VOA	3	HCl
Total Chromium	8oz Plastic	1	HNO_3

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Page _____ of _____

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. NY001496.0410.00002

Site Location BETHPAGE NY Date 2-24-10

Well No. GM-15E Replicate No. _____ Weather OVERCAST DRIZZLY

Sampling Personnel GW Sampling Time: Begin 155 End 3:33

Purge Data

Measuring Point (describe) TOC

Sounded Well Depth (ft bmp) 105

Depth to ~~Water~~ (ft bmp) _____

Depth to Packer (ft bmp) 94

Water Column in Well (ft) 11

Casing Diameter 4" (0.65)

Gallons in Well 7.15

Gallons Purged

Prior to Sampling 21.45

Pump Intake

Setting (ft bmp) _____

Packer Pressure (psi) _____

Pumping Rate (gpm) _____

Evacuation Method DEDICATED BLADDER PUMP

Sampling Method _____

Purge Time Begin _____ End _____

Field Parameters

Color COLORLESS

Odor NONE

Appearance CLEAR

	I	1V	2V	3V
pH (s.u.)	7.53	5.41	5.16	5.10
Conductivity (~~mS/cm~~) or (µmhos/cm) [1]	326	184.9	213	1838
Temperature (°C)	14.1	15.3	15.2	15.5
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				<20
Time				
DTW (ft bmp)				

Remarks: 94 − x.43 + 50 = 75 PSE

SCAN PAGES 1/1

Parameter	Container	No.	Preservative

PID Reading RADON

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: BM-15D
Date: 1/21/10
Sampled By: Gary Williams
Sampling Time: —
Recorded By: Gary Williams
Weather: —
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated bladder/low flow
Casing Diameter: 4" PVC
Screen Interval (ft bmp): Top 332 Bottom 342
Sounded Depth (ft bmp): 342
Pump Intake Depth (ft bmp): —
Depth to Water (ft bmp): 45.16
Purge Time: Start 4:25 Finish 5:25

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (µmhos or ~~mS/cm~~ 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
4:25	—	—	—	10.2	5.25	170.7	280	7.81	—	45.16
4:30	—	—	—	10.1	5.34	193.0	282	—	—	—
4:35	—	—	—	11.1	5.19	203	292	2.95	—	—
4:40	—	—	—	11.2	5.14	196.6	293	2.33	—	—
4:45	—	—	—	11.6	5.03	204	301	2.41	—	—
4:50	—	—	—	11.8	5.02	194.8	301	3.98	—	—
4:55	—	—	—	12.0	5.05	202	~~303~~	5.54	—	—
5:00	—	—	—	12.0	5.03	195.6	307	5.71	—	45.18
5:05	—	—	—	12.2	5.03	204	~~233~~ 310	5.75	—	—
5:10	—	—	—	12.2	5.04	197.8	310	5.74	—	—
5:15	—	—	—	12.3	5.03	205	309	6.20	—	45.19
5:20	—	—	—	12.4	5.04	198.4	309	5.95	—	—
5:25	—	—	—	12.4	5.03	206	311	6.13	<20	45.19

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml VOA	3	HCl

PID Reading: —

Comments

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP GRUMMAN
Project Number: N00149604D.00002
Site Location: Bethpage, NY
Well ID: GW-15D2
Date: 1-20-10
Sampled By: CW
Sampling Time:
Recorded By: CW
Weather: —
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated bladder/low flow sampling
Casing Diameter: 4
Screen Interval (ft bmp): Top 536 Bottom 556
Sounded Depth (ft bmp): 556
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 47.65
Purge Time: Start 2:30 pm Finish 3:30 pm

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
2:30				14.4	5.34	106.7	252	5.47		47.65
2:35				14.5	5.35	104.9	253	5.32		
2:40				14.8	5.32	103.5	252	4.96		
2:45				14.7	5.29	99.1	266	4.80		47.62
2:50				14.3	5.29	98.6	283	5.62		
2:55				14.6	5.28	98.0	277	5.64		
3:00				14.8	5.28	98.2	279	5.62		
3:05				14.5	5.29	98.0	279	5.51		47.62
3:10				14.6	5.29	98.2	278	5.82		
3:15				14.7	5.29	97.7	280	5.77		
3:20				14.7	5.29	98.1	280	5.47		
3:25				14.7	5.30	97.7	280	5.62		
3:30				14.7	5.29	97.8	281	5.67	<20	

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40 ml VOA	3	HCl

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Sys. Corp
Project Number: NY001496.0701.00002
Site Location: Bethpage, NY
Well ID: GM-17I
Date: 2/16/10
Sampled By: Jerome Oerthing
Sampling Time: 16:27
Recorded By: Jerome Oerthing
Weather: Snow - 32
Coded Replicate No.: —

Instrument Identification: oakton pH/cond 358979 YSI 556A-DO # 07B1431
Water Quality Meter(s): Lamotte 2020 # ~~358979~~ 2695-4200 Serial # Oakton ORP # 1242885
Casing Material: PVC
Casing Diameter: 4"
~~Sounded~~ Depth (ft bmp): 120
Depth to Water (ft bmp): 40.78
Purge Method: Low Flow Red Bladder Pump
Screen Interval (ft bmp): Top 100 Bottom 120
Pump Intake Depth (ft bmp): 110
Purge Time: Start 15:25 Finish 16:28

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
15:25	0	500		7.8	5.41	150.3	137	10.25		
15:30	5			8.0	5.38	153.6	149	10.10		
15:35	10			8.1	5.35	169.1	150	10.87	2.24	42.70
15:40	15			8.2	5.70	175.3	150	10.07		
15:45	20			8.2	5.98	180.7	156	10.52	2.20	
15:50	25			8.3	6.13	180.4	161	10.12		42.70
15:55	30			8.3	6.15	180.4	165	9.85	2.20	
16:00	35			8.3	6.18	180.3	167	9.74		
16:05	40			8.3	6.18	180.1	172	9.78	2.19	42.70
16:10	45			8.3	6.19	180.2	173	9.51		
16:15	50			8.3	6.21	180.3	177	9.27	2.25	42.70
16:20	55			8.3	6.21	180.3	179	9.39		
16:25	60	↓		8.3	6.22	180.4	180	9.20	2.10	42.70

Collected Sample Condition: Color clear Odor none Appearance clear

Parameter	Container	No.	Preservative
TVOC OLM4.3	40ml VOA	3	HCl

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Sys. Corp.
Project Number: NY001498.0410.00002
Site Location: Bethpage, NY
Well ID: GM-17D
Date: 2/17/10
Sampled By: Jerome Oesting
Sampling Time: 11:25
Recorded By: Jerome Oesting
Weather: Sunny 37
Coded Replicate No.: —

Instrument Identification: oakton pH cond #358979
Water Quality Meter(s): Lamotte 2020 # 2095-9200
Serial #: YSI SN# P.O. # 07131431; oakton ORP #1242885

Casing Material: PVC
Casing Diameter: 4"
Sounded Depth (ft bmp): 298
Depth to Water (ft bmp): 42.27

Purge Method: Ded. Tubing Bladder
Screen Interval (ft bmp): Top 278 Bottom 298
Pump Intake Depth (ft bmp): 288
Purge Time: Start 10:20 Finish 11:25

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
10:20	0	470		8.7	5.47	169.6	220	9.27	3.78	
10:25	5	↓		8.7	5.39	169.9	221	8.64		42.27
10:30	10			8.8	5.30	170.2	223	7.73		
10:35	15			8.9	5.21	169.7	227	7.24	3.13	42.27
10:40	20			8.7	5.19	158.4	234	7.08		
10:45	25			9.3	5.24	155.5	234	7.00	3.12	42.27
10:50	30			9.3	5.24	155.0	234	7.17		
10:55	35			9.3	5.25	154.8	235	7.24		42.27
11:00	40			9.2	5.24	155.0	236	7.22	2.27	
11:05	45			8.9	5.25	155.5	237	7.20		
11:10	50			8.9	5.24	155.5	237	7.21		42.27
11:15	55			8.9	5.24	155.6	237	7.22	2.87	
11:20	60	↓		8.9	5.24	155.4	237	7.21		

Collected Sample Condition: Color Clear; Odor None; Appearance Clear

Parameter	Container	No.	Preservative
TVOC VOA 8.3	40-1 VOA	3	HCl

PID Reading: _____

Comments: _____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Syo Cargo — Project No.: NY001496.0410.00002
Site Location: Bethpage, NY — Date: 2/9/10
Well No.: GM-18I — Replicate No.: — — Weather: overcast 35°
Sampling Personnel: Jerome Derthy — Sampling Time: Begin 16:57 — End 16:59

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	105
Depth to Water (ft bmp)	37.90
Depth to Packer (ft bmp)	94
Water Column in Well (ft)	11 (below packer)
Casing Diameter	4"
Gallons in Well	7.15
	x 3
Gallons Purged Prior to Sampling	21.45
Pump Intake Setting (ft bmp)	—
Packer Pressure (psi)	50 psi
Pumping Rate (gpm)	0.3
Evacuation Method	Dedicated Bladder
Sampling Method	3 volume purge
Purge Time Begin	15:41 End

Field Parameters

Color: clear →
Odor: none →
Appearance: clear →

	I	1V	2V	3V
pH (s.u.)	7.82	6.49	5.92	5.87
Conductivity (~~µ~~S/cm) or (µmhos/cm) [1]	76.5	287	312	326
	—	—	—	—
Temperature (°C)	14.8	16.3	16.9	16.1
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	11.5	4.23	3.00	2.87
Time	15:43	16:04	16:30	16:55
DTW (ft bmp)	37.65	37.60	37.65	37.62

Remarks: 94 - 37.90 x .43 + 28 = 50 psi

Parameter	Container	No.	Preservative
TVOC CVOA 4.3	40ml VOA	3	HCl

PID Reading: —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) **Circle one unit type**

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Sys. Corp
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: GM-18D
Date: 2/17/10
Sampled By: Jerome Oerthing
Sampling Time: 9:22
Recorded By: Jerome Oerthing
Weather: Sunny 34°
Coded Replicate No.: REP021710 and MS/MSD

Instrument Identification: oakton pH cond #358979 YSI 550A R.O. # 07B1431
Water Quality Meter(s): Lamotte 2020e # 2095-4200 Serial # oakton ORP #1242885

Casing Material: PVC
Casing Diameter: 4"
~~Sounded~~ Depth (ft bmp): 300
Depth to Water (ft bmp): 42.90

Purge Method: Dedicated Bladder
Screen Interval (ft bmp): Top 290 Bottom 300
Pump Intake Depth (ft bmp): 295
Purge Time: Start 8:20 Finish 9:25

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
8:20	0	425		14.0	5.13	297	181	6.60	3.58	43.00
8:25	5			14.9	5.16	309	189	7.09		
8:30	10			15.2	5.16	333	196	7.40		
8:35	15			15.4	5.21	335	207	7.18	3.17	43.00
8:40	20			14.8	5.22	338	211	6.64		
8:45	25	↓		14.5	5.23	339	213	6.52		
8:50	30	425		14.2	5.24	340	216	6.47		43.00
8:55	35			14.1	5.26	340	217	6.50	2.32	
9:00	40			14.1	5.29	340	218	6.61		43.00
9:05	45			13.9	5.29	339	220	6.39		
9:10	50			13.9	5.28	339	222	6.34	2.69	43.00
9:15	55	↓		13.9	5.28	339	223	6.30		
9:20	60			14.0	5.27	339	223	6.29	2.21	

Collected Sample Condition: Color clear Odor none Appearance clear

Parameter	Container	No.	Preservative
TVOC VOA 4.3	40ml VOA	3+3+3+3 = 12	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NORTHROP- GRUMMAN Project No. NY001496.0410.00002
Site Location BETHPAGE NY Date 2-12-10
Well No. GM-20E Replicate No. N/A Weather +

Sampling Personnel GW Sampling Time: Begin 12:55 End 1:45

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	105
Depth to Water (ft bmp)	35.06
Depth to Packer (ft bmp)	94
Water Column in Well (ft)	11
Casing Diameter	4 (0.65)
Gallons in Well	7.15
Gallons Purged	x 3
Prior to Sampling	21.45
Pump Intake	
Setting (ft bmp)	-
Packer Pressure (psi)	50 PSI
Pumping Rate (gpm)	-
Evacuation Method	BLADDER PUMP
Sampling Method	Dedicated bladder
Purge Time	Begin — End —

Field Parameters

Color	COLORLESS
Odor	NONE
Appearance	CLEAN

	I	1V	2V	3V
pH (s.u.)	5.46	11.04	10.76	11.20
Conductivity (~~mS/cm~~) or (µmhos/cm) [1]	296	241	253	243
Temperature (°C)	9.6	11.7	11.3	12.1
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	—	—	—	<20
Time	—	—	—	—
DTW (ft bmp)	—	—	—	—

Remarks: 5 GAL PAILS 11

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml VOA	3	HCl

PID Reading —

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) **Circle one unit type**

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. N400496.0410.00002

Site Location BETHPAGE N.Y Date 2-12-10

Well No. GM-20D Replicate No. N/A Weather

Sampling Personnel GW Sampling Time: Begin 2:30 End 2:35

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	226
Depth to Water (ft bmp)	36.85
Depth to Packer (ft bmp)	215
Water Column in Well (ft)	11
Casing Diameter	4(0.65)
Gallons in Well	7.15 x3
Gallons Purged Prior to Sampling	21.45
Pump Intake Setting (ft bmp)	-
Packer Pressure (psi)	130 PSI
Pumping Rate (gpm)	-
Evacuation Method	3 SW V.
Sampling Method	Dedicated bladder
Purge Time	Begin - End -

Field Parameters

Color: Colorless

Odor: None

Appearance: Clear

	I	1V	2V	3V
pH (s.u.)	9.36	5.72	6.02	5.79
Conductivity (mS/cm) or	2.55			
(µmhos/cm) [1]		12.2	49.9	1.18
Temperature (°C)	13.5	13.7	13.7	13.1
DO (mg/L)	-	-	-	-
ORP (mV)	-	-	-	-
Turbidity (NTU)	-	-	-	<20
Time	-	-	-	-
DTW (ft bmp)	-	-	-	-

Remarks: 215 - 36.85 x 0.43 + 50 = 2130 PSI

5 GAL PAILS IN ½

Parameter	Container	No.	Preservative
TVOC & LM 4-3	40ml VOA	3	HCl

PID Reading 0.0

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 01/29/10
Well No.: GM-21S ✓ | Replicate No.: N/A | Weather: Sunny, 12° F
Sampling Personnel: J. Doorley/S. Des | Sampling Time: Begin 945 am | End 947am

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	67
Depth to Water (ft bmp)	34.78
Depth to Packer (ft bmp)	--
Water Column in Well (ft)	32.2
Casing Diameter	2
Gallons in Well	15.46
Gallons Purged	(32.2 x 0.16 x 3)
Prior to Sampling	= 15.46
Pump Intake	—
Setting (ft bmp)	—
Packer Pressure (psi)	—
Pumping Rate (gpm)	—
Evacuation Method	—
Sampling Method	Redi Flo 3 ✓
Purge Time	Begin 9:30 End 9:44

Field Parameters

Color: Colorless
Odor: None
Appearance: Clear

	I	1V	2V	3V
pH (s.u.)	9.3	8.46	7.98	8.00
Conductivity (~~mS/cm~~) or µS/cm (~~µmhos/cm~~) [1]	165.4	169.2	153.9	144.9
Temperature (°C)	4.3	7.1	8.0	7.5
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	37.8	64.3	68.3	13.2
Time	9:30	9:35	9:39	9:44
DTW (ft bmp)	34.78	35.30	35.30	35.30

Remarks:

Parameter	Container	No.	Preservative
TVOC 8260 4.3	40ml VOA	3	HCl

PID Reading: ____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Sys. Corp. Project No.: NY001496.0410.00002
Site Location: Bethpage, NY Date: 2/11/10
Well No.: GM-21I Replicate No.: — Weather: Sunny 35°
Sampling Personnel: Jerome Northrop Sampling Time: Begin 16:09 End 16:16

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	140
Depth to Water (ft bmp)	36.99
Depth to Packer (ft bmp)	129
Water Column in Well (ft)	11 (below packer)
Casing Diameter	4" (0.65)
Gallons in Well	7.15
Gallons Purged	x 3
Prior to Sampling	21.45
Pump Intake	
Setting (ft bmp)	—
Packer Pressure (psi)	65 psi
Pumping Rate (gpm)	0.4
Evacuation Method	Ded. Bladder Pump
Sampling Method	3 volume
Purge Time	Begin 15:07 End

Field Parameters

Color: clear →
Odor: none →
Appearance: clear →

	I	1V	2V	3V
pH (s.u.)	6.93	8.19	9.24	9.32
Conductivity (µS/cm) or (µmhos/cm) [1]	185.1	146.1	141.4	144.0
	—	—	—	—
Temperature (°C)	8.4	8.1	10.9	11.3
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	2.28	2.31	1.96	2.40
Time	15:07	15:23	15:45	16:02
DTW (ft bmp)	36.23	39.05	39.07	39.08

Remarks: PSI = 129 − 37 × .43 + 25 = 65 psi

Parameter	Container	No.	Preservative
TOC VOA 8260	40ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) **Circle one unit type**

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Corp (NGC-002) | Project Number: NY001149.0410.00002 | Site Location: Bethpage, NY | Well ID: GM-21D
Date: 02/08/10 | Sampled By: J. Oesting / S. Das
Sampling Time: 1520 | Recorded By: J. Oesting / S. Das
Weather: Sunny, 34°F | Coded Replicate No.: N/A
Instrument Identification: ~~#5596~~ #A018/2
Water Quality Meter(s): YSI 550A, Oakton (19776); H19025 (088) Serial # Lamotte 2020 #2095-4200
Casing Material: 4" PVC | Purge Method: Dedicated Bladder Low flow
Casing Diameter: 4" | Screen Interval (ft bmp): Top 278 Bottom 288
Sounded Depth (ft bmp): 288 | Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 41.40 | Purge Time: Start 1415 Finish 1515

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1415	0	500	—	9.3	6.43	111.7	47.7	7.99	4.83	41.41
1420	5		—	9.5	6.12	114.9	68.3	6.51	—	—
1425	10		—	9.6	5.81	110.3	90.3	5.94	4.32	41.42
1430	15		—	9.6	5.68	107.9	101.7	5.80	—	—
1435	20		—	9.7	5.64	107.6	114.9	5.78	2.48	41.45
1440	25		—	9.7	5.59	107.9	121.2	5.83	—	—
1445	30		—	9.8	5.58	107.9	127.1	5.72	2.26	41.45
1450	35		—	9.9	5.56	108.6	131.5	5.78	—	—
1455	40		—	9.9	5.56	108.9	136.5	5.82	2.65	41.45
1500	45		—	9.9	5.53	109.3	137.8	5.81	—	—
1505	50		—	10.0	5.54	108.9	139.6	5.75	2.63	41.44
1510	55		—	10.1	5.50	108.8	141.6	5.78	—	—
1515	60	↓	—	10.1	5.55	109.0	141.9	5.74	2.28	41.44

Collected Sample Condition | Color: Colorless | Odor: None | Appearance: Clear

Parameter	Container	No.	Preservative
VOC 8260-3	40 ml vox	3	HCl

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Corp
Project Number: NY001496.0410.00002
Site Location: Bethpage NY
Well ID: GM-33D2
Date: 02/02/10
Sampled By: S. Das / J. Deathly
Sampling Time: 12:55
Recorded By: S. Das / J. Deathly
Weather: cloudy 35
Coded Replicate No.:

Instrument Identification: Horiba U-22
Water Quality Meter(s): Lamotte 2020
Serial #: EJI 00

Casing Material: PVC
Casing Diameter: 4"
Sounded Depth (ft bmp): ~~BD~~ NA 520
Depth to Water (ft bmp): 46.72

Purge Method: Low Flow / Dedicated Bladder
Screen Interval (ft bmp): Top 500 Bottom 520
Pump Intake Depth (ft bmp):
Purge Time: Start 1150 Finish 12:55

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (~~umhos or~~ mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1150	0	400		13.4	4.78	119.4	-5.6	6.93		
1155	5			13.8	4.97	112.5	-5.3	6.27	6.08	
1200	10			12.3	5.02	105.5	-5.4	6.08		47.25
1205	15			13.3	5.00	103.8	-4.7	6.10	3.11	
1210	20			13.6	5.06	102.3	-6.4	6.69		
1215	25			12.1	5.14	104.3	-1.2	6.55	2.90	47.30
1220	30			12.1	5.12	103.7	-1.5	6.51		
1225	35			12.4	5.09	103.5	-2.0	6.50		
1230	40			12.3	5.13	104.8	-2.5	6.65	2.78	
1235	45			12.6	5.17	105.7	-2.7	6.81		
1240	50			12.8	5.21	106.3	-2.7	6.89		
1245	55			12.9	5.24	106.4	-2.9	6.90		47.45
1250	60	↓		12.9	5.22	106.4	-2.8	6.91	1.82	

Collected Sample Condition: Color clear Odor none Appearance clear

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40 ml VOA	3	HCl

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Systems Corp
Project Number: NY001496.0410.00002
Site Location: Bethpage NY
Well ID: GM-34D
Date: 02/05/10
Sampled By: Jerome Oerthing
Sampling Time: 11:30
Recorded By: Jerome Oerthing
Weather: Cloudy 35
Coded Replicate No.:

Instrument Identification: oakton pH/Cond LA 197765
Water Quality Meter(s): Lamotte 2020 # 2095-4200
Serial #: HANNA # A51811 YSI 10 # 8896

Casing Material: Steel
Casing Diameter: 2"
~~Sounded~~ Depth (ft bmp): 319
Depth to Water (ft bmp): 12.65
Purge Method: Dedicated Bladder/Low Flow
Screen Interval (ft bmp): Top 309 Bottom 319
Pump Intake Depth (ft bmp):
Purge Time: Start 10:20 Finish

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~uS~~/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
10:20	0	500		8.9	7.26	194.7	188.5	5.76↓		
10:25	5			9.1	7.79	192.3	173.1	4.60↓	3.59	12.65
10:30	10			9.6	8.31	190.0	157.6	3.37		
10:35	15			9.9	8.47	187.2	155.2	2.57	3.67	
10:40	20			10.3	8.60	186.1	153.0	2.01		12.68
10:45	25			10.7	8.76	185.4	152.9	1.51	3.72	
10:50	30			10.9	9.37	183.9	110.3	1.22		
10:55	35			11.2	9.63	182.4	83.5	1.11	4.38	12.70
11:00	40			11.3	9.65	181.5	79.2	1.07		
11:05	45			11.4	9.69	180.5	76.1	0.98	4.40	
11:10	50			11.6	9.65	178.7	74.3	0.94		
11:15	55			11.7	9.61	176.3	66.7	0.94		
11:20	60			11.7	9.60	175.4	61.0	0.86	3.10	12.68
11:25	65			11.7	9.57	175.1	62.1	0.91		

Collected Sample Condition: Color clear Odor none Appearance clear

Parameter	Container	No.	Preservative
TVOC OVM 4.3	40 ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Sys. Corp
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: GM-34D2
Date: 2/5/10
Sampled By: Jerome Oerthing, Gary Williams
Sampling Time: 13:50
Recorded By: Jerome Oerthing
Weather: Cloudy 35
Coded Replicate No.: —

Instrument Identification: Oakton pH/cond # 197765; HANNA DO # A01812
Water Quality Meter(s): Hamotte 2020 # 2095-4200; Serial # YSI DO # 8896

Casing Material: Steel
Casing Diameter: 4"
Sounded Depth (ft bmp): 520
Depth to Water (ft bmp): 14.25
Purge Method: Non Dedicated Bladder / Low Flow
Screen Interval (ft bmp): Top 510, Bottom 520
Pump Intake Depth (ft bmp): —
Purge Time: Start 12:15, Finish 13:20

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
12:15	0	500		8.3	8.99	133.7	58.8	2.67		
12:20	5			9.7	8.82	128.7	61.7	1.23	35.7	14.25
12:25	10			10.9	8.74	124.1	63.2	0.85		
12:30	15			11.5	8.68	121.4	59.6	0.69		14.25
12:35	20			12.1	8.59	119.7	56.2	0.65		
12:40	25			12.5	8.56	118.0	54.2	0.61	40.2	14.25
12:45	30			12.6	8.47	116.2	51.7	0.59		
12:50	35			12.8	8.39	113.2	46.1	0.58		14.25
12:55	40			12.8	8.36	112.7	42.7	0.57	50.1	
13:00	45			13.0	8.13	115.2	31.6	0.97		14.25
13:05	50			13.2	7.88	117.1	22.7	1.43	70.8	
13:10	55			13.0	7.68	118.8	40.6	1.87	58.0	
13:15	60			13.0	7.60	119.5	46.8	2.35	54.6	
13:20	65	↓		13.1	7.53	120.2	52.2	2.76	50.8	

Collected Sample Condition: Color grey; Odor none; Appearance grey-silty

Parameter	Container	No.	Preservative
TVOC VOA 8.3	40ml VOA	3	HCl

PID Reading: —

Comments: —

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Syl. Corp
Project Number: NY001496.0010.00002
Site Location: Bethpage, NY
Well ID: GM-3402
Date: 2/5/10
Sampled By: Jerome Oechsle, Gary Willows
Sampling Time:
Recorded By: Jerome Oechsle
Weather:
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): See page 1
Serial #:

Casing Material:
Casing Diameter:
Sounded Depth (ft bmp):
Depth to Water (ft bmp):
Purge Method:
Screen Interval (ft bmp): Top: Bottom:
Pump Intake Depth (ft bmp):
Purge Time: Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1325	70	500		13.0	7.38	120.5	57.2	2.82	41.7	
1330	75			13.0	7.27	120.7	60.0	2.89	38.2	14.25
1335	80			12.5	7.17	121.2	68.8	2.94	31.1	
1340	85			12.3	7.10	121.7	66.2	3.01	30.1	
1345	90			12.1	7.06	122.0	64.1	3.17	30.2	
1350	95			11.9	7.00	122.4	69.6	3.20	30.2	14.25

Collected Sample Condition: Color: — Odor: — Appearance: —

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40 ml v oa	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. NY001496.0410.00002

Site Location BETHPAGE N.Y. Date 2-3-10

Well No. GM-35D-2 Replicate No. N/A Weather OVERCAST 35°

Sampling Personnel GW Sampling Time: Begin 10:30 End 1:30

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	530.00
Depth to Water (ft bmp)	507.82
Depth to Packer (ft bmp)	508
Water Column in Well (ft)	22
Casing Diameter	4"
Gallons in Well	14.30 x3
Gallons Purged Prior to Sampling	45.00
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	220 PSI
Pumping Rate (gpm)	—
Evacuation Method	3 SWV
Sampling Method	Dedicated bladder
Purge Time Begin	End

Field Parameters

Color COLORLESS

Odor NONE

Appearance CLEAR

	I	1V	2V	3V
pH (s.u.)	5.10	5.13	5.30	5.27
Conductivity ~~(mS/cm)~~ or (µmhos/cm) [1]	1953	130.7	152.3	119.9
Temperature (°C)	11.6	13.2	14.6	15.1
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	—	—	—	<20
Time	—	—	—	—
DTW (ft bmp)	—	—	—	—

Remarks: 5 GAL PAILS IN

Parameter	Container	No.	Preservative
TVOC & 1,4-D	40 ml VOA	3	HCl

PID Reading 1.2 NO BREATHING ZONE

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Sy. Corp | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 2/9/10
Well No.: GM-36D | Replicate No.: — | Weather: Sunny 35°
Sampling Personnel: Jerome Ochs | Sampling Time: Begin 11:40 End 11:43

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	214
Depth to Water (ft bmp)	33.35
Depth to Packer (ft bmp)	202
Water Column in Well (ft)	12 (below packer)
Casing Diameter	4" (0.65)
Gallons in Well	7.8
Gallons Purged Prior to Sampling	24
Pump Intake Setting (ft bmp)	—
Packer Pressure (psi)	100
Pumping Rate (gpm)	0.24
Evacuation Method	Dedicated Bladder
Sampling Method	Volume
Purge Time	Begin 10:00 End 11:45

Field Parameters

	I	1V	2V	3V
Color	clear	clear	clear	clear
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	6.25	6.13	5.85	5.97
Conductivity ~~(µ~~S/cm) or (µmhos/cm) [1]	167.4	145.7	139.4	137.8
	—	—	—	
Temperature (°C)	12.9	13.3	13.7	14.1
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	2.3	2.10	2.05	1.98
Time	10:02	10:20	11:00	11:40
DTW (ft bmp)	~~33.35~~ 33.35	32.98	32.52	32.87

Remarks:
202 - 33.35 x .43 + 25 = 97.5 psi

Parameter	Container	No.	Preservative
Thal Diss 4.3	40ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Sys. Corp. Project No.: NY001496.0410.00002
Site Location: Bethpage, NY Date: 2/9/10
Well No.: GM-36D2 Replicate No.: — Weather: Sunny 35°

Sampling Personnel: Jerome Oerthling Sampling Time: Begin 14:36 End 14:38

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	540
Depth to Water (ft bmp)	35.85
Depth to Packer (ft bmp)	518
Water Column in Well (ft)	22 (below packer)
Casing Diameter	4" (0.65)
Gallons in Well	14.3
Gallons Purged	(x3)
Prior to Sampling	43
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	232
Pumping Rate (gpm)	0.6 gpm
Evacuation Method	Dedicated Bladder
Sampling Method	3 volume
Purge Time	Begin 12:52 End

Field Parameters

Color: clear →
Odor: none →
Appearance: clear →

	1	1V	2V	3V
pH (s.u.)	7.03	10.62	8.94	7.08
Conductivity ~~(µ~~S/cm) or	1553	222	152.5	141.5
(µmhos/cm) [1]	—	—	—	
Temperature (°C)	13.5	14.6	14.3	14.2
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	8.20	7.76	7.97	8.39
Time	12:54	13:28	14:02	14:35
DTW (ft bmp)	36.48	36.27	36.52	36.59

Remarks: 518 - 35.85 x .43 + 25 = 232.2 psi

Parameter	Container	No.	Preservative
TVC VOA 8.3	40 ml vial	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project Northrop Grumman Sys. Corp. Project No. NY001496.0410.00002
Site Location Bethpage, NY Date 2/15/10
Well No. GM-37D Replicate No. — Weather sunny 35°

Sampling Personnel J. Oentling Sampling Time: Begin 13:05 End 13:08

Purge Data

Measuring Point (describe) TOC
~~Sounded~~ Well Depth (ft bmp) 262
Depth to Water (ft bmp) 37.40
Depth to Packer (ft bmp) 240
Water Column in Well (ft) 22 (below packer)
Casing Diameter 4" (0.65)
Gallons in Well 14.3
Gallons Purged (x3)
Prior to Sampling 43
Pump Intake
Setting (ft bmp) /
Packer Pressure (psi) 113 - 120
Pumping Rate (gpm) 0-3.5 gpm
Evacuation Method Ded. Bladder
Sampling Method 3 volume
Purge Time Begin 11:06 End 13:08

Field Parameters

Color clear →
Odor none →
Appearance clear →

	I	1V	2V	3V
pH (s.u.)	4.79	4.74	4.74	4.81
Conductivity ~~(µS~~/cm) or	250	240	243	233
(µmhos/cm) [1]	—	—	—	—
Temperature (°C)	10.8	13.3	13.7	14.9
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	2.4	2.10	1.95	1.73
Time	11:06	11:53	12:33	13:05
DTW (ft bmp)	37.35	34.21	30.10	31.78

Remarks: PSI = 240 - 37.40 x .43 + 25 = 113 psi
(N tank total start 1100)

Parameter	Container	No.	Preservative
TVOC plus 4.3	40-ml VOA	3	HCl
H_2S split TVOC	40-ml VOA	2	HCl

PID Reading

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Sys. Corp Project No.: NY001496.0410.00002
Site Location: Bethpage, NY Date: 2/15/10
Well No.: GM-39D2 Replicate No.: — Weather: Sunny 35°
Sampling Personnel: J. Oerthling Sampling Time: Begin 16:22 End 16:27

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	390
Depth to Water (ft bmp)	38.31
Depth to Packer (ft bmp)	367
Water Column in Well (ft)	23
Casing Diameter	4" (0.65)
Gallons in Well	14.95
Gallons Purged	x3
Prior to Sampling	45
Pump Intake Setting (ft bmp)	~
Packer Pressure (psi)	166
Pumping Rate (gpm)	0.25 gpm
Evacuation Method	Ded. Bladder
Sampling Method	Bailer
Purge Time	Begin 13:28 End 16:27

Field Parameters

Color: clear →
Odor: none →
Appearance: clear →

	1	1V	2V	3V
pH (s.u.)	5.41	5.16	4.86	5.05
Conductivity ~~(µ~~S/cm) or	167.5	155.4	157.9	158.6
(µmhos/cm) [1]	—	—	—	—
Temperature (°C)	14.2	14.2	13.4	13.6
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	2.97	2.88	2.43	2.13
Time	13:28	14:29	15:28	16:22
DTW (ft bmp)	38.17	37.58	37.10	37.52

Remarks: PSI = 367 − 38.31 × .43 + 2.5 = 166

(111) (2) 1

Parameter	Container	No.	Preservative
TVOC ONLY #3	40-ml VOA	3	HCl
H_2S split TVOC	40-ml VOA	2	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) **Circle one unit type**

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N00149.0410.00002
Site Location: Bethpage, NY
Well ID: GM-38D
Date: 2-4-10
Sampled By: GW
Sampling Time: —
Recorded By: GW
Weather: —
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated bladder/LF sampling
Casing Diameter: 4"
Screen Interval (ft bmp): Top 320 Bottom 340
Sounded Depth (ft bmp): 340
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 37.98
Purge Time: Start 12:15 Finish 1:15

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~[1])	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
12:15	—	—	—	10.7	6.07	146.8	150	3.65	—	37.98
12:20	—	—	—	11.1	5.81	146.5	159	2.09	—	—
12:25	—	—	—	11.1	5.53	147.8	175	1.30	—	—
12:30	—	—	—	11.1	5.53	147.5	177	1.27	—	—
12:35	—	—	—	11.1	5.34	148.3	187	1.00	—	—
12:40	—	—	—	11.4	5.17	144.8	196	.95	—	38.00
12:45	—	—	—	11.4	4.89	143.4	200	.95	—	—
12:50	—	—	—	11.3	4.89	142.4	200	.95	—	—
12:55	—	—	—	11.2	4.89	141.6	24	.95	—	38.04
1:00	—	—	—	11.1	4.86	142.2	217	.86	—	—
1:05	—	—	—	10.5	4.87	142.7	220	.77	—	—
1:10	—	—	—	10.4	4.87	142.5	220	.76	—	—
1:15	—	—	—	10.4	4.88	142.8	220	.75	<20	38.04

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml VOA	3	HCl

PID Reading: 0.0 BREATHING ZONE

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP - GRUMMAN
Project Number: NY001496.0410.00002 Site Location: BETHPAGE NY Well ID: GM-38D-2
Date: 12-4-10 Sampled By: GW
Sampling Time: — Recorded By: GW
Weather: — Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): — Serial #:

Casing Material: PVC Purge Method: Low flow (Dedicated bladder)
Casing Diameter: 4" Screen Interval (ft bmp) Top: 475 Bottom: 495
Sounded Depth (ft bmp): 495 Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 41.49 Purge Time Start: 1:50 Finish: 2:55

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1:50	—	—	-	8.8	4.88	160.5	218	6.9	—	41.49
1:55	—	—	-	8.9	5.89	164.2	216	8.28	-	-
2:00	—	—	-	9.2	5.98	165.1	213	7.74	-	-
2:05	—	—	-	9.0	6.02	165.0	212	7.78	-	-
2:10	—	—	-	9.0	6.02	164.8	212	7.59	-	-
2:15	—	—	-	9.0	6.04	164.8	213	7.51	-	41.12
2:20	—	—	-	9.6	6.03	163.3	213	8.02	-	-
2:25	-	-	-	9.6	6.03	163.3	213	7.81	-	-
2:30	—	—	-	10.0	5.99	161.8	212	7.59	-	-
2:35	-	-	-	10.1	5.99	161.5	212	7.94	-	-
2:40	—	—	-	10.2	5.95	161.5	213	7.97	—	-
2:45	—	-	-	9.9	5.97	227	213	6.79	-	41.20
2:50	—	—	-	9.9	6.14	229	211	6.52	-	-
2:55	-	-	-	9.9	6.12	231	212	6.45	<20	-

Collected Sample Condition Color: COLORLESS Odor: NONE Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40 ml VOA	3	HCl

PID Reading: 0.0 BREATHING ZONE

Comments: TETRA TECH IS PUMPING A EXTRACTION WELL AT 2.35 6.0 gpm APPROXIMATELY 75ft NW OF THE 38 CLUSTER. AS PER TT

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP GRUMMAN
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: GM-39A
Date: 1-29-10
Sampled By: GW
Sampling Time: —
Recorded By: GW
Weather: —
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated Bladder / Low flow Sampling
Casing Diameter: 4
Screen Interval (ft bmp): Top 262 Bottom 282
Sounded Depth (ft bmp): 282
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 36.79
Purge Time: Start 12:00 Finish 1:00

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
12:00	—	—	—	—	5.41	-	176	7.95	—	36.79
12:05	—	—	—	9.3	5.46	113.6	175	8.42	—	—
12:10	—	—	—	9.2	5.44	112.8	180	8.28	—	—
12:15	—	—	—	8.8	5.50	113.0	188	8.41	—	—
12:20	—	—	—	8.8	5.53	112.7	186	8.34	—	—
12:25	—	—	—	8.9	5.53	112.5	192	8.61	—	—
12:30	—	—	—	8.8	5.56	112.8	193	8.66	—	36.80
12:35	—	—	—	8.3	5.53	113.2	196	8.49	—	—
12:40	—	—	—	8.4	5.54	112.9	199	8.47	—	—
12:45	—	—	—	8.5	5.53	113.0	202	8.29	—	—
12:50	—	—	—	9.1	5.53	112.2	199	8.37	—	—
12:55	—	—	—	8.8	5.55	112.6	200	8.53	—	—
1:00	—	—	—	8.7	5.56	112.7	201	8.45	<20	—

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40ml voa	3	HCl

PID Reading: —

Comments

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N400149G.0410.00002 Site Location: Bethpage, NY Well ID: GM-39B
Date: 1-29-10 Sampled By: EB
Sampling Time: — Recorded By: EB
Weather: CLEAR 25° Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): — Serial #: —

Casing Material: — Purge Method: —
Casing Diameter: 4 Screen Interval (ft bmp) Top: 410 Bottom: 420
Sounded Depth (ft bmp): 420 Pump Intake Depth (ft bmp): —
Depth to Water (ft bmp): 39.60 Purge Time Start: 1:10 Finish: 2:10

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1:10				7.5	5.50	112.6	205	9.40		39.60
1:15				8.1	5.52	113.0	209	8.49		
1:20				8.6	5.37	113.3	211	8.63		
1:25				8.9	5.31	112.9	214	8.40		
1:30				9.5	5.27	112.6	220	8.49		39.60
1:35				9.8	5.26	112.1	217	8.38		
1:40				9.8	5.30	112.4	220	8.52		
1:45				10.2	5.29	112.1	220	8.61		
1:50				10.0	5.29	111.8	220	8.51		
1:55				10.1	5.27	111.8	221	8.64		39.60
2:00				10.1	5.29	111.8	221	8.63		
2:05				9.8	5.22	112.3	222	8.56		
2:10				9.7	5.23		229	8.67	<20	

Collected Sample Condition: Color COLORLESS Odor NONE Appearance CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4-3	40ml Voa	3	HCl

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Sys. Corp. Project No.: NY001496.0410.00002
Site Location: Bethpage, NY Date: 2/16/10
Well No.: GM-70D2 Replicate No.: — Weather: rain/sleet 32°

Sampling Personnel: J. Oerthling Sampling Time: Begin 13:25 End 13:28

Purge Data

Measuring Point (describe)	TOC
~~Sounded~~ Well Depth (ft bmp)	330
Depth to Water (ft bmp)	39.50
Depth to Packer (ft bmp)	308
Water Column in Well (ft)	22 (below packer)
Casing Diameter	4" (0.65)
Gallons in Well	14.3 (below packer)
Gallons Purged	x3
Prior to Sampling	43
Pump Intake	
Setting (ft bmp)	✓
Packer Pressure (psi)	140 psi
Pumping Rate (gpm)	~1.5 gpm
Evacuation Method	Ded. Bladder Pump
Sampling Method	3 volume
Purge Time	Begin 10:34 End

Field Parameters

Color: clear →
Odor: none →
Appearance: clear →

	1	1V	2V	3V
pH (s.u.)	4.38	4.88	4.97	5.06
Conductivity ~~(µ)~~S/cm) or	136.3	106.7	107.8	116.2
(µmhos/cm) [1]	—	—	—	—
Temperature (°C)	12.2	13.8	12.0	12.9
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	2.58	2.31	2.10	
Time	10:34	11:10	12:20	13125
DTW (ft bmp)	40.21	40.70	40.82	40.83
			All	

Remarks: PSI: 308 − 39.50 × .43 + 25 = 140 psi
* cont./ box ~~or pump~~ issue between 1V + 2V
12:52 - no purge again - turn off compressor
13:10 - control box working - continue to pump

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40 ml VOA	3	HCl
H_2M split TVOC	40 ml VOA	2	HCl

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. N400 1464.0410.00002

Site Location BETHPAGE Date 2-3-10

Well No. GM-710-2 Replicate No. _____ Weather OVERCAST 40°

Sampling Personnel GW Sampling Time: Begin 2:30 End 2:34

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	464
Depth to Water (ft bmp)	39.71
Depth to Packer (ft bmp)	442
Water Column in Well (ft)	22
Casing Diameter	4 (0.65)
Gallons in Well	14.30
Gallons Purged Prior to Sampling	14.30 x 3 = 42.9
Pump Intake Setting (ft bmp)	—
Packer Pressure (psi)	—
Pumping Rate (gpm)	—
Evacuation Method	3WV
Sampling Method	Dedicated Bladder
Purge Time	Begin — End —

Field Parameters

Color: COLORLESS

Odor: NONE

Appearance: CLEAR

	I	1V	2V	3V
pH (s.u.)	5.10	5.20	4.69	4.75
Conductivity ~~(mS/cm)~~ or (µmhos/cm) [1]	153.6	122.7	167.4	167.5
Temperature (°C)	14.0	14.0	13.5	13.5
DO (mg/L)	—	—	—	—
ORP (mV)	—	—	—	—
Turbidity (NTU)	—	—	—	<20
Time	—	—	—	—
DTW (ft bmp)	—	—	—	—

Remarks: SOAK PADS WILL

Parameter	Container	No.	Preservative
TVOC, 02LH4-3	40ml VOA	3	HCl

PID Reading —

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N40014960410.00002
Site Location: BETHPAGE NY
Well ID: GM-73D
Date: 1-28-10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather: CLOUDY 40°
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated bladder/low flow
Casing Diameter: 4
Screen Interval (ft bmp): Top 401 Bottom 411
Sounded Depth (ft bmp): ~~41.83~~ 411
Pump Intake Depth (ft bmp): — —
Depth to Water (ft bmp): 41.83
Purge Time: Start 3:30 Finish 4:30

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
3:30	—	—	—	8.4	5.06	113.1	232	8.23	—	41.83
3:35	—	—	—	8.7	5.04	113.3	245	7.95	—	—
3:40	—	—	—	—	—	—	—	—	—	—
3:45	—	—	—	—	—	—	—	—	—	—
3:50	—	—	—	8.9	5.04	112.4	250	8.15	—	41.83
3:55	—	—	—	8.9	5.04	112.1	253	8.39	—	—
4:00	—	—	—	8.8	5.04	112.4	253	8.45	—	—
4:05	—	—	—	8.9	5.04	112.1	254	8.48	—	—
4:10	—	—	—	8.8	5.04	112.5	255	8.45	—	41.83
4:15	—	—	—	8.6	5.04	112.3	254	8.33	—	—
4:20	—	—	—	8.4	5.04	112.6	254	8.37	—	—
4:25	—	—	—	8.4	5.04	112.3	255	8.44	—	—
4:30	—	—	—	8.3	5.04	112.6	255	8.42	<20	41.83

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40 ml VOA	3	HCl

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N40011496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-73D-2
Date: 1-28-10
Sampled By: GW
Sampling Time: —
Recorded By: GW
Weather: CLEAR 35°
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated bladder / LFS sampling
Casing Diameter: 4
Screen Interval (ft bmp): Top 532 Bottom 552
Sounded Depth (ft bmp): 552
Pump Intake Depth (ft bmp): — —
Depth to Water (ft bmp): 43.62
Purge Time: Start 4:40 Finish 5:45

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
4:40	—	—	—	6.8	5.03	113.7	254	11.97	—	43.62
4:50	—	—	—	6.8	5.40	113.7	248	12.06	—	—
4:55	—	—	—	7.1	5.52	120.7	244	11.27	—	—
5:00	—	—	—	7.1	5.54	121.0	244	8.15	—	—
5:05	—	—	—	7.6	5.31	118.5	246	7.40	—	—
5:10	—	—	—	7.7	5.15	113.4	253	7.62	—	39.95
5:15	—	—	—	7.8	5.07	112.8	255	7.73	—	—
5:20	—	—	—	7.4	5.03	112.7	256	7.76	—	—
5:25	—	—	—	7.2	5.06	112.9	256	7.72	—	39.09
5:30	—	—	—	6.9	5.07	113.4	257	7.75	—	—
5:35	—	—	—	6.9	5.04	113.2	258	7.79	—	—
5:40	—	—	—	6.8	5.08	113.5	257	7.77	—	—
5:45	—	—	—	6.8	5.01	113.2	258	7.79	<20	—

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4.3	40 ml voa	3	HCl

PID Reading: —

Comments

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-74I
Date: 1-28-10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather: LIGHT SNOW
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated bladder / low flow
Casing Diameter: 4"
Screen Interval (ft bmp): Top 94 Bottom 114
Sounded Depth (ft bmp): 114
Pump Intake Depth (ft bmp): — —
Depth to Water (ft bmp): 38.44
Purge Time: Start 1:15 Finish 2:00

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (µmhos or ~~mS/cm~~) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1:15	—	—	—	8.7	6.01	101.1	230	7.63	—	38.44
1:20	—	—	—	9.6	5.60	103.0	221	7.61	—	—
1:25	—	—	—	9.8	5.61	102.5	222	8.21	—	—
1:30	—	—	—	9.7	5.70	102.9	219	8.04	—	—
1:35	—	—	—	9.6	5.70	102.8	218	8.29	—	—
1:40	—	—	—	9.5	5.71	103.3	216	7.99	—	38.45
1:45	—	—	—	9.6	5.73	103.0	216	8.74	—	—
1:50	—	—	—	10.0	5.74	103.0	216	~~8.74~~	889	—
1:55	—	—	—	10.1	5.73	102.9	215	7.98	—	—
2:00	—	—	—	9.8	5.72	102.7	215	7.98	<20	3845
2:05	—	—	—	—	—	—	—	—	—	—
2:10	—	—	—	—	—	—	—	—	—	—
2:15	—	—	—	—	—	—	—	—	—	—

Collected Sample Condition: Color COLORLESS Odor NONE Appearance CLEAR

Parameter	Container	No.	Preservative
TNORGLM 4.3	40ml VOA	3	HCl

PID Reading: —

Comments

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-74D
Date: 1-28-10
Sampled By: GW
Sampling Time: —
Recorded By: GW
Weather: COLD AT SNOW
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Casing Diameter: 4"
Sounded Depth (ft bmp): 305
Depth to Water (ft bmp): 43.19

Purge Method: Dedicated bladder/low flow
Screen Interval (ft bmp): Top 295 Bottom 305
Pump Intake Depth (ft bmp): —
Purge Time: Start 12:00 Finish 1:00

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or [illegible]) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
12:00	—	—	—	7.8	5.20	89.8	202	3.74	—	43.19
12:05	—	—	—	10.4	5.20	92.2	211	5.93	—	—
12:10	—	—	—	8.3	4.83	92.7	212	5.99	—	—
12:15	—	—	—	8.6	4.82	92.6	214	6.07	—	—
12:20	—	—	—	8.8	4.80	93.3	214	6.10	—	—
12:25	—	—	—	9.6	4.81	94.3	217	6.25	—	—
12:30	—	—	—	9.4	4.79	95.3	218	6.17	—	43.25
12:35	—	—	—	9.4	4.78	95.2	220	6.30	—	—
12:40	—	—	—	9.4	4.79	95.9	221	6.22	—	—
12:45	—	—	—	9.8	4.79	95.9	225	6.40	—	—
12:50	—	—	—	10.0	4.79	96.2	226	6.46	—	43.19
12:55	—	—	—	10.0	4.80	95.9	227	6.45	—	—
1:00	—	—	—	10.0	4.81	96.3	229	6.46	<20	—

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC OLM 4.2	40ml VOA	3	HCl

Reading: —

Comments:

1) Note unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N40049610410.00002
Site Location: BETHPAGE
Well ID: GM-740-2
Date: 01/28/10
Sampled By: GW
Sampling Time: —
Recorded By: GW
Weather: LIGHT SNOW
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated bladder / low flow
Casing Diameter: 4
Screen Interval (ft bmp): Top 542 Bottom 562
Sounded Depth (ft bmp): 562
Pump Intake Depth (ft bmp): —
Depth to Water (ft bmp): 49.46
Purge Time: Start — Finish —

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~ 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
10:50	—	—	—	7.10	5.54	153.9	136	6.64	—	—
10:55	—	—	—	7.3	5.33	141.5	147	2.05	—	49.50
11:00	—	—	—	7.9	5.24	120.4	156	2.00	—	—
11:05	—	—	—	8.0	5.24	110.5	162	2.83	—	—
11:10	—	—	—	8.3	5.23	105.4	169	2.81	—	—
11:15	—	—	—	8.9	5.23	101.4	178	2.65	—	—
11:20	—	—	—	8.9	5.16	100.8	178	2.91	—	49.47
11:25	—	—	—	9.2	5.15	98.2	185	3.03	—	—
11:30	—	—	—	9.2	5.11	97.1	186	3.04	—	—
11:35	—	—	—	9.3	5.11	95.7	186	3.03	—	49.46
11:40	—	—	—	9.3	5.09	92.1	194	3.05	—	—
11:45	—	—	—	9.4	5.09	91.9	196	~~2.96~~	3.19	—
11:50	—	—	—	9.5	5.08	91.6	197	3.15	<20	—

Collected Sample Condition
Color: Colorless
Odor: None
Appearance: Clear

Parameter	Container	No.	Preservative
TVOC 8LM 4.3	40ml VOA	3	HCl

PID Reading: —

Comments

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Corp
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: BPM-75D2
Date: 02/03/10
Sampled By: J. Oertling / S. Dale
Sampling Time: 1354
Recorded By: J. Oertling / S. Dale
Weather: Sunny / 35F
Coded Replicate No.: Yes; MS/MSD taken
REF020310
Instrument Identification: —
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Casing Diameter: 4
Sounded Depth (ft bmp): 525
Depth to Water (ft bmp): 33.35
Purge Method: Dedicated Bladder pump
Screen Interval (ft bmp): Top 505 Bottom 525
Pump Intake Depth (ft bmp): —
Purge Time: Start 1240 Finish 1345

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1240	0	450	—	11.0	7.99	182.1	-46.8	10.39	—	—
1245	5		—	10.5	7.90	180.7	-10.7	7.62	10.76	—
1250	10		—	9.7	7.87	179.5	27.0	5.94	—	33.35
12:55	15		—	10.4	7.67	171.4	56.0	5.02	—	—
13:00	20		—	10.8	7.66	150.2	88.9	5.01	4.43	—
13:05	25		—	11.1	6.73	147.6	96.2	5.47	—	33.38
13:10	30		—	11.2	6.68	145.1	79.1	5.76	4.21	—
13:15	35		—	11.3	6.33	142.1	84.8	5.88	—	—
13:20	40		—	11.8	6.08	140.6	86.6	5.86	2.23	33.42
13:25	45		—	11.6	5.93	139.1	83.8	6.03	—	—
13:30	50		—	11.2	5.81	138.2	93.9	6.13	2.20	33.45
13:35	55		—	11.1	5.75	137.4	103.0	6.07	—	—
13:40	60		—	11.8	5.69	136.9	99.5	5.87	1.61	—
13:45	65		—	12.1	5.64	136.7	101.8	5.95	—	—

Collected Sample Condition
Color: Colorless
Odor: None
Appearance: Clear

Parameter	Container	No.	Preservative
TVOA 624.1	40ml VOA	3	HCl

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman Systems Corp | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 1/29/10
Well No.: GM-785 | Replicate No.: N/A | Weather: Sunny, 20°F
Sampling Personnel: S. Das, J. Oerthing | Sampling Time: Begin 1248 End 1252

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	70
Depth to Water (ft bmp)	39
Depth to Packer (ft bmp)	–
Water Column in Well (ft)	31
Casing Diameter	4
Gallons in Well	60.45
Gallons Purged Prior to Sampling	(70-39) x 0.65 = 20.15 x 3 =
Pump Intake Setting (ft bmp)	–
Packer Pressure (psi)	–
Pumping Rate (gpm)	–
Evacuation Method	–
Sampling Method	Redi-Flo/Stedy
Purge Time	Begin 1220 End 1248

Field Parameters

Color: Colorless
Odor: None
Appearance: Clear to transparent

	1	1V	2V	3V
pH (s.u.)	7.29	7.07	7.05	7.07
Conductivity (mS/cm) or (µmhos/cm) [1]	191	196	190	188
Temperature (°C)	14.4	15.6	16.3	16.7
DO (mg/L)	–	–	–	–
ORP (mV)	–	–	–	–
Turbidity (NTU)	–	11.0	8.54	7.23
Time	1220	1230	1238	1247
DTW (ft bmp)				

Remarks:

Parameter	Container	No.	Preservative
TVOC OLM4.3	40 ml VOA	3	HCl
Cd for total	Metal bottles	1	HNO3
Cd for dissolved	Metal bottles	1	HNO3

Reading: –

Well Casing Volumes

ft. 1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman Corp.
Project Number: NY001193.0000.00002 Site Location: Bethpage, NY Well ID: GM-78I
Date: 01/29/10 Sampled By: Jerome Oertling, Soma Das
Sampling Time: 14:05 Recorded By: S. Das
Weather: Sunny 20° Coded Replicate No. —

Instrument Identification
Water Quality Meter(s): Grey Van Meters Serial # —

Casing Material: 4" PVC Purge Method: Low flow/ Rediflow pump
Casing Diameter: 4" Screen Interval (ft bmp) Top: 90 Bottom: 110
Sounded Depth (ft bmp): 110 Pump Intake Depth (ft bmp): 100
Depth to Water (ft bmp): 39.05 Purge Time Start: 13:20 Finish: 14:07

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
13:20	0	400		14.4	7.21	156.7	-34.5	5.72		
13:25	5			14.3	7.16	168.5	-40.1	5.95		39.26
13:30	10			14.0	7.14	169.3	-40.0	5.87		
13:35	15			13.8	7.12	170.8	-41.2	5.83	1.59	39.28
13:40	20			13.7	7.10	171.7	-42.2	5.80		
13:45	25			13.7	7.09	173.2	-42.9	5.79	1.75	39.30
13:50	30			13.7	7.08	173.8	-43.8	5.85		
13:55	35			13.4	7.08	173.9	-43.5	5.84	1.87	39.29
14:00	40			13.3	7.08	174.9	-44.6	5.92		
14:05	45	↓		13.7	7.07	174.9	-44.8	5.88	1.80	39.29

Collected Sample Condition: Color clear Odor none Appearance clear

Parameter	Container	No.	Preservative
VOC OCM 4.3	40ml VOA	3	HCl
Cd/Cr Total	250ml Plastic	1	HNO_3
Cd/Cr Diss.	250ml Plastic	1	HNO_3

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N400.1496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-79I
Date: 1-22-10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather:
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated Bladder / low flow
Casing Diameter: 4
Screen Interval (ft bmp): Top 170 Bottom 180
Sounded Depth (ft bmp): 180
Pump Intake Depth (ft bmp): — —
Depth to Water (ft bmp): 38.52
Purge Time: Start 3:20 pm Finish

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
3:20	—	—	—	11.5	5.31	105.8	275	6.34	—	38.52
3:25	—	—	—	11.8	5.85	105.2	279	6.86	—	—
3:30	—	—	—	12.0	5.40	104.6	275	6.64	—	—
3:35	—	—	—	12.0	5.33	104.6	279	7.44	—	38.53
3:40	—	—	—	12.2	5.32	105.0	275	7.61	—	—
3:45	—	—	—	12.2	5.32	104.8	277	7.57	—	—
3:50	—	—	—	12.1	5.29	105.1	278	7.61	—	—
3:55	—	—	—	12.1	5.34	104.9	277	7.64	—	—
4:00	—	—	—	12.4	5.32	105.0	275	7.86	—	38.87
4:05	—	—	—	12.4	5.39	105.0	278	7.65	<20	—
4:10	—	—	—	—	—	—	—	—	—	—
4:15	—	—	—	—	—	—	—	—	—	—
4:20	—	—	—	—	—	—	—	—	—	—

Collected Sample Condition: Color COLORLESS Odor NONE Appearance CLEAR

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N00014960410.0002
Site Location: Bethpage, NY
Well ID: GM-79D
Date: 1-22-10
Sampled By: GW
Sampling Time: —
Recorded By: GW
Weather: —
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): —
Serial #: —

Casing Material: PVC
Purge Method: Dedicated bladder/low flow
Casing Diameter: 4
Screen Interval (ft bmp): Top 280 Bottom 290
Sounded Depth (ft bmp): 290
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 39.56
Purge Time: Start 1:55 Finish 2:55

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1:55	—	—	—	11.6	5.64	183.9	240	6.60	—	39.56
2:00	—	—	—	11.4	5.19	119.3	250	5.59	—	—
2:05	—	—	—	10.7	5.17	104.5	255	4.84	—	—
2:10	—	—	—	10.5	5.17	104.4	265	5.19	—	—
2:15	—	—	—	9.8	5.15	104.90	261	5.07	—	—
2:20	—	—	—	9.7	5.19	104.3	261	5.09	—	39.60
2:25	—	—	—	9.7	5.18	104.3	270	5.48	—	—
2:30	—	—	—	9.6	5.17	104.4	266	5.49	—	—
2:35	—	—	—	9.5	5.12	104.4	267	5.52	—	—
2:40	—	—	—	9.5	5.14	104.4	269	5.55	—	—
2:45	—	—	—	9.4	5.19	104.6	273	5.59	—	39.62
2:50	—	—	—	9.4	5.14	104.6	275	5.57	—	—
2:55	—	—	—	9.5	5.18	104.3	274	5.63	<20	—

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative
TVOC + OXY 4.3	40ml VOA	3	HCl

PID Reading: —

Comments

1) Circle one unit type

K1000593

ARCADIS

Laboratory Task Order No./P.O. No. NGC 042

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001496.0910.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation G. Williams / J. Oerthing

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	TVOC TCL NYSDEC ASP OLM 4.3	VOA (HCL)	Metals TCL ...				Remarks	Total
GM-15D	L	1/21/10		3						2 week TAT	3
GM-15D-2	L	↓		3						↓	3
BPOW1-1	L	↓		[illegible]	3					↓	3
BPOW1-2	L	↓		[illegible]	3					↓	3
TB012110	L	↓		3						↓	3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 15

Relinquished by: Jerome Oerthing	Organization: ARCADIS	Date 1/21/10	Time 17 30	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Report to Melissa Rendl

Delivery Method: ☐ In Person ☑ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

R1000402

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY 001496.0410.00002

Project Location BETHPAGE NY

Laboratory COLUMBIA ANALYTICAL SVCS

Project Manager MIKE WOLFERT

Sampler(s)/Affiliation G.W.,

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 CFR 136 624 VOC DUP 413 (HCl)						Remarks	Total
GM-79D	L	12-2-10		3							3
GM-79E				3							3
TB 12-2-10				3							3
										Total No. of Bottles/ Containers	9

Sample Matrix: L = Liquid; S = Solid; A = Air

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 12/2/10	Time		Yes No N/A
Received by:	Organization:	Date / /	Time		
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by:	Organization:	Date / /	Time		Yes No N/A

Special Instructions/Remarks: REPORT TO MEET 554 REDUX

Delivery Method: ☐ In Person ☒ Common Carrier FED EX SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

K1000405

ARCADIS

Laboratory Task Order No./P.O. No. NGC

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001496.0410000 2/NGC

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo SanGiovanni

Sampler(s)/Affiliation Jerome Oestling/Gary Williams

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA TVOC OLM 524.2	~~[illegible]~~ Oct 4/3 (4x)					Remarks	Total
TB012210	L	01/22/10		3						Standard TAT	3
BPOW1-3	L	01/22/10		3						↓	3
BPOW3-2	L	01/22/10		3						↓	3
~~GM-79I~~	~~L~~	~~1/22/10~~			~~3~~						
~~GM-79D~~	~~L~~				~~3~~						

Sample Matrix: (L) = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 9

Relinquished by: Sonia Das	Organization: ARCADIS	Date 1/22/10	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Report to Melissa Reindl

Delivery Method: ☐ In Person ☒ Common Carrier FEDEX (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

K1000405

ARCADIS

Laboratory Task Order No./P.O. No. NGC

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001496.0410.00002/NGC

Project Location Bethpage NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation Gary Williams/Sonia Dal

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml VOC aqu 524.2						Remarks	Total
TB012510	L	01/25/10		3						Standard TAT	3
BPOW-4-1	L	01/25/10		3						↓	3

Total No. of Bottles/ Containers: 6

Sample Matrix: L = Liquid; S = Solid; A = Air

				Seal Intact?
Relinquished by: Sonia Dal	Organization: ARCADIS	Date 01/25/10	Time 1600	
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Report to Melissa Reid

Delivery Method: ☐ In Person ☒ Common Carrier FEDEX (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

K1000405

ARCADIS

Laboratory Task Order No./P.O. No. N/C

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001436.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo Paviglianiti

Sampler(s)/Affiliation Gary Williams, Soma Das

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1,4-Dioxane 8270C SIM						Remarks	Total
TB012610	L	01/26/10		3						Standard TAT	3
BPOW 3-1	L	01/26/10		3						↓	3

Total No. of Bottles/ Containers: 6

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: Soma Das	Organization: ARCADIS	Date 01/26/10	Time 1520	Seal Intact?	
Received by:	Organization:	Date / /	Time	(Yes)	No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A

Special Instructions/Remarks: Report to Melissa Reidl

Delivery Method: ☐ In Person ☒ Common Carrier FEDEX (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

K1000403

ARCADIS

Laboratory Task Order No./P.O. No. NYC

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001496.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovani

Sampler(s)/Affiliation Pat Bezorski/Soma Das

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40ml VOA (HCl) Preserved TVOC OLM 524.2						Remarks	Total
TB012710	L	01/27/10		3							3
BPOH 4-2	L	01/27/10		9							9
BPOH 4-3	L	01/27/10		3							3
										Total No. of Bottles/ Containers	15

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: Soma Das	Organization: ARCADIS	Date 01/27/10	Time 1945	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:

* Please use samples for MS/MSD QA/QC analysis

Repool to Melissa Kowal

Delivery Method: ☐ In Person ☒ Common Carrier FEDEX (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. NGC 042

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001496.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation Jerome Destina / Arcadis, Gary Williams

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml voa (HCl) TVOC OLM 4.3 40ml VOA (HCl)						Remarks	Total
TB012810	L	01/28/10		3						Standard TAT	3
FB012810	L	01/28/10		3						↓	3
HN-40S	L	01/28/10		3							3
HN-40I	L	01/28/10		3							3
HN-42S	L	01/28/10		3							3
HN-42I	L	01/28/10		3							3
GM-74D	L	01/28/10		3							3
GM-74D2	L	01/28/10		3							3
GM-74I	L	01/28/10		3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 27

Relinquished by: [signature]	Organization: ARCADIS	Date 01/28/10	Time 1710	Seal Intact?
Received by:	Organization:	Date / /	Time	(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Report to Melissa Reind

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

R1000548

ARCADIS

Laboratory Task Order No./P.O. No. NGC

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001436.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovani

Sampler(s)/Affiliation Jerome Oertling / Gary Williams / Somebody

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40ml voa (HCl) TVOC 8260 4.3	8oz (HNO3) Cd/Cr Total	8oz (HNO3) Cd/Cr Dissolved				Remarks	Total
TB012910	L	01/29/10		3						Standard TAT	3
FB012910	L	01/29/10		3						↓	3
GM-21S	L	01/29/10		3						↓	3
FW-03	L	01/29/10		3						↓	3
GM-78S	L	01/29/10		3	1	1				↓	5
GM-78I	L	01/29/10		3	1	1				↓	5
GM-73D	L	01/28/10		3						↓	3
GM-73D2	L	01/28/10		3						↓	3
GM-39B	L	01/29/10		3						↓	3
GM-39A	L	01/29/10		3						↓	3

Sample Matrix: (L) = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 34

Relinquished by: Jerome Oertling	Organization: ARCADIS	Date 1/29/10	Time 16:00	Seal Intact?
Received by:	Organization:	Date / /	Time	(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

Report to Melissa Reindl

Delivery Method: ☐ In Person ☒ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

R1000580

ARCADIS

Laboratory Task Order No./P.O. No. NGC

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001496.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation S. Das / J. Oertling

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TVOC OLM 4.3	40ml VOA Total Chromium (HCl)	8oz Plastic Total Chromium (HNO3) & Cadmium	Dissolved Chromium & Cadmium			Remarks	Total
TB020110	L	02/01/10		3						Standard TAT	3
FB020110	L	↓		3		1					4
GM-15S	L	↓		3	1						4
PTIMW-04	L	↓			1						1
PTIMW-05	L	↓			1						1
PTIMW-06	L	↓			1						1
MW-2GF	L	↓				1	1				2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 16

Relinquished by: Soma Das	Organization: ARCADIS	Date 02/01/10	Time 17:00	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Report to Melissa Reindl

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

AG 05-12/01

R1000564

ARCADIS

Laboratory Task Order No./P.O. No. NFC 002

CHAIN-OF-CUSTODY RECORD

Project Number/Name N001996.0410.00002

Project Location Bethpage NY.

Laboratory Columbia Analytical Srvcs.

Project Manager Carlo SanGiovanni

Sampler(s)/Affiliation Dan AB. / Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ASP 2000 Rev. 3 (3) HCl	40 mL VOAs	Grab	STD. TAT	Temp. Bottle		Remarks	Total
Tower 102 Influent	L	2/1/10 0740		↓	3	↓	↓				3
Tower 102 Effluent	↓	0743			3						3
Tower 102 Effluent/MS		0743			3						3
Tower 102 Effluent/MSD		0743			3						3
Well 19		0759			3						3
Well 18		0812			3						3
Well 17		0818			3						3
Tower GW Influent		0839			3						3
Tower GW Effluent		0843			3						3
Well 1		0832			3						3
Well 3		0854			3						3
Rep 020110					3					Rep of Well 19	3
Trip Blank					3						3
Temp. Bottle					X			1			1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 40

Relinquished by: [illegible signature]	Organization: Arcadis	Date 2/1/10	Time 1300	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Attn. Mike Perry

Delivery Method: ☐ In Person ☒ Common Carrier Fed. Ex. (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

IL1000566

NGC

ARCADIS

Laboratory Task Order No./P.O. No. 042

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001496.0410.00002

Project Location Bethpage NY

Laboratory Columbia Analytical Servs

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation Dal: AB/Arcadis

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	Client Sample	TO-15	6xKB	STD TAT		Can #s	Remarks	Total
Tower 96 Influent	A	2/1/10 1029		↓	↓	↓	↓		SAC 00054	Init vac -29.4 End -7	
Tower 96 Effluent	↓	1033		↓	↓	↓	↓		SAC 00157	Init vac -28.0 End -7	
Tower 96 Total Effluent	↓	1038		↓	↓	↓	↓		SAC 00091	Init vac -29.4 End -7	
Tower 102 Influent	↓	1401		↓	↓	↓	↓		SAC 00081	Init vac -29.4 End -5	
Tower 102 Effluent	↓	1411		↓	↓	↓	↓		SAC 00067	Init vac -29.8 End -7	

Can # 00095 VAC was 27.0" Hg. Did not use. Gauge may have been wrong.

Returning the extra can also

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 6

Relinquished by: [signature]	Organization: Arcadis	Date 2/1/10	Time 1500	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Attn: Mick Okamura

Delivery Method: ☐ In Person ☒ Common Carrier Fed. Ex. (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

21000077

ARCADIS

Laboratory Task Order No./P.O. No. NGC 042 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name NY001496.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation J. Oertling / S. Das

				ANALYSIS / METHOD / SIZE							
Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	TVOC OLM 4.3 40ml VOA (HCl)	Total Cd/Cr 8oz Plastic (HNO_3)	Dissolved Cd/Cr 8oz Plastic (HNO_3)				Remarks	Total
FB020210	L	02/02/10		3	1					Standard TAT	4
TB020210	L			3							3
N-10627	L			3							3
GM-33D2	L			3							3
N-10631	L			3	1	1					5

Total No. of Bottles/Containers 18

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: Jerome Oertling	Organization: ARCADIS	Date 2/2/10	Time 1630	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Report to Melissa Reindl

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

R1000629

ARCADIS

Laboratory Task Order No./P.O. No. NCC 0012

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001496.0410.00002

Project Location Bethpage NY

Laboratory Columbia Analytical

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation S. Das / J. Oerthig

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TCE OLM 4.3 40ml VOA (HCl)	Total Cd/Cr 8oz Plastic (HNO3)	Dissolved Cd/Cr 8oz Plastic (HNO3)				Remarks	Total
TB020310	L	2/3/10		3						Standard TAT	3
FB020310	L			3	1						4
N-10624	L			3							3
GM-75D2	L			9*						*MS/MSD	9*
REP020310	L			3							3
MW-16F	L				1	1					2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 24

Relinquished by: Irma DAS	Organization: ARCADIS	Date 02/03/10	Time 1630	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Report to Melissa Rendl

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

R1000637

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page _____ of _____

Project Number/Name NY001491.0410.00002

Project Location BETHPAGE NY

Laboratory COLUMBIA ANALYTICAL SVCS

Project Manager MIKE WALSH

Sampler(s)/Affiliation G.W

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VOC DLM 4/3						Remarks	Total
GM-350-2				3							3
GM-710-2				3							3
TB 2-3-10GW				3							3

Total No. of Bottles/ Containers 5

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: GW	Organization: ARCADIS	Date 2/3/10	Time 430	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier FED EX SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

R1000651

ARCADIS

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001496.D410.0000

Project Location CETH... NJ

Laboratory Columbia Analytical Serv

Project Manager Mike Wolfert

Sampler(s)/Affiliation G.W.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40ml VOA / VOC 8260 HCl						Remarks	Total
GM-38D	L	2-4-10		3							3
GA-38D-2	↓	↓		3							3
TB 2-4-10				3							3

Total No. of Bottles/Containers 9

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: [signature]	Organization: ARCADIS	Date 2/4/10	Time 6:00	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: REPORT TO MELISSA REVAL

Delivery Method: ☐ In Person ☐ Common Carrier ______ SPECIFY ☐ Lab Courier ☐ Other ______ SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. NBC 042 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name NY001496.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation J. Oerthay / G. Williams

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TVOC OLM 4.3 40ml VOA (HCl)						Remarks	Total
TB020510	L	2/5/10		3						Standard TAT	3
FB020510	L	↓		3						↓	3
GM-34D	L	↓		3						↓	3
GM-34D2	L	↓		3						↓	3

Total No. of Bottles/Containers

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: Jerome Oerthay Organization: ARCADIS Date 2/5/10 Time 17:15 Seal Intact? (Yes) No N/A
Received by: Organization: Date / / Time

Relinquished by: Organization: Date / / Time Seal Intact? Yes No N/A
Received by: Organization: Date / / Time

Special Instructions/Remarks: Report to Melissa Rendl

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

R1000698

ARCADIS

Laboratory Task Order No./P.O. No. NGC 002 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name NY001432.0410.00002/NGC

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo Sangiovanni

Sampler(s)/Affiliation Jerome Oetting/C.Dos

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml Vial (HCl) Trace VOA (8260)						Remarks	Total
GM-21D	L	02/02/10		3						Standard TAT	3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 3

Relinquished by: Jerome Oetting	Organization: ARCADIS	Date 02/08/10	Time 1630	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A

Special Instructions/Remarks: Report to Melissa Kroll

Delivery Method: ☐ In Person ☒ Common Carrier FEDEX (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

K1000746

ARCADIS

Laboratory Task Order No./P.O. No. NGC 042 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name NY001496.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation Jerome Oertling / Gary Williams

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	TVOC OLM 4.3 40ml VOA (HCl)						Remarks	Total
TB020910	L	2/9/10		3						Standard TAT	3
GM-36D	L			3							3
GM-36D2	L			3							3
GM-18I	L			3							3
GM-13D	L			3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers

Relinquished by: Jerome Oertling Organization: ARCADIS Date 2/9/10 Time 18:50

Received by: ______ Organization: ______ Date / / Time ______

Seal Intact? (Yes) No N/A

Relinquished by: ______ Organization: ______ Date / / Time ______

Received by: ______ Organization: ______ Date / / Time ______

Seal Intact? Yes No N/A

Special Instructions/Remarks: Report to Melissa Rendl

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. NGC 002

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001496.0412.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation Jerome Oerthng

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TVOCs OLM 4.3 40ml vial (HCl)						Remarks	Total
TB02-1110	L	2/11/10		3						Standard TAT	3
GM-21I	L			3							3
										Total No. of Bottles/ Containers	6

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: Jerome Oerthng	Organization: ARCADIS	Date 2/11/10	Time 17:30	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Report to Melissa Reindl

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

R1000746

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name 30049604.0010.00002

Project Location BETHPAGE NY

Laboratory COLUMBIA ANALYTICAL SERV.

Project Manager MIKE WOLFERT

Sampler(s)/Affiliation G.W

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VOC CLP (4°C HCl)						Remarks	Total
GM-20I	L	2-12-10		3							3
GM-20D	↓	↓		2*							2
TB 2-12-10	↓	↓		3							3

Total No. of Bottles/ Containers: 8

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: [signature]	Organization: ARCADIS	Date 2/12/10	Time 5:15	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

* 1 BOTTLE BROKEN REPORT TO MARISA RADOC

Delivery Method: ☐ In Person ☒ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

R1000605

ARCADIS

Laboratory Task Order No./P.O. No. NCC 042 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name NYGB14PB.0110.0002

Project Location Bethpage NY

Laboratory Columbia Analytical

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation J. Derting

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TCL VOCs 624.1	Remarks	Total
TB021510	L	2/15/10		3	Standard TAT	3
GM-37D	L			3		3
GM-37D2	L			3		3
DC021510	L			3		3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 12

Relinquished by: Jerome Derting	Organization: ARCADIS	Date 2/15/10	Time 1800	Seal Intact?		
Received by:	Organization:	Date / /	Time	(Yes)	No	N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?		
Received by:	Organization:	Date / /	Time	Yes	No	N/A

Special Instructions/Remarks: Report Results to Melissa Reidl

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

R1000825

ARCADIS Laboratory Task Order No./P.O. No. NGC 042 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name NY001496.0410.00002

Project Location Bethpage, NY

Laboratory Columbia Analytical

Project Manager Carlo SanGiovanni

Sampler(s)/Affiliation Jerome Oertling

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TVOC OLM 4.3 40ml VOA (HCl)						Remarks	Total
TB021610	L	2/16/10		3						Standard TAT	3
GM-70D2	L	↓		3							3
GM-17I	L	↓		3						↓	3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 9

Relinquished by: Jerome Oertling	Organization: ARCADIS	Date 2/16/10	Time 18:00	Seal Intact?
Received by:	Organization:	Date / /	Time	(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Report to Melissa Reindl

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name: Bethpage Water District

Project Location: Bethpage, NY

Laboratory: H2M

Project Manager: _____

Sampler(s)/Affiliation: Jerome Derheny - ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC	Total VOCs (8260)						Remarks	Total
GM-70D2	L	2/16/10		3								3
GM-37D	L	2/15/10		3								3
GM-37D2	L	2/15/10		3								3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers

Relinquished by: Jerome Derheny	Organization: ARCADIS	Date 2/16/10	Time 18:00	Seal Intact?	
Received by: M. Watt	Organization: H2M	Date 2/16/10	Time 18:00	Yes No (N/A)	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☒ In Person ☐ Common Carrier _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. NL OUL

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001496.0410_00002

Project Location Bethpage, NY

Laboratory Columbia Analytical

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation Jerome Oetting

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TVOC OLM 4.3 40ml/VOA (HCl)						Remarks	Total
TB021710	L	2/17/10		3						Standard TAT	3
REP021710	L			3							3
GM-17D	L			3							3
GM-18D	L	↓		9*	*USE FOR MS/MSD FOR 3rd SDG						9

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 18

Relinquished by: Jerome Oetting	Organization: ARCADIS	Date 2/17/10	Time 1400	Seal Intact?
Received by:	Organization:	Date / /	Time	(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Report to Melissa Revell

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name NY001496.0410.00002

Project Location BETHPAGE NY

Laboratory COLUMBIA ANALYTICAL SERVICES

Project Manager MIKE WOLFERT

Sampler(s)/Affiliation G.W

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml VOC DLM 4.3 (HCl)						Remarks	Total
GM-15I	L	2-24-10		3							3
TB 2-24-10	L	U		3							3

Total No. of Bottles/ Containers: 6

Sample Matrix: L = Liquid; S = Solid; A = Air

					Seal Intact?
Relinquished by: G.W	Organization: ARCADIS	Date 2/24/10	Time 4:30		
Received by:	Organization:	Date / /	Time		Yes No N/A
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by:	Organization:	Date / /	Time		Yes No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☑ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

ARCADIS
Infrastructure, environment, facilities

Page ____ of ____

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. NY001496.0418.00002

Site Location BETHPAGE NY Date 4-20-10

Well No. GM-2DD Replicate No. ____ Weather ____

Sampling Personnel GW Sampling Time: Begin 12:25 End ____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	226
Depth to Water (ft bmp)	33.67
Depth to Packer (ft bmp)	215
Water Column in Well (ft)	11
Casing Diameter	4 (0.65)
Gallons in Well	7.15
Gallons Purged	x 3
Prior to Sampling	21.45
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	130
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 12:40 End ____

Field Parameters

Color: COLORLESS

Odor: NONE

Appearance: CLEAR

	I	1V	2V	3V
pH (s.u.)	6.96	6.95	6.95	6.95
Conductivity (mS/cm) or (µmhos/cm) [1]	1418.1	218	157	176
Temperature (°C)	14.7	15.6	15.9	15.5
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				.82
Time				
DTW (ft bmp)				

Remarks: 5 GALLON PAILS II

Parameter	Container	No.	Preservative

PID Reading ~

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. NY001496.0410.00002 Page ___ of ___

Site Location ___ Date 4-19-10

Site/Well No. GM-21I Replicate No. ___

Weather ___ Sampling Time: Begin 4! End ___

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	140
Depth to Water (ft bmp)	
Depth to Packer (ft bmp)	129
Water Column in Well (ft)	11
Casing Diameter	4" (0.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	21.45
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	90 PSI
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 5:00 End ___

Field Parameters

	I	1V	2V	3V
Color	COLORLESS	COLORLESS		
Odor	NONE	NONE		
Appearance	CLEAR	CLEAR		
pH (s.u.)	5.44	6.35	7.52	7.45
Conductivity (mS/cm)	—	—	—	—
(µmhos/cm)	94.6	92.3	91.5	91.4
Temperature (°C)	10.5	10.5	10.9	10.9
DO (mg/L)				
Turbidity (NTU)				<20
Time				
DTW (ft bmp)				

Remarks: 5 GALLON PAILS 11

3

Constituents Sampled: See COC Sampling Personnel: ___

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN OU-2
Project Number: NY001496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-21D
Date: 4-19-10
Sampled By: G.W.
Sampling Time:
Recorded By: G.W.
Weather:
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): YSI 550 (DO) OAKTON 300 (pH/cond) OAKTON ACORN (ORP) Serial #:

Casing Material:
Purge Method:
Casing Diameter:
Screen Interval (ft bmp) Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 38.09
Purge Time Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
3:35				~~15.8~~ 12.2	7.69	105.1	239	7.02		38.09
3:40				11.4	7.49	112.3	240	7.05		
3:45				10.7	6.90	89.9	254	6.26		
3:50				10.7	6.36	77.6	274	6.06		38.09
3:55				10.7	6.13	76.8	284	5.80		
4:00				10.6	6.08	76.9	285	5.88		
4:05				10.8	5.93	77.5	296	6.09		
4:10				10.7	5.93	77.6	297	6.10		
4:15				10.8	5.94	77.3	301	6.09		38.15
4:20				10.9	5.75	77.3	305	6.24		
4:25				10.8	5.73	77.1	305	6.57		
4:30				10.9	5.66	77.3	306	6.44		38.16
4:35				10.9	6.67	77.3	306	6.45	<20	

Collected Sample Condition: Color COLORLESS Odor NONE Appearance CLEAR

Parameter	Container	No.	Preservative

PID Reading: —

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001096.0410.0002
Site Location: Bethpage, NY
Well ID: GM-33D2
Date: 4-16-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time: 1508
Recorded By: Sunny Xu
Weather: Cloudy 46F
Coded Replicate No.: NONE

Instrument Identification
Water Quality Meter(s): see calibration sheet
Serial #:

Casing Material:
Purge Method: ~~bailer~~ dedicated bladder pump
Casing Diameter: 4"
Screen Interval (ft bmp): Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 43.88
Purge Time: Start 1343 Finish 1443

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1343	0	low		11.7	7.71	98.1	134	9.11		
1348	5			12.0	8.04	1047	~~1447~~ 177 s.u.	6.11		
1353	10			12.1	7.79	102.4	188	6.08		
1358	15			12.2	7.32	95.4	199	5.76		43.95
1403	20			12.2	7.21	97.1	202	5.73		
1408	25			12.3	6.95	96.8	207	5.67		43.95
1413	30			12.4	6.85	94.4	212	5.81		
1418	35			12.4	6.83	93.1	213	5.78		43.90
1423	40			12.5	6.73	91.7	215	5.78		
1428	45			12.5	6.85	92.5	215	6.09		43.90
1433	50			12.6	6.76	95.0	207	5.80		
1438	55			12.6	7.21	114.7	165	5.83		44.00
1443	60			12.7	8.40	145.2	110	5.80		
1448	65			12.7	8.70	131.3	88	5.82		44.00

Collected Sample Condition
Color: Colorless
Odor: none
Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: GM-33D2
Date: 4-16-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time: 1508
Recorded By: Sunny Xu
Weather: Cloudy 58F
Coded Replicate No.: NONE

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Casing Diameter: 4"
Sounded Depth (ft bmp):
Depth to Water (ft bmp):

Purge Method:
Screen Interval (ft bmp): Top: Bottom:
Pump Intake Depth (ft bmp):
Purge Time: Start 13:43 Finish 15:08

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
14:53				12.7	8.99	107.5	96.	5.97		
14:58				12.5	9.09	96.8	105.	5.98		44.00
15:03				12.6	9.14	95.9	110	5.98		
15:08				12.6	9.13	94.9	115	5.98		44.00

Collected Sample Condition: Color: Odor: Appearance:

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: GM-34D
Date: 4-12-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time:
Recorded By: Sunny Xu
Weather: Sunny 65F
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): See calibration log
Serial #:

Casing Material:
Purge Method: Dedicated bladder pump
Casing Diameter: 2"
Screen Interval (ft bmp): Top 309 Bottom 319
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 8.94
Purge Time: Start 1400 Finish 1450

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1405	0			16.7	5.87	119.0	126	3.29		
1410	5			16.4	6.24	115.0	123	1.80		
1415	10			16.5	6.63	113.2	117	1.13		8.91
1420	15			16.6	6.86	112.9	117	0.99		
1425	20			16.7	7.03	113.2	114	0.78		8.92
1430	25			16.9	7.20	113.0	115	0.76		
1435	30			16.9	7.32	118.0	113.4	0.74		9.46
1440	35			17.0	7.44	113.9	119	0.75		
1445	40			17.1	7.46	113.3	117	0.76		9.46
1450	45			17.0	7.46	113.5	118	0.80		

Collected Sample Condition
Color: Colorless
Odor: none
Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs ASP200	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0410.0002
Site Location: Bethpage, NY
Well ID: GM-36D2
Date: 4-12-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time: 1620
Recorded By: Sunny Xu
Weather: Sunny 80's F.
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): See Calibration log
Serial #:

Casing Material:
Purge Method: bladder pump
Casing Diameter: 2"
Screen Interval (ft bmp) Top: 410 Bottom: 420
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 10.70
Purge Time Start: 1535 Finish: 1620

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (~~mS/cm~~ umhos or mS/cm)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1535	0	500		20.4	8.46	104.9	113	4.37		
1540	5			17.7	8.56	89.8	119	2.05		
1545	10			16.4	8.48	79.6	128	0.66		10.71
1550	15			16.4	8.36	77.5	131	0.50		
1555	20			16.0	8.40	76.4	132	0.41		10.69
1600	25			16.0	8.40	76.0	134	0.39		
1605	30			16.0	8.33	75.4	137	0.38		10.69
1610	35			16.2	8.31	75.0	139	0.38		
1615	40			16.1	8.30	74.6	140	0.38		10.69
1620	45	↓		16.1	8.30	74.3	141	0.38	~~9.8~~ 9.0	

Collected Sample Condition
Color: Colorless
Odor: none
Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs ASP2000	40ml VOA	3	HCl

PID Reading:

Comments:

type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project Northrop Grumman OU-2 Project No. NY001496.0410.0002

Site Location ~~Yaphank~~ Bethpage, NY. Date 4-22-10

Well No. GM-35D2 Replicate No. NA. Weather Sunny 75°F

Sampling Personnel Greg Williams / Sunny X2 Sampling Time: Begin 1613 End 1618

Purge Data

Measuring Point (describe) TOC

Sounded Well Depth (ft bmp) 503

Depth to Water (ft bmp)

Depth to Packer (ft bmp) 507.

Water Column in Well (ft) 23

Casing Diameter 4" (0.65)

Gallons in Well 14.95

Gallons Purged x3

Prior to Sampling 45.

Pump Intake Setting (ft bmp)

Packer Pressure (psi) ~~507~~ 260 psi.

Pumping Rate (gpm)

Evacuation Method dedicated bladder pump.

Sampling Method ~~SWD Flow thru~~

Purge Time Begin 1440 End 1613

Field Parameters

	I	1V	2V	3V
Color	colorless	Colorless	colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	8.28	7.68	7.24	7.03
Conductivity (mS/cm) or (µmhos/cm) [1]	85.7	87.9	86.1	86.7
Temperature (°C)	16.3	14.0	14.4	13.8
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time				1613
DTW (ft bmp)				

Remarks: 5QA2 XXXXXXXXX

Split with H2M.

Parameter	Container	No.	Preservative
See COC.			

PID Reading

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0410.00002 | Site Location: | Well ID: GM-7D2
Date: 4/15/10 | Sampled By: Gary Williams / Sunny Xu
Sampling Time: 1355 | Recorded By: Sunny Xu
Weather: Sunny 70°F | Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): See Calibration log | Serial #:

Casing Material: PVC | Purge Method: Dedicated-bladder pump
Casing Diameter: 4" | Screen Interval (ft bmp) Top: 505 Bottom: 525
Sounded Depth (ft bmp): | Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 28.23 | Purge Time Start: 1225 Finish: 1355

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (~~umhos or mS/cm~~) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1255	0	500		17.2	7.13	219	204	6.58		
1300	5			16.6	6.22	146.2	-33	4.14		28.29
1305	10			16.5	6.08	126.0	-49	4.60		
1310	15			16.5	5.95	123.0	-51	4.71		28.29
1315	20			16.5	5.86	113.1	-62	4.91		
1320	25			16.3	5.91	109.5	-64	5.02		28.29
1325	30			16.2	5.91	103.6	-67	5.03		
1330	35			16.4	5.90	101.3	-69	5.04		29.31
1335	40			16.5	5.89	98.6	-70	5.01		
1340	45			16.5	5.76	98.5	-71	4.99		29.31
1345	50			16.5	5.73	96.2	-71	5.03		
1350	55			16.4	5.65	94.5	-72	5.02		29.31
1355	60			16.4	5.65	94.6	-72	5.01		

Collected Sample Condition | Color: Colorless | Odor: None | Appearance: Clear

Parameter	Container	No.	Preservative
TCL VOCs ASP2000	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: N-Grummer OU2
Project Number: N/001496.0410.0002
Site Location: Bethpage, NY
Well ID: GM-79D
Date: 4/13/10
Sampled By:
Sampling Time: 1405
Recorded By: Prezorski
Weather: overcast
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): See calibration log
Serial #:

Casing Material: PVC
Purge Method: Dedicated Bladder / Low Flow
Casing Diameter: 4"
Screen Interval (ft bmp): Top 280 Bottom 290
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 36.14
Purge Time: Start 1305 Finish 1405

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (~~umhos~~ or ~~mS/cm~~)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1305	0			9.8	6.27	73.1	266	7.52		
1310	5	275		9.6	6.28	73.0	267	6.59		36.14
1315	10			9.4	6.15	73.2	268	5.54		
1320	15			9.3	6.08	73.5	271	4.05		36.14
1325	20	250		9.2	6.01	73.9	276	4.62		
1330	25			9.2	5.95	73.9	280	4.69		36.14
1335	30			9.2	5.89	73.6	277	4.62		
1340	35	250		9.3	5.83	73.4	279	4.91		36.15
1345	40			9.5	5.77	73.3	280	4.97		
1350	45			9.8	5.78	73.3	281	4.97		36.15
1355	50	250		10.0	5.67	72.9	282	4.99		
1400	55	255		10.2	5.66	72.5	282	4.81		36.15
1405	60			10.2	5.61	72.4	282	5.08	2.34	

Collected Sample Condition
Color: Colorless
Odor: none
Appearance: Clear.

Parameter	Container	No.	Preservative
Gas Cor			

PID Reading:

Comments: Need sand around well casing

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NYW1496.0410.0002
Site Location: Bethpage, NY
Well ID: GM-79I
Date: 4-13-10
Sampled By: Pat Prezorski / Sunny Xu
Sampling Time: 1250
Recorded By: Prezorski
Weather: Overcast
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): see calibration log
Serial #:

Casing Material: PVC
Casing Diameter: 4"
Sounded Depth (ft bmp):
Depth to Water (ft bmp): 34.87
Purge Method: Dedicated Bladder / Low Flow
Screen Interval (ft bmp): Top 170 Bottom 180
Pump Intake Depth (ft bmp):
Purge Time: Start 1204 Finish 1250

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (~~mmhos~~ or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1205	0			11.4	7.33	101.6	176	6.93		
1210	5	450		11.1	6.38	81.9	214	5.67		34.87
1215	10			11.2	6.44	82.0	220	6.03		
1220	15			11.2	6.37	74.9	238	6.73		34.87
1225	20			11.0	6.37	74.5	252	7.01		
1230	25			10.9	6.37	74.2	258	6.93		34.87
1235	30			10.7	6.30	74.0	263	6.45		
1240	35			10.7	6.30	73.7	266	6.72		34.87
1245	40			10.7	6.28	73.8	269	6.72		
1250	45			10.7	6.28	73.3	269	6.79	9.0	34.87

Collected Sample Condition: Color Colorless Odor None Appearance Clear

Parameter	Container	No.	Preservative
See COC			

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 Project No. NY001496.0410.00002

Site Location: Bethpage, NY Date: 4-6-10

Well No.: BPW 1-1 Replicate No.: Weather: Sunny 78°F

Sampling Personnel: Gary Williams / Sonny Xu Sampling Time: Begin 12:40 End 12:58

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	241
Depth to Water (ft bmp)	24.26
Depth to Packer (ft bmp)	169
Water Column in Well (ft)	72
Casing Diameter	4" (0.65)
Gallons in Well	46.8 x 3
Gallons Purged Prior to Sampling	140
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	120 psi
Pumping Rate (gpm)	
Evacuation Method	dedicated submersible pump
Sampling Method	3wV
Purge Time	Begin 1240 End 1258

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	8.04	6.85	6.10	5.93
Conductivity ~~(mS/cm)~~ or (µmhos/cm) [1]	198.5	186.5	194.5	195.4
Temperature (°C)	16.8	15.0	14.1	14.0
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	12:40pm	12:46	12:52	12:58
DTW (ft bmp)				

Remarks: (169 - 24.26) x 0.43 + 10 = 112.

Parameter	Container	No.	Preservative
TCL VOCs ~~ASP 1000~~ S.X. SW8.2	40ml VOA	3	HCl

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001496.0410.0002
Site Location: Bethpage, NY | Date: 4-6-10
Well No.: BPOW1-2 | Replicate No.: NA | Weather: Cloudy 76°F
Sampling Personnel: Greg Williams/Sunny Xu | Sampling Time: Begin 1426 | End 1438

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	355
Depth to Water (ft bmp)	24.92
Depth to Packer (ft bmp)	294
Water Column in Well (ft)	41
Casing Diameter	4"(0.65)
Gallons in Well	26.65
Gallons Purged	x 3
Prior to Sampling	80.
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	147 PSI.
Pumping Rate (gpm)	
Evacuation Method	dedicated submersible pump
Sampling Method	3 WV
Purge Time	Begin 1423. End 1436

Field Parameters

	1	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear.	Clear.	Clear.	Clear.
pH (s.u.)	5.10	5.26.	5.19	4.71
Conductivity ~~(mS/cm)~~ or (µmhos/cm)[1]	192.9	170.	151.7	140.5
Temperature (°C)	17.2	15.1	13.7.	13.2
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	14:23	1430	14:33	14:36
DTW (ft bmp)				

Remarks: (294 − 24.92) × 0.43 + 50 = 147

Parameter	Container	No.	Preservative
TCL VOCs ~~ASP200~~ SW4.2	40mL VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001496.0410.0002

Site Location: Bethpage, NY | Date: 4-6-10

Well No.: BPOW 1-3 | Replicate No.: NA | Weather: Cloudy 78°F.

Sampling Personnel: Gary Dillion / Sunny K. | Sampling Time: Begin 1617 | End 1620

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	419
Depth to Water (ft bmp)	~~3033~~ (S.W) 24.92
Depth to Packer (ft bmp)	344
Water Column in Well (ft)	75
Casing Diameter	4" (0.65)
Gallons in Well	48.75
	x3
Gallons Purged	
Prior to Sampling	147
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	187
Pumping Rate (gpm)	
Evacuation Method	dedicated submersible pump
Sampling Method	3WV
Purge Time	Begin 1552 End 1616

Field Parameters

		I	1V	2V	3V
Color		Colorless	Colorless	Colorless	Colorless
Odor		None	None	None	None
Appearance		Clear	Clear	Clear	Clear
pH (s.u.)		4.45	3.71	3.64	3.65
Conductivity	~~(mS/cm)~~ or				
	(µmhos/cm)[1]	190.0	199.9	182.0	182.9
Temperature (°C)		16.5	14.1	14.7	13.1
DO (mg/L)					
ORP (mV)					
Turbidity (NTU)					
Time		1552	1600	1608	1616
DTW (ft bmp)					

Remarks: (344 - 24.92) x 0.43 + 50 = 187

Parameter	Container	No.	Preservative
TCL VOCs ~~ASP 200~~ S.W 624.2	40ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 4-7-10
Well No.: SPOW3-1 | Replicate No.: REP04071O | Weather: Sunny 90°F
Sampling Personnel: Gary Williams. | Sampling Time: Begin 1130 End 1134

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	516
Depth to Water (ft bmp)	20.85
Depth to Packer (ft bmp)	414
Water Column in Well (ft)	102
Casing Diameter	4"(0.65)
Gallons in Well	66.3
	x3
Gallons Purged	
Prior to Sampling	199
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	dedicated submersible pump
Sampling Method	SWV
Purge Time	Begin 1053 End 1130

Field Parameters

		1	1V	2V	3V
Color		Colorless	Colorless	Colorless	Colorless
Odor		none	none	none	none
Appearance		clear	clear	clear	clear
pH (s.u.)		4.61	3.04	7.13	7.15
Conductivity	~~(mS/cm)~~ or				
	(~~umhos/cm~~) [1]	185.2	179.5	92.0	94.0
Temperature (°C)		18.1	17.0	14.2	13.2
DO (mg/L)					
ORP (mV)					
Turbidity (NTU)					
Time		10:53	11:04	11:16	11:30
DTW (ft bmp)			26.17		

Remarks: (414 - 20.85) x 0.43 + 50 = 219

Parameter	Container	No.	Preservative
TCL VOCs ASP 2002	40ml VOA	3	HCl

PID Reading: _____ Note: pH meter changed after 1V.

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project Northrop Grumman OU-2 Project No. HY001096.0413. OU 2

Site Location Bethpage, NY Date 4-7-10

Well No. BPOW3-2 Replicate No. NA Weather Sunny 90°F

Sampling Personnel Gary Williams / Sunny Xu Sampling Time: Begin 15:18 End 15:20

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	647
Depth to Water (ft bmp)	22.56
Depth to Packer (ft bmp)	503
Water Column in Well (ft)	144
Casing Diameter	4"(0.65)
Gallons in Well	93.60 x 3
Gallons Purged Prior to Sampling	280.
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	247
Pumping Rate (gpm)	
Evacuation Method	dedicated submersible pump
Sampling Method	FWV
Purge Time Begin	1328 End

Field Parameters

	I	1V	2V	3V
Color	Colorless	colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	7.15	7.15	7.15	7.15
Conductivity ~~(mS/cm)~~ or (µmhos/cm) 1)	58.0	71.6	66.0	59.9
Temperature (°C)	16.3	18.5	16.2	13.9
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	1328	13:43	13:56	14:16
DTW (ft bmp)				

Remarks: (503 - 22.56) x 0.43 + 50 = 247

Parameter	Container	No.	Preservative
TCL VOCs 524.2	40ml VOA	3	HCl

PID Reading

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001096.0410.0002
Site Location: Bethpage, NY | Date: 4-8-10
Well No.: BPOW 4-1 | Replicate No.: NA | Weather: Sunny 30's
Sampling Personnel: Campbellson / Surry X. | Sampling Time: Begin 16:00 | End 16:05

Purge Data

Measuring Point (describe)	TOC	
Sounded Well Depth (ft bmp)	652	692
Depth to Water (ft bmp)	20.45	
Depth to Packer (ft bmp)	503	652
Water Column in Well (ft)	149	40
Casing Diameter	4"/0.65	2"/0.16
Gallons in Well	96.85 x3	6.4 x3
Gallons Purged Prior to Sampling	309	
Pump Intake Setting (ft bmp)		
Packer Pressure (psi)	215 psi	
Pumping Rate (gpm)		
Evacuation Method	dedicated submersible pump	
Sampling Method	3WV	
Purge Time	Begin 13:31	End 16:00

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	5.39	5.56	5.64	5.54
Conductivity (~~mS/cm~~) or (umhos/cm)	49.7	83.9	62.5	54.3
Temperature (°C)	13.9	12.2	13.5	11.6
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	13:31	13:45	14:00	16:00
DTW (ft bmp)				

Remarks:

Parameter	Container	No.	Preservative
TCL VOCs + 24.2	40ml VOA	3	HCl

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: N700/1696.0410, Task 2
Site Location: Bethpage, NY | Date: 4-8-10
Well No.: BP02 4 2 | Replicate No.: MS/MSD. | Weather: Sunny 85°F
Sampling Personnel: Gary Williams / Sunny | Sampling Time: Begin 13:21 End 13:26

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	764
Depth to Water (ft bmp)	19.98
Depth to Packer (ft bmp)	503
Water Column in Well (ft)	261
Casing Diameter	4" (0.65)
Gallons in Well	169.65
Gallons Purged	x3
Prior to Sampling	509
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	257 psi.
Pumping Rate (gpm)	
Evacuation Method	Dedicated sub mersible pump
Sampling Method	Bwv
Purge Time	Begin 10:11 End 13:21

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	7.15	~~7.65~~ 5.76	5.47	5.53
Conductivity (mS/cm) or (µmhos/cm) [1]	61.5	93.4	83.1	69.4
Temperature (°C)	14.3	13.1	13.7	13.2
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	10:11	10:40	11:59	13:24
DTW (ft bmp)				

Remarks: (503 − 19.98) × 0.43 + 50 = 257

Parameter	Container	No.	Preservative
TCL VOCs + TIC's	40 ml VOA	3	HCl

PID Reading: ____ # needs new plug. Ants growing inside.

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, buildings

ID#: 16692

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Lab Work Order #

MELISSA REINDL

Send Results to:

Contact & Company Name: ARCADIS
Telephone: (631) 249-7600
Address: 2 HUNTINGTON QUADRANGLE
Fax: (631) 249-7610
City: MELVILLE State: NY Zip: 11747
E-mail Address:
Project Name/Location (City, State):
Project #: NY001496.0410.06002
Sampler's Printed Name: DENNIS MCCAFFERTY
Sampler's Signature: [signature]

Preservative: N/O
Filtered (✓): ✓
# of Containers: 5
Container Information: 6L

PARAMETER ANALYSIS & METHOD: TO 15 | 6 Liter Summa | GRAB | STD TAT | CAN #'s | GAUGE # | START VAC | END VAC

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TO 15	6 Liter Summa	GRAB	STD TAT	CAN #'s	GAUGE #	START VAC / END VAC	REMARKS
TOWER 102 EFF.	4/6/10	0900				↓	↓	↓	↓	SLC 00144	AVG 01082	-29/-7.0	102 SAMPLES TAKEN DURING THE LAST 1/2 HOUR OF A 10 HOUR CYCLE.
TOWER 102 INF. TANK A		0910								SLC 00154	AVG 01198	-29/-7.0	
TOWER 96 INF.		1125								SLC 00141	AVG 01197	-28.3/-7.0	96 SAMPLES TAKEN DURING THE LAST 1/2 HOUR OF A 6 HOUR CYCLE.
TOWER 96 MID EFF.		1137								SLC 00142	AVG 01199	-28.1/-7.0	
TOWER 96 EFF. TANK B	↓	1145				↓	↓	↓	↓	SLC 00150	AVG 00194	-29.3/-7.0	RETURNING 1 UNUSED SUMMA

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other G. Other H. Other

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other 10. Other

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: COLUMBIA ANALYTICAL SERVICES	Cooler Custody Seal (✓)	Printed Name: DENNIS MCCAFFERTY	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature: [signature]	Signature:	Signature:	Signature:
Specify Turnaround Requirements: STANDARD	Sample Receipt:	Firm: ARCADIS	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp:	Date/Time: 4/6/10 1230	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16690

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

MELISSA REINAL

Send Results to:	
Contact & Company Name: ARCADIS	Telephone: (631) 249-7600
Address: 2 HUNTINGTON QUADRANGLE	Fax: (631) 249-7610
City: MELVILLE State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): NGC 002 BETHPAGE N.Y.	Project #: NY001496.0410.00002
Sampler's Printed Name: DENNIS MCCLAFFERTY	Sampler's Signature: [signature]

Preservative	HCL
Filtered (✓)	N/O
# of Containers	38
Container Information	40mL

Keys

Preservation Key:	Container Information Key:
A. H_2SO_4	1. 40 ml Vial
B. HCL	2. 1 L Amber
C. HNO_3	3. 250 ml Plastic
D. NaOH	4. 500 ml Plastic
E. None	5. Encore
F. Other:	6. 2 oz. Glass
G. Other:	7. 4 oz. Glass
H. Other:	8. 8 oz. Glass
	9. Other:
	10. Other:

Matrix Key: SO - Soil, SE - Sediment, NL - NAPL/Oil, W - Water, SL - Sludge, SW - Sample Wipe, T - Tissue, A - Air, Other:

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	40ml VOAs	ASP 2000	STD T.A.T.	REMARKS
TOWER 102 INF.	4/6/10	0740		X	L	3			
TOWER 102 EFF.		0750		X		3			1 OF THE TRIP BLANK
TOWER 102 EFF. M/S		0750		X		3			VOA'S WAS BROKEN
TOWER 102 EFF. MSD		0750		X		3			WHEN OPENED. SENT
REP 040610				X		3			JUST 2 BACK.
WELL 19		0755		X		3			DM
WELL 18		0805		X		3			
WELL 17		0817		X		3			REP OFF WELL 19
WELL 1		0835		X		3			
WELL 3		0845		X		3			
TOWER 96 INF.		0825		X		3			
TOWER 96 EFF.		0825		X		3			
TRIP BLANK				X		2			
TEMP. BOTTLE						1			

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: COLUMBIA ANALYTICAL SERVS	Cooler Custody Seal (✓)	Printed Name: DENNIS MCCLAFFERTY	Printed Name:	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature: [signature]	Signature:	Signature:	Signature:
Specify Turnaround Requirements: STANDARD	Sample Receipt:	Firm: ARCADIS	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp:	Date/Time: 4/6/10 1330	Date/Time:	Date/Time:	Date/Time:

ARCADIS
Infrastructure, environment, buildings

ID#: 16687

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to

Contact & Company Name:	Telephone:
Melissa Reindl / Arcadis	631-249-7600
Address: 2 Huntington Quad. Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Northrop Grumman OU-2 / Bethpage NY	Project #: NY001496.0010.00002
Sampler's Printed Name: Gary Williams / Sunny Xu	Sampler's Signature:

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (Y/N)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD: TCL VOCs	PARAMETER ANALYSIS & METHOD: ASP 2000	REMARKS
TBOU0610	4-6-10	1200		✓	W	B		3	1	1		
BPOU1-1	↓	1208		↓	↓					1		
BPOU1-2	↓	1436		↓	↓					1		
BPOU1-3	↓	1620		↓	↓					1		

Keys:

Preservation Key: A: H2SO4 B: HCl C: HNO3 D: NaOH E: None F: Other _____ G: Other _____ H: Other _____

Container Information Key: 1: 40 ml Vial 2: 1 L Amber 3: 250 ml Plastic 4: 500 ml Plastic 5: Encore 6: 2 oz. Glass 7: 4 oz. Glass 8: 8 oz. Glass 9: Other _____ 10: Other _____

Matrix Key: SO: Soil SE: Sediment NL: NAPL/Oil W: Water SL: Sludge SW: Sample Wipe T: Tissue A: Air Other _____

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By:	Received By:	Relinquished By	Laboratory Received By:
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓):	Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements: Standard	Sample Receipt:	Firm: Arcadis	Firm/Courier: Fedex	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp:	Date/Time: 4/6/10 1700	Date/Time: 4/6/10 1730	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16688

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Reindl / Arcadis
Telephone: 631-249-7600
Address: 2 Huntington Quad, Suite 1S10
Fax: 631-249-7610
City: Melville State: NY Zip: 11747
E-mail Address:
Project Name/Location (City, State): Northrop Grumman OU-2 / Bethpage, NY
Project #: NY001496.0415.00002
Sampler's Printed Name: Gary Williams / Sunny Xu
Sampler's Signature: X

	Preservative	B						
	Filtered (✓)							
	# of Containers	3						
	Container Information	1						

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TCL VOCs 524 ASP							REMARKS
TB040710	4-7-10			✓	W	1							
REP040710	↓			↓	↓	1							
BPOW 3-1	↓			↓	↓	1							
BPOW 3-2	↓			↓	↓	1							

Keys

Preservation Key: A. H_2SO_4; B. HCL; C. HNO_3; D. NaOH; E. None; F. Other; G. Other; H. Other

Container Information Key: 1. 40 ml Vial; 2. 1 L Amber; 3. 250 ml Plastic; 4. 500 ml Plastic; 5. Encore; 6. 2 oz. Glass; 7. 4 oz. Glass; 8. 8 oz. Glass; 9. Other; 10. Other

Matrix Key: SO - Soil; W - Water; T - Tissue; SE - Sediment; SL - Sludge; A - Air; NL - NAPL/Oil; SW - Sample Wipe; Other

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services
☑ Cooler packed with ice (✓)
Specify Turnaround Requirements: Standard
Shipping Tracking #:
Cooler Custody Seal (✓): ☐ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: ____

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
Signature: X	Signature:	Signature:	Signature:
Firm: Arcadis	Firm/Courier:	Firm/Courier:	Firm:
Date/Time: 4-7-10	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16689

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Reidl / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Northrop Grumman / Bethpage, NY	Project #: NY001496.0410.00002
Sampler's Printed Name: Carey D. Evans / Sunny Xu	Sampler's Signature: [signature]

Preservative	B						
Filtered (✓)							
# of Containers	3						
Container Information	1						

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key:	Container Information Key:
A. H_2SO_4	1. 40ml Vial
B. HCL	2. 1 L Amber
C. HNO_3	3. 250ml Plastic
D. NaOH	4. 500ml Plastic
E. None	5. Encore
F. Other	6. 2 oz. Glass
G. Other	7. 4 oz. Glass
H. Other	8. 8 oz. Glass
	9. Other
	10. Other

Matrix Key: SO - Soil, SE - Sediment, NL - NAPL/Oil, W - Water, SL - Sludge, SW - Sample Wipe, T - Tissue, A - Air, Other

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TCL VOCs 524.2							REMARKS
TB040810	4-8-10			✓	W	3							
BPOW 4-2 *	↓			↓	↓	3							MS/MSD
BPOW 4-1	↓			↓	↓	1							

Special Instructions/Comments: * Please use for QA/QC MS/MSD

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services

☐ Cooler packed with ice (✓)

Specify Turnaround Requirements:

Shipping Tracking #:

Cooler Custody Seal (✓): ☐ Intact ☐ Not Intact

Sample Receipt:

Condition/Cooler Temp: ____

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Sunny Xu			
Signature:	[signature]			
Firm / Firm/Courier:	Arcadis	Fedex		
Date/Time:	4-8-10 / 1730	[illegible] / 1730		

ARCADIS
Infrastructure, environment, buildings

ID#: 16599

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Rindls / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Northrop Grumman OU-2 / Bethpage NY	Project #: NY001446.0412.0002
Sampler's Printed Name: Gary Dilliards / Sunny Xu	Sampler's Signature: [signature]

PARAMETER ANALYSIS & METHOD

Preservative	B
Filtered (✓)	
# of Containers	3
Container Information	1

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TCL VOCs ASP 2000							REMARKS
TB041210	4-12-10			✓	W	1							
FB041210	↓			↓	↓	1							
GM-34D	↓			↓	↓	1							
GM-34D2	↓			↓	↓	1.							

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other ____ G. Other ____ H. Other ____

Container Information Key: 1. 40 ml Vial 2. 1L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other ____ 10. Other ____

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other ____

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓)	Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature: [signature]	Signature:	Signature:	Signature:
Specify Turnaround Requirements: Standard	Sample Receipt:	Firm: Arcadis	Firm/Courier: Fedex	Firm/Courier:	Firm:
Shipping Tracking #: 8641 1995 7074	Condition/Cooler Temp: ____	Date/Time: 4/12/10 1730	Date/Time: 4/12/10 1730	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16600

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Zeudl / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Northrop Grumman OU-2 / Bethpage NY	Project #: NY001496.0410.0002
Sampler's Printed Name: Pat Bozzocci / Sunny Xu	Sampler's Signature: X

Preservative	B									
Filtered (✓)										
# of Containers	3									
Container Information	1									

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	TCL VOCs ASP 2000								REMARKS
TB041310	4-13-10	12:00		✓	W	1								
GM-79I	↓	12:30		↓	↓	1								
GM-79D	↓	1415		↓	↓	1								

Keys

Preservation Key: A. H_2SO_4 B. HCl C. HNO_3 D. NaOH E. None F. Other G. Other H. Other

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other 10. Other

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact
☐ Cooler packed with ice (✓) ✓	
Specify Turnaround Requirements: Standard	Sample Receipt:
Shipping Tracking #: 8661 1995 7063	Condition/Cooler Temp:

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Sunny Xu			
Signature:	X			
Firm / Firm/Courier:	Arcadis	Fedex		
Date/Time:	4/13/10 1700	4/13/10 1700		

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16642

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Reinell / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Road Suite 1510	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Northrop Grumman OU-2 / Bethpage NY	Project #: NY001496.0010.00002
Sampler's Printed Name: Gary Williams / Sunny Xu	Sampler's Signature: Xu

Preservative	B	
Filtered (✓)		
# of Containers	3	
Container Information	1	

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type (✓) Comp.	Type (✓) Grab	Matrix	TCL VOCs ASP 2000							REMARKS
TB041610	4-16-10	0900		✓	W	1							
GM-33D2	4-16-10	1155		✓	W	1							

Keys

Preservation Key: A. H_2SO_4 B. HCl C. HNO_3 D. NaOH E. None F. Other ___ G. Other ___ H. Other ___

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other ___ 10. Other ___

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services

☑ Cooler packed with ice (✓)

Specify Turnaround Requirements: Standard

Shipping Tracking #:

Cooler Custody Seal (✓): ☐ Intact ☐ Not Intact

Sample Receipt:

Condition/Cooler Temp: ___

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Sunny Xu			
Signature:	Xu			
Firm / Firm/Courier:	Arcadis	Fedex		
Date/Time:	4/16/10 1700	4/16/10 1700		

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16643

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Reindl / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Northrop Grumman, OU-2 / Bethpage	Project #: NY001496.0 W.O. 0002
Sampler's Printed Name: Cindy Williams / Sunny Xu	Sampler's Signature:

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	TCL VOCs	ASP 2000						
TBOU1S10	9-15-10	0900		✓	W	B		3	1	1							
GM-76D2	↓	1345		✓	W					1							

Keys:

Preservation Key: A: H2SO4 B: HCL C: HNO3 D: NaOH E: None F: Other

Container Information Key: 1: 40 ml Vial V: 2: 1 L Amber G: 3: 250 ml Plastic 4: 500 ml Plastic 5: Encore 6: 2 oz Glass 7: 4 oz Glass 8: 8 oz Glass 9: Other 10: Other

Matrix Key: SO: Soil SE: Sediment NL: NAPL/Oil W: Water SL: Sludge SW: Sample Wipe T: Tissue A: Air O: Other

REMARKS

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓)	Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements: Standard	Sample Receipt	Firm: Arcadis	Firm/Courier: Fedex	Firm/Courier:	Firm:
Shipping Tracking #: 8260 7443 2314	Condition/Cooler Temp:	Date/Time: 9/15/10 1700	Date/Time: 9/16/10 1700	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16604

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #:

Send Results to:

Contact & Company Name: ARCADIS	Telephone: 631-249-7600
Address: 2 HUNTINGTON QUAD SUITE 1S10	Fax: 631-249-7610
City: MELVILLE State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): NORTHROP-GRUMMAN/NY	Project #: NY001496.0410.00002
Sampler's Printed Name: G. WILLIAMS	Sampler's Signature: G WW

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD: 40ml VOAs VOC 8260B (HL)	REMARKS
GM-21D	4/19					HCl				3	
GM-21I	4/19									3	
GM-20D	4/20									3	
GM-20I	4-20									3	
DISCHARGE H2O	4-20									3	
TB 4-19-20-10	4/19									3	

Keys:

Preservation Key: A: H_2SO_4 B: HCl C: HNO_3 D: NaOH E: None F: Other ____ G: Other ____ H: Other ____

Container Information Key: 1: 40ml Vial 2: 1L Amber 3: 250ml Plastic 4: 500ml Plastic 5: Encore 6: 2oz Glass 7: 4oz Glass 8: 8oz Glass 9: Other ____ 10: Other ____

Matrix Key: SO: Soil SE: Sediment NL: NAPL/Oil W: Water SL: Sludge SW: Sample Wipe T: Tissue A: Air O: Other

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact	Printed Name: GARY M. LASCOMBS	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)		Signature: G WW	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt	Firm: ARCADIS	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: ____	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16602

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Reed/Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Northrop Grumman OU-2/B	Project #: NY001496.0010.00002
Sampler's Printed Name: Gary Williams / Sunny Xu	Sampler's Signature:

Preservative	B							
Filtered (Y/N)								
# of Containers	3							
Container Information	1							

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type (Y/N) Comp	Type (Y/N) Grab	Matrix	TCL VOCs	ASP 2ww						
TB042210	4/22/10	1400		L	W	1							
GM-35 D2	4/22/10	1613		L	W	1							

Keys:

Preservation Key: A: H2SO4 B: HCl C: HNO3 D: NaOH E: None F: Other ____ G: Other ____ H: Other ____

Container Information Key: 1: 40 ml Vial 2: 1 L Amber 3: 1 L or 250 ml Plastic 4: 500 ml Plastic 5: Encore 6: 2 oz Glass 7: 4 oz Glass 8: 8 oz Glass 9: Other ____ 10: Other ____

Matrix Key: SO: Soil SE: Sediment NL: NAPL/Oil W: Water SL: Sludge SW: Sample Wipe T: Tissue A: Air Other ____

REMARKS

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (Y/N)	Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)	☑ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements: Standard	Sample Receipt	Firm: Arcadis	Firm/Courier: Fedex	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: ____	Date/Time: 4/23/10 1730	Date/Time: 4/23/10 1730	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS

Water Sampling Log

Project: Northrop Grumman Project No.: NY00N96.0410.0002 Page: 1 of 1

Site Location: Bethpage, NY Date: 8/12/10

Site/Well No.: MW-16F Replicate No.: N/A

Weather: Cloudy 81°F Sampling Time: Begin _____ End _____

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	48
Depth to Water (ft bmp)	41.26
Depth to Packer (ft bmp)	
Water Column in Well (ft)	
Casing Diameter	4" (0.65)
Gallons in Well	10.9
Gallons Pumped/Bailed	x3
Prior to Sampling	32.7
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 1219 End 1235

Field Parameters

	1	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	6.92	6.29	5.97	5.73
Conductivity (mS/cm)				
(µmhos/cm)	282	260	263	252
Temperature (°C)	18.2	17.3	17.4	17.5
DO (mg/L)				
Turbidity (NTU)	14.4	7.97	6.68	6.09
Time	1219	1224	1229	1236
DTW (ft bmp)				

Remarks: _____

Constituents Sampled: See COC Sampling Personnel: Gary Williams / Sunny Xu

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

ARCADIS

Water Sampling Log

Project Northrop Grumman Project No. NY001496.0002 [illegible] Page 1 of 1

Site Location Bethpage, NY Date 8/12/10

Site/Well No. MW-2GF Replicate No. ________

Weather Cloudy 91°F Sampling Time: Begin ________ End ________

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	58
Depth to Water (ft bmp)	41.70
Depth to Packer (ft bmp)	
Water Column in Well (ft)	
Casing Diameter	4"(0.65)
Gallons in Well	10.6
Gallons Pumped/Bailed Prior to Sampling	x 3 31.8
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin ________ End ________

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear

	I	1V	2V	3V
pH (s.u.)	5.51	5.59	6.09	6.30
Conductivity (mS/cm)				
(µmhos/cm)	328	365	378	377
Temperature (°C)	16.9	16.7	16.3	16.3
DO (mg/L)				
Turbidity (NTU)	4.72	19.4	14.9	13.3
Time	1301	1306	1311	1347
DTW (ft bmp)				

Remarks: ________

Constituents Sampled: See COC Sampling Personnel: Gary Williams / Sunny Xu

Well Casing Volumes

Gal./Ft.				
	1-1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

ARCADIS

Water Sampling Log

Project NGC Project No. NYWN496.0415.WW2 Page 1 of 1

Site Location Bethpage, NY Date 8/11/10

Site/Well No. FW-03 Replicate No. NA

Weather Sunny 89°F Sampling Time: Begin _____ End _____

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	64
Depth to Water (ft bmp)	9.48
Depth to Packer (ft bmp)	~~+2.5~~
Water Column in Well (ft)	12.52
Casing Diameter	2" (0.16)
Gallons in Well	2
Gallons Pumped/Bailed	x 3
Prior to Sampling	6.
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time Begin _____ End _____	

Field Parameters

	I	1V	2V	3V
Color	~~Brown~~ ~~Yellowish~~	~~Yellowish~~	~~Yellow~~	brown
Odor	none	none	none	none
Appearance	cloudy	cloudy	cloudy	cloudy
pH (s.u.)	9.13	9.26	9.18	8.98
Conductivity (mS/cm)				
(µmhos/cm)	190.2	187.2	188.0	180.6
Temperature (°C)	18.4	17.9	17.5	17.5
DO (mg/L)				
Turbidity (NTU)				24.0
Time	13:49	13:51	13:53	13:55
DTW (ft bmp)				

Remarks: well lock is missing

Constituents Sampled: See COC Sampling Personnel: _____

Well Casing Volumes

Gal./Ft.				
	1¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NAC
Project Number: N001496.0410.00002
Site Location: Bethpage, NY
Well ID: HN-24I
Date: 8/6/10
Sampled By: Gary Williams / Sunny Xu
Sampling Time:
Recorded By: Sunny Xu
Weather: Sunny 85°F
Coded Replicate No.: MS/MSD

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material: A
Casing Diameter: 4"
Sounded Depth (ft bmp):
Depth to Water (ft bmp): 51.25
Purge Method: non-dedicated Redi-Flo
Screen Interval (ft bmp) Top: Bottom:
Pump Intake Depth (ft bmp):
Purge Time Start: 1436 Finish: 1521

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1436	0	450		23.3	7.71	194.0	164	7.32		
1441	5			20.5	7.17	197.6	194	5.16		
1446	10			20.7	6.87	199.0	206	5.03		51.32
1451	15			21.5	6.42	235	216	4.77		
1456	20			22.0	6.32	235	218	4.77		51.32
1501	25			23.0	6.07	236	222	4.57		
1506	30			23.0	5.99	239	225	4.53		51.33
1511	35			22.6	5.83	235	228	4.58		
1516	40			21.9	5.69	240	231	4.74		51.33
1521	45	↓		21.9	5.65	240	233	4.72		

Collected Sample Condition: Color: Colorless Odor: None Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs 8260B	40ml VOA	2	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NBC | Project No. NYWL496.0010.0002

Site Location Buffalo, NY | Date 7-15-10

Well No. HN-40S | Replicate No. NA | Weather Cloudy 85°F

Sampling Personnel Gary Williams / Sue Xm | Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	59
Depth to Water (ft bmp)	44.45
Depth to Packer (ft bmp)	
Water Column in Well (ft)	14.55
Casing Diameter	4" (0.65)
Gallons in Well	9.5
Gallons Purged	X 3
Prior to Sampling	28.5
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	1
Evacuation Method	non-dedicated Redi-flo
Sampling Method	3 w v / low-flow
Purge Time	Begin 1420 End 1448

Field Parameters

	I	1V	2V	3V
Color	Colorless	colorless	colorless	colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	6.22	6.05	5.78	5.59
Conductivity (mS/cm) or (µmhos/cm) [1]	150.6	133.2	128.1	128.6
Temperature (°C)	20.6	19.0	18.7	18.9
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	1420	1429	1438	1448
DTW (ft bmp)				

Remarks:

Parameter	Container	No.	Preservative
TCL VOCs ASP 2000	40ml VOA	3	HCl

PID Reading _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NGC
Project Number: NY000496.0410.0002
Site Location: Bethpage, NY
Well ID: HN-40I
Date: 7-15-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time:
Recorded By: Sunny Xu
Weather: cloudy / 85°F
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): See calibration sheet
Serial #:

Casing Material:
Casing Diameter: 4
Sounded Depth (ft bmp):
Depth to Water (ft bmp): 44.28

Purge Method: non-dedicated Redi-flo
Screen Interval (ft bmp): Top 108 Bottom 118
Pump Intake Depth (ft bmp): 113
Purge Time: Start 13:05 Finish 13:50

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
13:05		400		21.7	8.09	191.2	96	9.41		
13:10				20.3	7.84	191.8	102	8.54		
13:15				19.0	7.24	193.4	120	7.91		44.33
13:20				19.1	6.91	191.3	137	7.81		
13:25				19.2	6.63	193.3	156	7.73		
13:30				19.2	6.44	193.2	167	7.73		44.34
13:35				19.3	6.32	186.9	174	7.58		
13:40				19.5	6.18	190.0	182	7.63		
13:45				19.4	6.01	188.2	192	7.53		44.35
13:50				19.4	5.92	186.6	196	7.57		

Collected Sample Condition
Color: Colorless
Odor: none
Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs ASP2000	40ml VOA	3	HCl

Reading

\\OLFERT\Technical Forms\2006\lowflowsampforms.xls - Sheet1

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Infrastructure, environment, facilities

Water Sampling Log

Project NGC | Project No. NY001496.0410.000 2
Site Location Bethpage, NY | Date 7-15-10
Well No. HN-42S | Replicate No. NA | Weather Cloudy / 85°F
Sampling Personnel Gary Williams/Sunny Xu | Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	60
Depth to Water (ft bmp)	46.61
Depth to Packer (ft bmp)	
Water Column in Well (ft)	13.39
Casing Diameter	4" (0.65)
Gallons in Well	8.7
Gallons Purged	x3
Prior to Sampling	26.1
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 10:50 End 11:14

Field Parameters

		1	1V	2V	3V
Color		Colorless	Colorless	Colorless	Colorless
Odor		none	none	none	none
Appearance		clear	clear	clear	clear
pH (s.u.)		9.69	9.18	8.45	7.80
Conductivity (mS/cm) or (µmhos/cm)		466	438	447	448
Temperature (°C)		19.6	19.4	18.5	18.1
DO (mg/L)		18.			
ORP (mV)					
Turbidity (NTU)					
Time		10:50	10:58	11:06	11:14
DTW (ft bmp)					

Remarks:

Parameter	Container	No.	Preservative
TCL VOCs ASP2000	40ml VOA	3	HCl

PID Reading _____

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NGC OU-2
Project Number: NY001496.0410.0002 | Site Location: Bethpage, NY | Well ID: HX-42I
Date: 7-15-10 | Sampled By: Gary Williams / Sunny Xu
Sampling Time: 1030 | Recorded By: Sunny Xu
Weather: Cloudy / 85°F | Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): See calibration sheet | Serial #:

Casing Material: | Purge Method: non-dedicated Redi-Flo
Casing Diameter: 4 | Screen Interval (ft bmp) Top: 100 Bottom: 110
Sounded Depth (ft bmp): | Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 45.91 | Purge Time Start: 9:45 Finish: 10:30

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
9:45	0	450		18.8	11.95	559	11	7.56		
9:50	5			18.8	12.09	489	8	7.32		
9:55	10			19.8	12.11	378	5	7.20		46.00
10:00	15			20.5	12.09	375	5	7.17		
10:05	20			20.7	12.09	383	5	7.09		
10:10	25			20.7	12.09	429	6	7.03		45.99
10:15	30			20.8	12.09	441	6	6.98		
10:20	35			20.7	12.11	455	6	7.00		
10:25	40			20.8	12.11	451	6	6.93		45.99
10:30	45			21.0	12.10	466	6	6.95		

Collected Sample Condition | Color: Colorless | Odor: None | Appearance: Clear

Parameter	Container	No.	Preservative
TCL VOCs ASP2000	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS

Water Sampling Log

Project Northrop Grumman Project No. NY001496.0410.0002 Page 1 of 1

Site Location Bethpage, NY Date 7-28-10

Site/Well No. PLT1-MW04 Replicate No. NA

Weather _____ Sampling Time: Begin 0640 pm End 0652 pm

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	56.50
Depth to Water (ft bmp)	40.30
Depth to Packer (ft bmp)	
Water Column in Well (ft)	26.2
Casing Diameter	2" (0.16)
Gallons in Well	4.2
Gallons Pumped/Bailed	x 3
Prior to Sampling	12.6
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin _____ End _____

Field Parameters

	I	1V	2V	3V
Color	COLORLESS			COLORLESS
Odor	SLIGHT			SLIGHT
Appearance	CLEAN			CLEAN

	I	1V	2V	3V
pH (s.u.)	5.84	6.01	6.10	6.09
Conductivity (mS/cm)				
(µmhos/cm)	499	270	507	486
Temperature (°C)	17.0	16.8	16.5	16.1
DO (mg/L)				
Turbidity (NTU)	1.58	2.40	2.68	3.13
Time	6:40	6:44	6:48	6:52
DTW (ft bmp)				

Remarks: _____

Constituents Sampled: See COC Sampling Personnel: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

ARCADIS

Water Sampling Log

Project NGC OU-2 Project No. NY000426.0010.00002 Page 1 of 1

Site Location Bethpage, NY Date 7-28-10

Site/Well No. PLT1-MW05 Replicate No. N/A

Weather Sunny 95°F Sampling Time: Begin 0537 pm End 0549 pm

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	62
Depth to Water (ft bmp)	37.52
Depth to Packer (ft bmp)	~~24.48~~
Water Column in Well (ft)	24.48
Casing Diameter	2" (0.16)
Gallons in Well	4
Gallons Pumped/Bailed	x 3
Prior to Sampling	12
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 5:37 End 5:49

Field Parameters

	I	1V	2V	3V
Color	Black	Black	Colorless	Colorless
Odor	none	none	none	none
Appearance	turbid	cloudy	clear	clear
pH (s.u.)	6.48	6.47	6.47	6.47
Conductivity (mS/cm)				
(µmhos/cm)	311	140.1	308	302
Temperature (°C)	19.2	17.8	17.8	17.8
DO (mg/L)				
Turbidity (NTU)	Err	4.17	45.3	15.0
Time	5:37	5:41	5:45	5:49
DTW (ft bmp)				

Remarks:

Constituents Sampled: See COC Sampling Personnel:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

ARCADIS

Water Sampling Log

Project NGC OU-2 Project No. NY000496.0410.0002 Page 1 of 1

Site Location Bethpage, NY Date 7-28-10

Site/Well No. PLT1-MW06 Replicate No. N/A

Weather Sunny 85°F Sampling Time: Begin 1814 End 1823

Evacuation Data

Measuring Point	
Sounded Well Depth (ft bmp)	62
Depth to Water (ft bmp)	41.30
Depth to Packer (ft bmp)	
Water Column in Well (ft)	20.70
Casing Diameter	2" (0.16)
Gallons in Well	3.2
Gallons Pumped/Bailed	x 3
Prior to Sampling	9.6
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 1814 End 1827

Field Parameters

	I	1V	2V	3V
Color	yellow	yellow	Colorless	Colorless
Odor	none	none	none	none
Appearance	cloudy	cloudy	cloudy	clear
pH (s.u.)	6.57	6.52	6.45	6.38
Conductivity (mS/cm)				
(µmhos/cm)	165.5	162.5	170.8	167.6
Temperature (°C)	20.2	18.1	17.9	17.6
DO (mg/L)				
Turbidity (NTU)	638	643	68.6	26.7
Time	1814	1817	1820	1823
DTW (ft bmp)				

Remarks:

Constituents Sampled: See COC Sampling Personnel:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-1/2" = 0.26	3-1/2" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: N-10624
Date: 8-10-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time:
Recorded By: Gary Williams / Sunny Xu
Weather: Cloudy 90F
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method: non-dedicated bladder
Casing Diameter: 2"
Screen Interval (ft bmp): Top 190 Bottom 194
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 28.11
Purge Time: Start 1336 Finish 1431

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1336	0			23.9	8.92	145.3	82	7.58		28.21
1341	5			28.0	8.76	171.5	31	7.64		
1346	10			24.8	8.70	178.4	-28	7.68		
1351	15			23.7	8.69	184.2	-34	7.72		
1356	20			23.4	~~7.77~~	188.2	-40	7.77		
1401	25			22.8	~~8.34~~ 8.42	174.2	-49	7.84		40.10
1406	30			22.8	8.87	170.8	-38	7.92		
1411	35			23.1	8.97	153.7	-16	7.98		41.05
1416	40			23.1	8.97	153.3	4	7.99		
1421	45			23.9	8.87	140.8	33	8.04		41.65
1426	50			23.8	8.86	138.0	34	8.03		
1431	55			23.8	8.86	137.1	35	8.02	<20	

Collected Sample Condition
Color: Colorless
Odor: none
Appearance: clear

Parameter	Container	No.	Preservative
See COC			

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP GRUMMAN
Project Number: NY001496.0410.00002 Site Location: Bethpage, NY Well ID: N-10627
Date: 8-10-10 Sampled By: Gary Williams
Sampling Time: Recorded By: Gary Williams
Weather: Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): Serial #:

Casing Material: Purge Method: non-dedicated bladder
Casing Diameter: 4" Screen Interval (ft bmp) Top: 309 Bottom: 295
Sounded Depth (ft bmp): Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 33.05 Purge Time Start: 12:00 Finish: 1:00 pm

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
12:00				—	—	—	—	—		33.05
12:05					9.12	151.7	43	7.87		
12:10				19.5	9.95	151.0	-8	8.05		
12:15				19.0	10.28	150.7	-25	8.16		
12:20				18.9	10.30	151.8	-57	8.15		
12:25				19.6	9.64	170.4	-67	8.12		
12:30				19.5	10.05	150.6	-67	8.13		34.76
12:35				—	—	—	—	—		
12:40				19.8	10.27	~~102.7~~ 144.8	-66	8.03		
12:45				19.4	10.17	132.1	-57	8.07		
12:50				19.5	10.11	128.1	-53	8.04		34.92
12:55				19.6	10.02	125.1	-47	8.06		
1:00				19.7	9.81	120.8	-46	7.95		

Collected Sample Condition: Color: Colorless Odor: none Appearance: clear

Parameter	Container	No.	Preservative

PID Reading:

Comments: pH METER READING AFTER CALIBRATION OK PROBE RETURNED TO 7:00 AFTER 4.01 CALIBRATION

1) Circle one unit type

ARCADIS

Water Sampling Log

Project Northrop Grumman Project No. NY001696.0410.0002 Page 1 of 1

Site Location Bethpage, NY Date 8/11/11

Site/Well No. N-10631 Replicate No. NA

Weather Sunny / 90F Sampling Time: Begin _____ End _____

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	67.
Depth to Water (ft bmp)	35.48
Depth to Packer (ft bmp)	
Water Column in Well (ft)	31.52
Casing Diameter	2" (0.16)
Gallons in Well	5.04
Gallons Pumped/Bailed	x 3
Prior to Sampling	15.2
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	1 gpm.
Evacuation Method	new dedicated poly-tb
Sampling Method	
Purge Time	Begin 1245pm End 0500pm

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	6.71	7.21	7.04	6.92
Conductivity (mS/cm)				
(µmhos/cm)	84.2	141.8	139.8	138.8
Temperature (°C)	16.8	16.0	15.8	15.7
DO (mg/L)				
Turbidity (NTU)		43.9	20.8	17.8
Time	4:45pm	4:50pm	4:55pm	5:00pm
DTW (ft bmp)				

Remarks: _____

Constituents Sampled: See COC Sampling Personnel: Gary Williams / Sunny Xu

Well Casing Volumes

Gal./Ft.	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

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Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project NORTHROP-GRUMMAN
Project Number NY001496.0410.00002 Site Location ____ Well ID GM-13D
Date 8-4-10 Sampled By GW
Sampling Time ____ Recorded By GW
Weather ____ Coded Replicate No. ____

Instrument Identification
Water Quality Meter(s) ____ Serial # ____

Casing Material ____ Purge Method ____
Casing Diameter ____ Screen Interval (ft bmp) Top ____ Bottom ____
Sounded Depth (ft bmp) ____ Pump Intake Depth (ft bmp) ____ ____
Depth to Water (ft bmp) ____ Purge Time Start ____ Finish ____

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
11:40				22.2	7.88	158.4	178	1.08		42.11
11:45				22.0	6.06	154.4	201	1.07		
11:50				22.0	6.07	153.1	203	1.03		
11:55				22.1	5.53	146.9	209	.99		
12:00				22.1	5.54	146.9	210	.99		
12:05				22.2	5.51	146.1	210	1.02		42.14
12:10				22.3	5.38	145.2	214	.96		
12:15				22.3	5.38	144.8	214	.96		
12:20				22.0	5.33	144.3	216	.96		42.13
12:25				22.0	5.33	144.1	216	.93		
12:30				22.1	5.33	144.0	217	.92		
12:35				22.3	5.32	143.5	218	.84		
12:40				22.3	5.31	143.9	219	.82		

Collected Sample Condition Color COLORLESS Odor ~~ODOR~~ SLIGHT Appearance CLEAR

Parameter	Container	No.	Preservative

PID Reading ____

Comments ____

1) Circle one unit type

ARCADIS

Water Sampling Log

Project NGC OU-2 Project No. NY001496.0415.00002 Page 1 of 1

Site Location Bethpage, NY Date 7-28-10

Site/Well No. GM-15S Replicate No. NA

Weather Sunny 95°F Sampling Time: Begin _____ End _____

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	80
Depth to Water (ft bmp)	41.29
Depth to Packer (ft bmp)	
Water Column in Well (ft)	38.71
Casing Diameter	~~38.71~~ 4" (0.65)
Gallons in Well	25
Gallons Pumped/Bailed Prior to Sampling	75
Sample Pump Intake Setting (ft bmp)	75
Packer Pressure (psi)	
Pumping Rate (gpm)	2
Evacuation Method	non-dedicated Redi-flo
Sampling Method	3WV / low-flow
Purge Time Begin _____ End _____	

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	6.08	6.09	6.03	6.01
Conductivity (mS/cm)				
(µmhos/cm)	323	143.5	144.8	142.1
Temperature (°C)	~~18.3~~ ~~29.6~~ 3.6	18.1	19.8	18.2
DO (mg/L)				
Turbidity (NTU)	9.93			6.20
Time	~~1435~~	15:53	1602	16:20
DTW (ft bmp)				

Remarks:

Constituents Sampled: See COC Sampling Personnel: Gary Williams / Sunny Xu

Well Casing Volumes

Gal./Ft.	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

ARCADIS

Water Sampling Log

Project: NCC OU-2 | Project No.: HYW1496.0410.0002 | Page 1 of 1

Site Location: Bethpage, NY | Date: 7-28-10

Site/Well No.: GM-15I | Replicate No.: NA

Weather: Sunny 96°F | Sampling Time: Begin _____ End _____

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	105
Depth to Water (ft bmp)	41.12
Depth to Packer (ft bmp)	94
Water Column in Well (ft)	~~53~~ 12
Casing Diameter	4" (0.65)
Gallons in Well	~~34.45~~
Gallons Pumped/Bailed Prior to Sampling	22.5
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin _____ End _____

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	
Odor	none	none	none	
Appearance	clear	clear	clear	
pH (s.u.)	6.57	6.40	6.16	
Conductivity (mS/cm)				
(µmhos/cm)	17.20	12.47	11.60	
Temperature (°C)	23.4	20.6	~~20.3~~	
DO (mg/L)				
Turbidity (NTU)				
Time	12:10	13:00	13:25	
DTW (ft bmp)				

Remarks: (94 - 41.12) × 0.43 + ~~50~~ 31 = 72.79

Constituents Sampled: See COC | Sampling Personnel: Gary Williams / Sunny Xu

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

XXXX 1/2

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.000002
Site Location: BETHPAGE
Well ID: GM-15D
Date: 7-13-10
Sampled By: GW XX
Sampling Time: 04.30
Recorded By: GW
Weather:
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): see calibration sheet.
Serial #:

Casing Material:
Purge Method: Low flow
Casing Diameter: 4"
Screen Interval (ft bmp): Top 332 Bottom 342
Sounded Depth (ft bmp): 342
Pump Intake Depth (ft bmp): 337.
Depth to Water (ft bmp): 43.26.
Purge Time: Start 3:30 Finish 4:30

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
3:30		450			5.31	126.4	243	6.34		43.26
3:35				23.9	5.06	165.3	256	2.94		
3:40				23.3	4.92	120.1	269	1.61		
3:45				23.0	4.71	123.9	274	4.14		
3:50				23.0	4.72	123.7	274	4.23		43.31
3:55				23.0	4.67	124.4	276	4.68		
4:00				23.0	4.68	122.4	278	4.76		43.32
4:05				22.9	4.64	126.6	279	4.81		
4:10				23.0	4.64	124.9	280	4.82		43.22
4:15				23.0	4.65	124.1	279	4.88		
4:20				23.0	4.65	124.9	282	4.90		
4:25				23.1	4.62	125.2	283	4.88		43.26
4:30				23.1	4.61	125.2	284	4.96	<20	

Collected Sample Condition — Color: COLORLESS — Odor: NONE — Appearance: CLEAR

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP GRUMMAN
Well ID: GM-150-2
Project Number: N/00149G.0410.0002
Site Location: Bethpage, NY
Date: 7-13-10
Sampled By: GW XX
Sampling Time:
Recorded By: GW
Weather:
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): see calibration sheet
Serial #:

Casing Material:
Purge Method:
Casing Diameter: 4
Screen Interval (ft bmp): Top 536 Bottom 556
Sounded Depth (ft bmp): 556
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 46.11
Purge Time: Start 115 Finish 300

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
115		450			6.78	1350	187	2.46		46.11
120		↓			5.87	1111	205	1.48		
125					5.64	—	—	3.84		
130				22.3	5.52	103.7	223	3.82		46.15
135				22.3	5.43	100.3	224	3.57		
140				22.4	5.39	99.3	232	4.44		46.15
145				22.4	5.32	100.5	237	4.33		
150				22.4	5.32	101.1	235	4.62		
155				22.4	5.27	102.3	240	5.06		
200				22.3	5.22	71.6	243	5.18		46.185
205				←				5.28		
210				22.1	4.85	98.2	254	5.28		46.09
215				22.2	5.09	98.1	257	5.32		
220				22.2	5.08	98.2	257	5.41		

250
255
300

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative

PID Reading:

Comments: OUTSIDE TEMP DO HIGH 80's - LIGHTNING STARTED AT 2:15 CALLED CARL SAW GOODMAN IT - STORM TO END AT 3pm WILL SAMPLE THEN

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N40014961.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-17I
Date: 7-29-10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather: OVERCAST 80's RAIN
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method:
Casing Diameter:
Screen Interval (ft bmp): Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp):
Purge Time: Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
10:40				22.9	7.59	123.5	123	7.90		~42.71
10:45				22.6	7.52	124.1	156	7.68		
10:50				22.4	7.47	121.5	172	6.69		
10:55				22.8	7.35	123.3	184	6.17		42.94
11:00				22.8	7.28	120.5	186	6.06		
11:05				22.3	7.22	112.8	188	6.14		
11:10				22.3	7.21	111.8	186	6.13		42.68
11:15				23.0	7.07	110.7	190	6.51		
11:20				23.0	7.06	110.7	188	6.54		
11:25				22.9	7.06	110.7	188	6.67		42.68
10										

Collected Sample Condition: Color: Odor: Appearance:

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP GRUMMAN
Project Number: NYOX1496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-17D
Date:
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather:
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method:
Casing Diameter:
Screen Interval (ft bmp): Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 45.31
Purge Time: Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
5:05				23.5	6.42	110.2	179	6.48		45.31
5:10				22.8	6.42	109.6	184	5.67		
5:15				21.6	6.41	109.2	188	5.93		
5:20				21.5	6.20	108.8	189	5.80		
5:25				21.2	6.14	108.1	190	5.97		
5:30				21.0	6.05	107.9	193	6.00		45.26
5:35				20.9	6.06	107.9	194	5.95		
5:40				20.9	6.01	108.0	195	5.64		
5:45				21.1	5.96	107.8	197	5.76		
5:50				21.2	5.90	107.5	201	5.60		
5:55				21.1	5.97	107.4	205	5.68		45.31
6:00				21.1	5.81	106.3	208	5.66		
6:05				21.1	5.81	106.3	208	5.67		

Collected Sample Condition: Color: Odor: Appearance:

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS

Water Sampling Log

Project NORTHROP GRUMMAN Project No. NY001496.0410.00002 Page 1 of 1

Site Location BETHPAGE NY Date 8-11

Site/Well No. GM-18I Replicate No. _____

Weather HAZY 90°+ Sampling Time: Begin 10:30 End _____

Evacuation Data

Measuring Point	_____
Sounded Well Depth (ft bmp)	_____
Depth to Water (ft bmp)	39.41
Depth to Packer (ft bmp)	93
Water Column in Well (ft)	12
Casing Diameter	4 (0.65)
Gallons in Well	7.80 x 3
Gallons Pumped/Bailed Prior to Sampling	23.5
Sample Pump Intake Setting (ft bmp)	_____
Packer Pressure (psi)	60 PSI
Pumping Rate (gpm)	_____
Evacuation Method	_____
Sampling Method	_____
Purge Time Begin	_____ End _____

Field Parameters

	I	1V	2V	3V
Color	COLORLESS			COLORLESS
Odor	NONE			NONE
Appearance	CLEAR			CLEAR

	I	1V	2V	3V
pH (s.u.)	7.76	5.80	5.62	5.63
Conductivity ~~(mS/cm)~~ (µmhos/cm)	454	184.6	184.3	178.5
Temperature (°C)	22.9	19.8	20.4	20.0
DO (mg/L)				
Turbidity (NTU)				4.20
Time				
DTW (ft bmp)				

Remarks: 93 − 39.41 = 53.59 x .43 = 23 + 2.5 = 48 (60 PSI)

5 GAL PAILS III

Constituents Sampled: See COC Sampling Personnel: GW / Gary Williams

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

93.00 − 39.41 = 53.59

53.59 x .43 = 96077 + 21436 = 230437

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N400.1496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-18D
Date: 7/30/10
Sampled By: GW
Sampling Time: ____
Recorded By: GW
Weather: ____
Coded Replicate No.: ____

Instrument Identification
Water Quality Meter(s): ____ Serial #: ____

Casing Material: ____ Purge Method: ____
Casing Diameter: ____ Screen Interval (ft bmp) Top: ____ Bottom: ____
Sounded Depth (ft bmp): ____ Pump Intake Depth (ft bmp): ____ ____
Depth to Water (ft bmp): 41.75 Purge Time Start: ____ Finish: ____

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
2:30				25.3	5.34	231	233	5.86		41.75
2:35				24.5	5.33	233	234	6.01		
2:40				22.6	5.31	165.1	234	7.18		
2:45				22.7	5.30	155.5	234	7.07		
2:50				22.5	5.27	146.3	235	7.35		
2:55				22.1	5.28	145.5	235	7.41		41.71
3:00				21.3	5.24	144.8	237	7.68		
3:05				22.1	5.25	144.3	237	7.75		
3:10				22.2	5.24	144.6	237	7.76		
3:15				22.3	5.24	144.7	238	7.73		41.42
3:20				22.4	5.23	144.6	238	7.63		
3:25				22.5	5.23	144.6	238	8.04		41.69
3:30				22.2	5.22	144.5	239	7.96		
3:35				22.1	5.22	144.8	239	8.05		

Collected Sample Condition: Color CLOUDS Odor NONE Appearance CLEAR

Parameter	Container	No.	Preservative

PID Reading: ____

Comments: ____

1) Circle one unit type

ARCADIS

Water Sampling Log

Project NORTHROP - GRUMMAN Project No. 40149604.0000 Page ___ of ___

Site Location ___ Date 8-6-10

Site/Well No. GM-20S Replicate No. ___

Weather ___ Sampling Time: Begin ___ End ___

Evacuation Data

Measuring Point	
Sounded Well Depth (ft bmp)	105 ~~130~~
Depth to Water (ft bmp)	34.50
Depth to Packer (ft bmp)	~~130~~ 125
Water Column in Well (ft)	~~130~~ 12
Casing Diameter	4 (0.65)
Gallons in Well	7.80
Gallons Pumped/Bailed	x 3
Prior to Sampling	22.5
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time Begin ___ End ___	

Field Parameters

	I	1V	2V	3V
Color				COLORLESS
Odor				NONE
Appearance				CLEAR

	I	1V	2V	3V
pH (s.u.)	5.75	7.89	9.06	9.56
Conductivity (mS/cm)				
(µmhos/cm)	129.6	126.9	117.3	17.7
Temperature (°C)	24.1	20.1	17.5	20.7
DO (mg/L)				
Turbidity (NTU)				<20
Time				
DTW (ft bmp)				

Remarks: 130 - 34.50 = 93.40 x .43 + 25 = 40. + 25 = 70

CONFIRMS 1111 5

Constituents Sampled: See COC Sampling Personnel: ___

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

~~130~~ 128.80
-34.50
93.40
.43
28020
37360
40120

ARCADIS

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. N400149G.0410.00002 Page 1 of 1

Site Location RONKONKOMA NY Date 8/9/10

Site/Well No. GM-20D Replicate No. N/A

Weather _____ Sampling Time: Begin _____ End _____

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	36.51
Depth to Packer (ft bmp)	~~215~~ 214
Water Column in Well (ft)	12
Casing Diameter	4 (0.65)
Gallons in Well	7.80 x 3
Gallons Pumped/Bailed Prior to Sampling	23.5
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	100 PSI
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin _____ End _____

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				

	I	1V	2V	3V
pH (s.u.)	8.20	7.30	6.33	6.04
Conductivity (~~mS/cm~~) (umhos/cm)	157.7	110.5	99.8	102.3
Temperature (°C)	22.5	18.5	17.3	17.5
DO (mg/L)				
Turbidity (NTU)				
Time				
DTW (ft bmp)				

Remarks: 215.00 - 36.51 = 178.49 x 0.43 = 76.75 + 25 = 100 PSI
* EQUIPMENT 1

Constituents Sampled: See COC Sampling Personnel: Gary Williams

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

12 x 1.65 = 19.80 ≈ 20

215.00 − 36.51 = 178.49

178.49 × .43 = 76.7507 ≈ 76.750

ARCADIS

Water Sampling Log

Project NORTHROP GRUMMAN Project No. 60001496.0410.00002 Page 1 of 1

Site Location BETHPAGE NY Date 8-5-10

Site/Well No. GM-21S Replicate No. NA

Weather Sunny 95°F Sampling Time: Begin _____ End _____

Evacuation Data

Measuring Point	
Sounded Well Depth (ft bmp)	67.00
Depth to Water (ft bmp)	34.60
Depth to Packer (ft bmp)	
Water Column in Well (ft)	32.40
Casing Diameter	2" (0.16)
Gallons in Well	5.184
Gallons Pumped/Bailed	x 3
Prior to Sampling	16GAL
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin _____ End _____

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	7.98	7.97	7.80	7.71
Conductivity (mS/cm)				
(µmhos/cm)	93.7	95.6	88.2	85.5
Temperature (°C)	20.3	20.8	20.9	21.2
DO (mg/L)				
Turbidity (NTU)				
Time	1727	1732	1737	1742
DTW (ft bmp)				

Remarks: _____

Constituents Sampled: See COC Sampling Personnel: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

67.00
34.60
32.40
.16
19440
3240
5184

ARCADIS

Water Sampling Log

Project NORTHROP GRUMMAN Project No. 60190496.0410.00002 Page 1 of 1

Site Location BATAVIA NY Date 8-5-10

Site/Well No. GM-21I Replicate No. N/A

Weather Sunny 95°F Sampling Time: Begin _____ End _____

Evacuation Data

Measuring Point	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	36.18
Depth to Packer (ft bmp)	130
Water Column in Well (ft)	18.3
Casing Diameter	(0.65)
Gallons in Well	7.80
Gallons Pumped/Bailed Prior to Sampling	22.5
Sample Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	80 PSI
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin _____ End _____

Field Parameters

	I	IV	2V	3V
Color	Colorless	Colorless	Colorless	
Odor	none	none	none	
Appearance	clear	clear	clear	

	I	1V	2V	3V
pH (s.u.)	8.05	6.89	7.71	8.03
Conductivity (mS/cm)				
(µmhos/cm)	337	106.8	98.5	97.9
Temperature (°C)	23.6	18.6	17.5	17.0
DO (mg/L)				
Turbidity (NTU)				
Time		1629	1657	
DTW (ft bmp)				

Remarks: 130 - 36.18 = 93.82 x .43 = 40.24 = 65 PSI PACKER

Constituents Sampled: See COC Sampling Personnel: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

X X X 1 1/2

999.00
130.00
-36.18
93.82

93.82
.43
12
.65
60
22146
72
37428
7.80
4024 26
+25

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-21D
Date:
Sampled By: G.W
Sampling Time:
Recorded By: G.W
Weather:
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method:
Casing Diameter:
Screen Interval (ft bmp): Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp):
Purge Time: Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
2:30				26.1		89.5	208	6.22		40.46
2:45				23.8	5.32	80.6	253	5.70		
2:50				23.7	5.46	80.8	255	5.43		
2:55				23.7	5.18	80.8	259	5.68		
3:00				23.7	5.15	81.1	261	6.06		40.47
3:05				23.5	4.95	81.1	268	6.27		
3:10				23.3	4.93	81.4	270	5.93		
3:15				22.8	4.86	82.4	276	5.75		40.46
3:20				22.9	4.83	82.5	278	6.30		
3:25				22.9	4.84	82.2	279	6.67		
3:30				22.8	4.75	82.3	282	6.69		
3:35				22.8	4.73	82.3	284	6.63		40.48
3:40				22.7	4.71	82.6	284	6.50		
3:45				22.7	4.72	82.7	285	6.80		40.53

Collected Sample Condition: Color: Odor: Appearance:

Parameter	Container	No.	Preservative

PID Reading:

Comments: * ALMOST 90° OUTS.

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-33D-2
Date: 8/11/10
Sampled By: G.W.
Sampling Time:
Recorded By: G.W.
Weather:
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method: Dedicated bladder pump
Casing Diameter: 4"
Screen Interval (ft bmp): Top 500 Bottom 520
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 47.00
Purge Time: Start 2:40 pm Finish 3:10 pm

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
2:40				22.4	6.05	102.5	200	7.11		47.00
2:45				22.3	6.09	102.4	191	6.73		
2:50				21.1	6.34	101.5	175	7.33		
2:55				21.2	6.44	101.2	165	6.01		
3:00				21.2	6.44	100.9	165	6.06		47.06
3:05				21.1	6.47	100.3	173	6.10		
3:10				21.3	6.57	101.0	168	6.07		
3:15				21.3	6.58	101.1	164	6.01		
3:20				21.4	6.59	101.4	162	6.03		
3:25				21.4	6.79	108.1	150	5.75		
3:30				21.4	6.82	108.1	146	5.85		47.02
3:35				21.3	6.86	108.5	144	5.65		
3:40				21.4	6.90	107.2	145	5.70		

Collected Sample Condition — Color: CLOUDY — Odor: NONE — Appearance: CLEAR

Parameter	Container	No.	Preservative
See COC			

PID Reading: —

Comments: * WATER LEVEL MEASURED TO LAND SURFACE CASING

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: N/00496.0410.0002
Site Location: Bethpage, NY
Well ID: GM-34D
Date: 7-19-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time:
Recorded By: Sunny Xu
Weather: Sunny 95°F
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): See calibration sheet
Serial #:

Casing Material:
Purge Method: pre-calibrated Redi-flo
Casing Diameter: 6" SX 2
Screen Interval (ft bmp): Top 309 Bottom 319
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 11.60
Purge Time: Start 1440 Finish 1540

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
14:40		450		22.9	6.21	90.9	118.	2.50		
14:45				23.0	8.36	115.6	122.	0.80		
14:50				23.2	8.81	110.5	118	0.62		11.61
14:55				23.1	8.93	112.5	116	0.58		
15:00				22.9	9.11	99.7	108	0.57		
15:05				23.2	9.54	114.6	90	0.46		11.61
15:10				23.2	9.64	97.2	81	0.63		
15:15				23.2	9.71	116.7	69	0.70		11.58
15:20				23.1	9.60	117.4	64	0.70		
15:25				23.2	9.62	118.7	67	0.63		
15:30				23.2	9.20	118.7	57	0.65		
15:35				23.0	9.14	112.7	55	0.62		
15:40		V		23.0	9.10	112.4	55	0.60		

Collected Sample Condition
Color: Color less
Odor: none
Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs ASP 2000	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001x96.0410.ou 2
Site Location: Bethpage, NY.
Well ID: GM-34 D2
Date: 7-19-10.
Sampled By: Gary Williams / Sunny Xu
Sampling Time:
Recorded By: Sunny Xu.
Weather: Sunny 85°F
Coded Replicate No.: NA.

Instrument Identification
Water Quality Meter(s): see calibration sheet
Serial #:

Casing Material:
Purge Method: non-electrical peristaltic
Casing Diameter: 4
Screen Interval (ft bmp): Top 510 Bottom 520.
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 13.94
Purge Time: Start 1600 Finish 1700

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1600	0			32.4	8.63	111.0	101	3.53		
1605	5			26.4	8.38	85.6	108	1.30		
1610	10			23.3	8.36	56.1	110	0.69		13.94
1615	15			22.9	8.35	56.4	110	0.40		
1620	20			22.2	8.31	64.4	112	0.31		
1625	25			22.3	8.24	76.4	114	0.28		13.91
1630	30			22.3	8.18	73.5	115	0.31		
1635	35			22.6	7.98	78.5	98	0.61		
1640	40			22.6	7.88	81.0	75	0.75		13.91
1645	45			22.6	7.74	81.6	57	1.15		
1650	50			22.5	7.60	81.5	51	1.73		
1655	55			22.5	7.54	81.1	50	2.06		13.91
1700	60			22.5	7.48	80.4	50	2.26	98.5	

Collected Sample Condition
Color: ~~Color Less~~ black. Odor: ~~none~~ slight Appearance: ~~clear~~ cloudy.

Parameter	Container	No.	Preservative
TCL VOCs ASP200	40 ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. NY001496041D.0000 Page ___ of ___

Site Location BETHPAGE NY Date 8-12-10

Site/Well No. GM-35D-2 Replicate No. ___

Weather ___ Sampling Time: Begin ___ End ___

Evacuation Data

Measuring Point	TOC
Sounded Well Depth (ft bmp)	___
Depth to Water (ft bmp)	36.89
Depth to Packer (ft bmp)	~~508~~
Water Column in Well (ft)	___
Casing Diameter	___
Gallons in Well	___
Gallons Pumped/Bailed Prior to Sampling	___
Sample Pump Intake Setting (ft bmp)	___
Packer Pressure (psi)	~~___~~
Pumping Rate (gpm)	≈
Evacuation Method	___
Sampling Method	___
Purge Time Begin ___ End ___	

Field Parameters

	I	1V	2V	3V
Color				COLORLESS
Odor				NONE
Appearance				CLEAR

	I	1V	2V	3V
pH (s.u.)	7.26	7.60	6.56	6.57
Conductivity ~~(mS/cm)~~ MS ~~(umhos/cm)~~	126.5	121.9	116.5	105.3
Temperature (°C)	19.0	17.1	17.1	16.7
DO (mg/L)	~~___~~	~~___~~	~~___~~	~~___~~
Turbidity (NTU)				
Time				
DTW (ft bmp)				

Remarks: 508 - 36.89 = 471.11 x 43 = 202 + 25 = 230

5 GALLON PAILS IIII

Constituents Sampled: See COC Sampling Personnel: ___

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

568.00
36.89
471.11
.43
413.33
18844
2025773

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NY001496.0410.00002
Project Number: 1
Site Location: BETHPAGE NY
Well ID: GM-38D
Date: 9-21-10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather:
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): QA 1000 300, YSI 556 DO, LOW FLOW 6
Serial #:

Casing Material:
Purge Method:
Casing Diameter:
Screen Interval (ft bmp): Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp):
Purge Time: Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
10:40				16.4	6.34	100.3	198	4.47		39.58
10:45				15.7	6.81	94.1	235	2.28		
10:50				15.7	6.81	93.6	235	2.17		
10:55				15.8	6.83	92.7	236	1.95		39.67
11:00				15.9	6.74	93.1	237	1.93		
11:05				16.1	5.97	93.4	247	1.53		
11:10				16.1	5.97	93.5	247	1.54		
11:15				16.7	5.72	94.2	254	1.36		39.70
11:20				16.7	5.65	94.7	258	1.28		
11:25				16.8	5.48	91.6	269	1.02		
11:30				17.3	5.65	84.7	272	0.80		
11:35				17.3	5.63	84.1	273	0.79		
11:40				17.3	5.60	83.3	273	0.79		39.55

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0416.00002
Site Location: BETHPAGE NY
Well ID: GM-38D-2
Date: 9-21-10
Sampled By: G.W.
Sampling Time: ____
Recorded By: G.W.
Weather: ____
Coded Replicate No.: ____

Instrument Identification
Water Quality Meter(s): ____ Serial #: ____

Casing Material: ____ Purge Method: ____
Casing Diameter: ____ Screen Interval (ft bmp) Top: ____ Bottom: ____
Sounded Depth (ft bmp): ____ Pump Intake Depth (ft bmp): ____ ____
Depth to Water (ft bmp): ____ Purge Time Start: ____ Finish: ____

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
12:25				23.4	6.11	87.3	250	5.93		44.15
12:30				23.5	6.11	85.8	255	6.41		
12:35				23.6	6.04	85.8	255	6.44		
12:40				23.6	6.04	84.9	257	6.43		
12:45				23.4	6.02	84.0	257	5.49		44.09
12:50				23.4	6.02	83.7	257	5.65		
12:55				23.8	6.00	84.3	258	5.41		
1:00				23.8	6.01	84.3	259	6.26		
1:05				23.8	6.00	85.7	259	6.18		
1:10				24.0	6.02	87.7	257	6.00		
1:15				24.0	6.03	88.4	257	6.05		"
1:20				24.1	6.05	87.2	257	5.72		44.04
1:25				24.0	6.03	88.5	257	5.48		

Collected Sample Condition: Color____ Odor____ Appearance____

Parameter	Container	No.	Preservative

PID Reading: ____

Comments: ____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N40014961.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-39D A
Date: 7-30-10
Sampled By: GW
Sampling Time: ____
Recorded By: GW
Weather: ____
Coded Replicate No.: ____

Instrument Identification
Water Quality Meter(s): ____ Serial #: ____

Casing Material: ____ Purge Method: ____
Casing Diameter: ____ Screen Interval (ft bmp) Top: ____ Bottom: ____
Sounded Depth (ft bmp): ____ Pump Intake Depth (ft bmp): ____ ____
Depth to Water (ft bmp): ____ Purge Time Start: ____ Finish: ____

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1:00				18.8	5.16	95.0	227	8.12		35.68
1:05				18.6	5.43	95.2	232	8.17		
1:10				18.6	5.41	95.2	232	8.22		
1:15				18.6	5.42	95.0	232	8.15		
1:20				18.6	5.42	95.2	233	8.16		35.64
1:25				18.6	5.41	95.3	235	8.25		
1:30				18.5	5.41	95.4	236	8.31		
1:35				18.4	5.42	95.4	236	8.33		
1:40				19.2	5.41	95.9	237	8.18		35.64
1:45				19.2	5.41	95.9	238	8.08		
1:50				19.0	5.39	96.3	238	8.05		
1:55				19.0	5.41	96.1	239	8.02		35.61
2:00										

Collected Sample Condition: Color COLORLESS Odor NONE Appearance CLEAR

Parameter	Container	No.	Preservative

PID Reading: ____

Comments: ____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N40001496.0410.00002
Site Location: BETHPAGE
Well ID: GM-39DB
Date: 7-30-10
Sampled By: GW
Sampling Time: ____
Recorded By: GW
Weather: ____
Coded Replicate No.: ____

Instrument Identification
Water Quality Meter(s): ____ Serial #: ____

Casing Material: ____ Purge Method: ____
Casing Diameter: ____ Screen Interval (ft bmp) Top: ____ Bottom: ____
Sounded Depth (ft bmp): ____ Pump Intake Depth (ft bmp): ____ ____
Depth to Water (ft bmp): 38.34 Purge Time Start: ____ Finish: ____

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
11:35				20.4	6.55	104.1	202	8.56		38.34
11:40				20.2	6.31	102.7	205	8.52		
11:45				19.6	5.91	99.1	216	8.45		
11:50				19.8	5.92	98.2	227	8.14		38.26
11:55				19.8	5.53	98.2	228	8.50		
12:00				19.8	5.49	98.0	229	8.41		
12:05				19.6	5.46	98.4	230	8.37		
12:10				19.6	5.46	98.2	236	8.58		
12:15				19.6	5.27	98.3	242	8.54		38.26
12:20				19.8	5.24	98.4	247	8.53		
12:25				19.7	5.18	98.2	249	8.46		
12:30				19.6	5.17	98.3	250	8.61		
12:35				19.5	5.16	98.4	251	8.62		38.25
12:										

Collected Sample Condition Color COLORLESS Odor NONE Appearance CLEAR

Parameter	Container	No.	Preservative

PID Reading: ____

Comments: ____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP GRUMMAN
Project Number: ~~NY001496.0410.0002~~ 8-3-10
Site Location: BETHPAGE NY
Well ID: GM-73D
Date: 8-3-10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather:
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method:
Casing Diameter:
Screen Interval (ft bmp): Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp):
Purge Time: Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1:30				20.5	7.67	157.1	193	8.25		40.92
1:35				20.4	7.26	145.8	197	8.47		
1:40				20.2	6.10	103.6	>16	8.41		
1:45				20.2	6.06	103.1	216	8.40		40.90
1:50				20.2	5.66	96.1	227	8.35		
1:55				20.2	5.64	96.1	228	8.17		
2:00				20.2	5.62	96.1	230	8.19		40.91
2:05				20.2	5.56	96.0	230	8.20		
2:10				20.1	5.47	95.2	236	8.09		
2:15				20.1	5.45	95.3	237	8.06		
2:20				20.3	5.45	95.1	243	8.01		
2:25				20.3	5.31	95.2	243	7.86		
2:30				20.1	5.26	95.2	246	7.73	>20	

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0411.00002
Site Location:
Well ID: GM-73D-2
Date: 8-3-10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather:
Coded Replicate No.: REP-8-3-10

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method:
Casing Diameter:
Screen Interval (ft bmp): Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp):
Purge Time: Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
3:00				21.6	5.68	96.1	223	8.04		42.79
3:05				21.5 (5.33)	~~6.17~~	96.1	240	6.17		
3:10				21.5	5.31	96.2	241	6.06		
3:15				21.5	5.31	96.2	242	6.15		
3:20				21.4	5.19	107	248	6.52		
3:25				21.4	5.18	107	256	6.46		37.95
3:30				21.3	5.06	~~108~~	263	6.37		
3:35				21.1	5.01	108	265	6.13		
3:40				21.2	5.01	107	265	6.52		
3:45				21.2	5.01	107	266	6.41		
3:50				21.2	4.99	106	267	6.41		37.75
3:55				21.8	4.99	107	269	6.38		
4:00				21.0	4.97	108	269	6.34		

Collected Sample Condition — Color: COLORLESS — Odor: NONE — Appearance: CLEAR

Parameter	Container	No.	Preservative

PID Reading:

Comments: M-SCOPE NOT WORKING WELL

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-74I
Date: ~~7-13-10~~ 7-14-10
Sampled By: Gary Williams
Sampling Time:
Recorded By: Gary Williams
Weather: OVERCAST 80's
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): See calibration sheet
Serial #:

Casing Material:
Purge Method:
Casing Diameter: 4
Screen Interval (ft bmp): Top 94 Bottom 114
Sounded Depth (ft bmp): 114
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 36.65
Purge Time: Start 12:40 Finish 1:25

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
12:40				21.3	7.45	404	195	7.45		36.65
12:45				21.0	7.16	366	194	7.43		
12:50				20.5	7.19	268	192	7.35		
12:55				20.3	6.35	248	193	7.12		36.70
1:00				20.1	6.31	167.8	194	7.04		
1:05				19.7	5.99	137.9	198	6.81		
1:10				19.7	5.83	129.1	200	6.67		36.75
1:15				20.0	5.84	125.1	202	6.60		
1:20				19.9	5.80	122.1	203	6.54		36.75
1:25 (45 min)				20.00	5.81	121.1	203	6.51		
~~1:30~~										
~~1:35~~										
~~1:40~~										

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLOUDY

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP - GRUMMAN
Project Number: N00149604D.00002
Site Location: BETHPAGE
Well ID: GM-74D
Date: 7-14-10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather: OVERCAST 80°S
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): see calibration sheet
Serial #:

Casing Material:
Purge Method:
Casing Diameter: 4
Screen Interval (ft bmp): Top 295 Bottom 305
Sounded Depth (ft bmp): 305
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 41.46
Purge Time: Start 1:50 Finish 2:50

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1:50				24.5	~~6.85~~ 5.77	103.3	214	6.85		41.46
1:55				21.9	5.41	100.4	227	5.42		
2:00				20.5	5.03	100.9	243	4.97		
2:05				20.4	5.04	100.9	244	4.99		
2:10				20.3	5.01	101.3	244	4.82		
2:15				20.3	5.02	101.2	244	5.02		41.45
2:20				20.2	4.89	100.2	249	4.94		
2:25				20.2	4.90	100.2	250	4.94		
2:30				20.1	4.80	100.5	254	4.97		
2:35				20.1	4.79	100.5	255	5.06		
2:40				20.0	4.76	100.2	256	5.00		41.42
2:45				20.0	4.77	91.0	258	4.96		
2:50				19.4	4.77	98.0	259	5.00		

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: N400196.0410.00002
Site Location: Bethpage, NY
Well ID: GM-74D2
Date: 7-14-10
Sampled By: Gary Williams
Sampling Time:
Recorded By: Gary Williams
Weather:
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material: PVC
Purge Method:
Casing Diameter: 4
Screen Interval (ft bmp): Top 542 Bottom 562
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 47.79
Purge Time: Start 3:10 Finish 4:20

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
3:10				21.4	5.08	91.0	260	4.08		47.79
3:15				20.5	4.90	93.5	264	2.03		
3:20				20.4	4.88	94.0	265	1.73		
3:25	*			20.3	5.20	130.7	268	1.56		
3:30				20.3	5.09	132.7	271	2.37		47.79
3:35				20.3	5.08	133.2	271	2.64		
3:40				20.5	5.07	133.2	272	2.65		
3:45				20.7	5.06	133.5	273	2.63		47.75
3:50				20.7	5.09	133.3	275	2.57		
3:55				20.6	5.05	132.1	277	2.47		
4:00				20.5	5.06	131.9	277	2.36		
4:05				20.2	5.09	131.4	279	2.48		
4:10				20.2	5.03	131.3	279	2.38	<20	47.75

Collected Sample Condition
Color: COLORLESS
Odor: NONE
Appearance: CLEAR

Parameter	Container	No.	Preservative

PID Reading:

Comments:
* CHANGED METER BATTERY LOW

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NORTHROP-GRUMMAN
Project Number: NY001496.0410.00002
Site Location: BETHPAGE NY
Well ID: GM-75D-2
Date: 8/10/10
Sampled By: GW
Sampling Time:
Recorded By: GW
Weather:
Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method: Dedicated bladder pump
Casing Diameter: 4"
Screen Interval (ft bmp) Top: 505 Bottom: 525
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 33.15
Purge Time Start: 2:55 pm Finish: 3:55 pm

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or ~~mS/cm~~)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
2:55				22.5	8.23	107.0	23	~~8.07~~	6.28	33.15
3:00				22.4	8.17	103.3	46	5.43		
3:05				22.4	8.06	103.5	46	6.01		
3:10				22.4	7.93	106.6	61	5.87		
3:15				22.3	7.37	106.7	70	5.77		
3:20				22.3	6.91	110.5	104	5.13		
3:25				22.3	6.87	110.3	105	5.40		
3:30				21.9	6.64	110.1	124	5.23		33.11
3:35				—	6	—	—	—		
3:40				22.0	6.22	112.5	161	4.93		33.10
3:45				21.9	6.20	112.9	164	5.10		
3:50				22.0	5.95	113.5	180	5.96		
3:55				22.0	5.93	114.3	181	5.03		

Collected Sample Condition
Color: Colorless
Odor: None
Appearance: Clear

Parameter	Container	No.	Preservative
See COC			

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001496.0410.00002

Site Location: Bethpage, NY | Date: 7-16-10

Well No.: GM-78S | Replicate No.: NA | Weather: Sunny 90°F

Sampling Personnel: Gary Williams / Sunny Yun | Sampling Time: Begin 1033 End 1636

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	70
Depth to Water (ft bmp)	36.85
Depth to Packer (ft bmp)	
Water Column in Well (ft)	33.15
Casing Diameter	4" (0.65)
Gallons in Well	21.5
Gallons Purged	x 3
Prior to Sampling	64.5
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	2 gpm
Evacuation Method	non-dedicated Redi-flo
Sampling Method	3WV / low-flow
Purge Time	Begin 1600 End 1632

Field Parameters

	I	1V	2V	3V
Color	colorless	colorless	colorless	colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	6.24	6.15	6.14	6.09
Conductivity (mS/cm) or (µmhos/cm) [1]	115.7	118.0	124.5	126.4
Temperature (°C)	21.0	18.6	18.2	18.1
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)	11.3	8.20	5.33	4.29
Time	1600	1610	1624	1632
DTW (ft bmp)				

Remarks:

Parameter	Container	No.	Preservative
TCL VOCs + App 2 VOCs	40ml VOA	3	HCl
Cr (6)	250 ml plastic	2	HNO3

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NYo14960413.0002 Site Location: Bethpage, NY Well ID: GM-78I
Date: 7-16-10 Sampled By: Gary Williams / Sang Kim
Sampling Time: Recorded By: Sang Kim
Weather: Sunny 95°F Coded Replicate No.: N/A

Instrument Identification
Water Quality Meter(s): See calibration sheet Serial #:

Casing Material: Purge Method: non-dedicated Redi-flo.
Casing Diameter: 4 Screen Interval (ft bmp) Top: 90 Bottom: 110
Sounded Depth (ft bmp): Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 37.11 Purge Time Start: 14:55 Finish: 15:40

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
14:55		400		21.1	6.08	66.0	212	6.86		
15:00				19.9	5.04	75.0	212	6.14		
15:05				19.9	6.03	77.4	207	6.30		
15:10				20.2	5.03	78.8	205	5.99		37.14
15:15				20.2	5.99	81.7	202	5.85		
15:20				20.3	5.99	83.2	201	5.85		
15:25				20.6	5.99	121.6	200	5.82		37.14
15:30				20.7	5.99	123.1	198	5.79		
15:35				20.4	5.98	123.1	198	5.76		
15:40				20.3	5.98	123.1	197	5.77	6.98	37.14

Collected Sample Condition Color: Colorless Odor: None Appearance: Clear

Parameter	Container	No.	Preservative
TCL VOCs PBDMs	40ml VOA	3	HCl
Ca/Cal.	250 ml plastic	2	HNO3

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0410.0002
Site Location: Bethpage, NY
Well ID: GM-79I
Date: 7-16-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time:
Recorded By: Sunny Xu
Weather: Sunny 96°F
Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method: decontaminated bladder pump
Casing Diameter: 4
Screen Interval (ft bmp) Top: 170 Bottom: 180
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 36.76
Purge Time: Start 11:13 Finish 11:58

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
11:13	0	450		22.8	7.69	96.0	200	8.03		
11:18	5			19.5	6.71	96.5	239	5.29		36.79
11:23	10			18.4	6.11	71.7	249	0.32		
11:28	15			18.6	5.88	73.9	246	6.59		36.79
11:33	20			18.6	5.83	69.4	253	6.65		
11:38	25			18.6	5.75	69.6	251	6.57		36.78
11:43	30			18.8	5.68	69.2	251	6.50		
11:48	35			19.1	5.62	91.9	256	6.56		36.78
11:53	40			19.2	5.58	90.5	255	6.81		
11:58	45	V		19.0	5.54	87.7	259	6.99		36.78

Collected Sample Condition: Color Colorless Odor none Appearance clear

Parameter	Container	No.	Preservative
TCL VOCs + 1,4-Dioxane	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

NW

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0410 ows 2
Site Location: Bethpage, NY
Well ID: GM-79D
Date: 7-16-10
Sampled By: Gary Williams / Sunny Xu
Sampling Time:
Recorded By: Sunny Xu
Weather: Sunny / 95°F
Coded Replicate No.: MS/MSD / REP071610

Instrument Identification
Water Quality Meter(s): see calibration sheet
Serial #:

Casing Material:
Purge Method: dedicated bladder pump
Casing Diameter: 4
Screen Interval (ft bmp): Top 280 Bottom 290
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 38.23
Purge Time: Start 12:15 Finish 13:00

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
12:15	0	450		25.7	5.69	83.6	226	8.01		
12:20	5			25.1	5.59	82.9	229	7.00		38.25
12:25	10			24.2	5.51	82.1	231	6.42		
12:30	15			23.3	5.42	81.7	232	4.43		
12:35	20			23.0	5.35	82.8	234	4.09		
12:40	25			22.9	5.31	83.6	236	4.32		38.25
12:45	30			23.1	5.31	85.6	236	4.42		
12:50	35			23.2	5.31	87.6	237	4.53		
12:55	40			23.3	5.27	86.4	238	4.59		38.25
13:00	45			23.4	5.28	86.5	239	4.63		
13:05	50			23.3	5.26	86.1	240	4.64		
13:10	55			23.3	5.25	87.7	241	4.66		38.25
13:15	60			23.3	5.25	85.1	242	4.68		

Collected Sample Condition: Color colorless Odor none Appearance clear

Parameter	Container	No.	Preservative
TCL VOCs ASP 200	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001696.2410.0002
Site Location: Bethpage, NY | Date: 7-20-10
Well No.: BPOW1-1 | Replicate No.: NA | Weather: Sunny 90°F
Sampling Personnel: Gary Dillon / Sunny Xu | Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC.
Sounded Well Depth (ft bmp)	241
Depth to Water (ft bmp)	28.19
Depth to Packer (ft bmp)	169
Water Column in Well (ft)	
Casing Diameter	4" (0.65).
Gallons in Well	x3.
Gallons Purged Prior to Sampling	
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	dedicated submersible pump
Sampling Method	
Purge Time	Begin _____ End _____

Field Parameters

	1	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	5.75	5.67	5.29	5.28
Conductivity ~~(mS/cm)~~ or (µmhos/cm) [1]	108.1	78.9	86.3	88.2
Temperature (°C)	21.4	16.4	15.1 ~~16.1~~	15.3
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time				
DTW (ft bmp)				

Remarks: (169 - 28.19) x 0.43 + 50 = 110. psi

Parameter	Container	No.	Preservative
TCL VOCs 8260	40 ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NORTHROP-GRUMMAN Project No. N4001496.0440.00002

Site Location BOTTPAGE Date 7-20-10

Well No. BPOW-1-2 Replicate No. NA Weather Sunny 95°F

Sampling Personnel GW XX Sampling Time: Begin 2:40 End

Purge Data

Measuring Point (describe) TOC

Sounded Well Depth (ft bmp) ~~335~~ 335

Depth to Water (ft bmp) 29.50

Depth to Packer (ft bmp) 294

Water Column in Well (ft) 41

Casing Diameter 4" (0.65)

Gallons in Well 26.65

Gallons Purged x 3

Prior to Sampling 80

Pump Intake

Setting (ft bmp)

Packer Pressure (psi)

Pumping Rate (gpm)

Evacuation Method

Sampling Method

Purge Time Begin End

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	1.32	6.81	6.08	5.55
Conductivity ~~(mS/cm)~~ or (µmhos/cm) [1]	67.7	159.7	94.5	80.4
Temperature (°C)	20.4	17.1 ~~25.1~~	14.8	15.2
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time				
DTW (ft bmp)				

Remarks:

294 - ~~323~~ 29.50 x 43 + 50 = 180 PSI

Parameter	Container	No.	Preservative
TCL VOCs 8260 V			

PID Reading

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001496.0410.0002
Site Location: Bethpage, NY | Date: 7-20-10
Well No.: BPOW 1-3 | Replicate No.: NA | Weather: Sunny 90's
Sampling Personnel: Gary Williams / Sunny Xu | Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	419
Depth to Water (ft bmp)	30.89
Depth to Packer (ft bmp)	344.
Water Column in Well (ft)	
Casing Diameter	4"(0.65).
Gallons in Well	
Gallons Purged Prior to Sampling	
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 1712 End 1735

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Slight brown
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	4.85	4.39	4.37	4.20
Conductivity (mS/cm) or (µmhos/cm)[1]	101.0	121.3	84.1	103.X
Temperature (°C)	21.2	15.9	15.9	14.5
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	17:12	17:19	1727	17:35
DTW (ft bmp)				

Remarks: ~~419 - 30.89~~ (344 - 30.89) x 0.43 + 5 = 138.5

Parameter	Container	No.	Preservative
TCL VOCs SW8.2	40ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 Project No.: NY001496.0410.00002

Site Location: Bethpage, NY Date: 7-21-11

Well No.: BPOW 3-1 Replicate No.: NA Weather: Sunny 92°F.

Sampling Personnel: Gary Williams / Sunny X. Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	516
Depth to Water (ft bmp)	Not accessible
Depth to Packer (ft bmp)	414
Water Column in Well (ft)	
Casing Diameter	4"
Gallons in Well	198.9 (according to previous (x))
Gallons Purged Prior to Sampling	
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	220
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time Begin 1520 End 1532	

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	4.15	4.13	4.20	4.78
Conductivity (mS/cm) or (µmhos/cm) [1]	1068	69.0	69.3	78.X
Temperature (°C)	21.7	18.0	17.5	16.7
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	15:00	15:12	15:22	15:32
DTW (ft bmp)				

Remarks: _____

Parameter	Container	No.	Preservative
TCL VOCs 8242	40 ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY000496.0410.0002
Site Location: Bethpage, NY | Date: 7-21-10
Well No.: BPOW 3-2 | Replicate No.: N/A | Weather: Sunny 92°F
Sampling Personnel: Gary Williams / Sunny X | Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	647
Depth to Water (ft bmp)	Not accessible
Depth to Packer (ft bmp)	
Water Column in Well (ft)	
Casing Diameter	4" ø 65
Gallons in Well	
Gallons Purged	
Prior to Sampling	280 (per previous log)
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	256 psi
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin _____ End _____

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	5.13	4.94	4.90	4.86
Conductivity (mS/cm) or (µmhos/cm) [1]	69.4	67.4	62.5	60.0
Temperature (°C)	21.0	18.8	17.8	17.8
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	11:26	13:53		
DTW (ft bmp)				

Remarks:

Parameter	Container	No.	Preservative
TCL VOCs SW8260	60ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

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Water Sampling Log

Project: Northrop Grumman | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 7-22-10
Well No.: EPOW 4-1 | Replicate No.: NA | Weather: Sunny, 89°F
Sampling Personnel: Gary Williams / Sunny Xu | Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	652 (stainpipe) 692 (screen)
Depth to Water (ft bmp)	
Depth to Packer (ft bmp)	503 652
Water Column in Well (ft)	149 40
Casing Diameter	4"(0.65) 2"(0.16)
Gallons in Well	96.85 + 6.4 x3
Gallons Purged Prior to Sampling	309
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	252 psi
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 1431 End 1630

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	4.94	4.71	4.72	4.77
Conductivity (mS/cm) or (µmhos/cm) [1]	32.9	58.1	59.2	58.9
Temperature (°C)	19.8	18.1	16.9	15.6
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	1431	1545	16:05	1630
DTW (ft bmp)				

Remarks:

Parameter	Container	No.	Preservative
TCL VOCs SW4.2	40ml VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman ORE-2 | Project No.: NY001496.0410.0002
Site Location: Bethpage, NY | Date: 7-22-10
Well No.: SPOW4-2 | Replicate No.: N/A | Weather: Clear, 89°F
Sampling Personnel: Gary Williams / Sung Xu | Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC.
Sounded Well Depth (ft bmp)	764.
Depth to Water (ft bmp)	Not accessible.
Depth to Packer (ft bmp)	503.
Water Column in Well (ft)	
Casing Diameter	4"(0.65)
Gallons in Well	
Gallons Purged Prior to Sampling	509 (per previous log)
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	21+
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 9210. End 1237

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear.
pH (s.u.)	4.94	4.68.	4.39	4.60
Conductivity (mS/cm) or (µmhos/cm) [1]	54.1	91.0	63.7	57.9
Temperature (°C)	18.0.	14.2.	16.4	15.6.
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	9:10	9:37	11:20	12:37
DTW (ft bmp)				

Remarks: 5th

Parameter	Container	No.	Preservative
TCL VOCs 524.2	40 mL VOA	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, buildings

ID#: 16630

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: [illegible] / Arcadis
Telephone: 631-249-7600
Address: 2 Huntington Road Suite 110
Fax: 631-249-7610
City: Melville State: NY Zip: 11747
E-mail Address:
Project Name/Location (City, State): Northrop Grumman / Bethpage, NY
Project #: NY001496.0410.0002
Sampler's Printed Name: Greg Williams / Xuan Xu
Sampler's Signature: [signature]

Preservative	B						
Filtered (✓)							
# of Containers	3						
Container Information	1						

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other: ____ G. Other: ____ H. Other: ____

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: ____ 10. Other: ____

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other: ____

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TCL VOCs ASP2000							REMARKS
GM-15D2	7-13-10			✓	W	1							
TB071310	↓			✓	W	1							
GM-15D	↓			✓	W	1							

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services
☑ Cooler packed with ice (✓)
Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact
Specify Turnaround Requirements:
Sample Receipt:
Shipping Tracking #:
Condition/Cooler Temp: ____

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Xuan Xu			
Signature:	[signature]			
Firm:	Arcadis			
Date/Time:	1730 7/13/10			

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16629

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Rezell / Arcadis
Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10
Fax: 631-249-7610
City: Melville State: NY Zip: 11747
E-mail Address:
Project Name/Location (City, State): NGC / Bethpage, NY
Project #: NY001496.0010.00002
Sampler's Printed Name: Bryan Dillon / Sammy Xu
Sampler's Signature: [signature]

Preservative	B							
Filtered (✓)								
# of Containers	3							
Container Information	1							

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	TCL VOCs Aspect							REMARKS
TB071510	7-15-10			✓	W	✓							
FB071510	↓			↓	↓	↓							
HN-40S	↓			↓	↓	↓							
HN-40I	↓			↓	↓	↓							
HN-42S	↓			↓	↓	↓							
HN-42I	↓			↓	↓	↓							

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: ______
G. Other: ______
H. Other: ______

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: ______
10. Other: ______

Matrix Key:
SO - Soil SE - Sediment NL - NAPL/Oil
W - Water SL - Sludge SW - Sample Wipe
T - Tissue A - Air Other: ______

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services
Cooler Custody Seal (✓)
☐ Cooler packed with ice (✓)
☐ Intact ☐ Not Intact
Specify Turnaround Requirements:
Sample Receipt:
Shipping Tracking #:
Condition/Cooler Temp: ______

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Printed Name:	Printed Name:	Printed Name:
Signature:	Signature:	Signature:	Signature:
Firm:	Firm/Courier:	Firm/Courier:	Firm:
Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16628

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Reindl / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): NGC / Bethpage, NY	Project #: NY001496.0410.0002
Sampler's Printed Name: Gary / Dilliane / Sunny Xu	Sampler's Signature:

	TCL VOCs 8260	Total Colcd	Dissolved Colcd (Filtered)				
Preservative	B	C	C				
Filtered (✓)			✓				
# of Containers	3	1	1				
Container Information	1	3	3				

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TCL VOCs 8260	Total Colcd	Dissolved Colcd (Filtered)					REMARKS
TB071610	7-16-10			✓	W	1							
GM-79I	↓			↓	↓	1							
GM-79D						3							MS/MSD
DEP071610						1							
GM-78I						1	1	1					
GM-75S						1	1	1					
FB071610						1	1						

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other: G. Other: H. Other:

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: 10. Other:

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other:

Special Instructions/Comments:

☒ Special QA/QC Instructions(✓): Please use GM-79D for QA/QC MS/MSD

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services

☐ Cooler packed with ice (✓)

Specify Turnaround Requirements:

Shipping Tracking #:

Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact

Sample Receipt:

Condition/Cooler Temp: ______

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Printed Name:	Printed Name:	Printed Name:
Signature:	Signature:	Signature:	Signature:
Firm:	Firm/Courier:	Firm/Courier:	Firm:
Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16507

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Reid / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Northrop Grumman Bethpage	Project #: NY001496.0000.00002
Sampler's Printed Name: [illegible]	Sampler's Signature: [illegible]

Preservative	B							
Filtered (✓)								
# of Containers	3							
Container Information	1							

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	TCL VOCs Addendum							REMARKS
TB071910	7-?			✓	W	✓							
FB071910	↓			↓	↓	↓							
GM-34D	↓			↓	↓	↓							
GM-34D?	↓			↓	↓	↓							

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: ______
G. Other: ______
H. Other: ______

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: ______
10. Other: ______

Matrix Key:
SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other: ______

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓)
☐ Cooler packed with ice (✓) ✓	☐ Intact ☐ Not Intact
Specify Turnaround Requirements:	Sample Receipt:
Shipping Tracking #:	Condition/Cooler Temp: ______

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Printed Name:	Printed Name:	Printed Name:
Signature:	Signature:	Signature:	Signature:
Firm:	Firm/Courier:	Firm/Courier:	Firm:
Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name #PNY46.0010.0003/NGC OU-2
Project Location Bethpage NY
Laboratory Columbia Analytical Services
Project Manager Mike Wolfert
Sampler(s)/Affiliation [illegible] / Sammy Yu

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	TCL VOC (OU-2)						Remarks	Total
TB072010	W	7-20-10		3							3
BPOW1-1	↓	↓		3							3
BPOW1-2	↓	↓		3							3
BPOW1-3	↓	↓		3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 12

Relinquished by: [illegible]	Organization: Arcadis	Date 7/20/10	Time 1900	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier [illegible] (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

ARCADIS
Infrastructure, environment, buildings

ID#: 16622

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Reid / Arcadis
Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10
Fax: 631-249-7610
City: Melville State: NY Zip: 11747
E-mail Address:
Project Name/Location (City, State): NRC / Bethpage, NY
Project #:
Sampler's Printed Name:
Sampler's Signature:

Preservative	B
Filtered (✓)	
# of Containers	3
Container Information	1

PARAMETER ANALYSIS & METHOD

TCL VOCs 524.2

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TCL VOCs 524.2							REMARKS
TB072110	7-21-10			✓	W	1							
BPOW3-2	↓			↓	↓	1							
BPOW3-1	↓			↓	↓	1							

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: ____
G. Other: ____
H. Other: ____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: ____
10. Other: ____

Matrix Key:
SO - Soil
W - Water
T - Tissue
SE - Sediment
SL - Sludge
A - Air
NL - NAPL/Oil
SW - Sample Wipe
Other: ____

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services
☑ Cooler packed with ice (✓)
Specify Turnaround Requirements:
Shipping Tracking #:
Cooler Custody Seal (✓)
☐ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: ____

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Printed Name:	Printed Name:	Printed Name:
Signature:	Signature:	Signature:	Signature:
Firm: Arcadis	Firm/Courier:	Firm/Courier:	Firm:
Date/Time: 7/21/10 1730	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#: 16627

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Riedl / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): NGC / Bethpage, NY	Project #: NY001496.0012.00002
Sampler's Printed Name: Gary Williams / Kimmy X.	Sampler's Signature: X

Preservative	B								
Filtered (✓)									
# of Containers	3								
Container Information	1								

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	TCL VOCs 524.2							REMARKS
TB072210	7-22-10			✓	W	1							
BPOW 4-1	↓			↓	↓	1							
BPOW 4-2	↓			↓	↓	1							

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: ______
G. Other: ______
H. Other: ______

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: ______
10. Other: ______

Matrix Key:
SO - Soil; SE - Sediment; NL - NAPL/Oil
W - Water; SL - Sludge; SW - Sample Wipe
T - Tissue; A - Air; Other: ______

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓)	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓) ✓	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: ______	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS

Laboratory Task Order No./P.O. No. ___

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NJ0114.60U1.0002 / NGC

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Mike Belfort

Sampler(s)/Affiliation Greg Williams / Sunny Xu

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	TCL VOCs 40ml VOA w/ HCl	Total Cr 250ml plastic w/ HNO3	Dissolved Cr (Filtered) 250ml plastic w/ HNO3				Remarks	Total
GM-15I	W	7-28-10		3							3
GM-15S	↓	↓		3	1	1					5
FB072810	↓	↓		3	1						4
TB072810	↓	↓		3							3
PLT1-MW05	↓	↓			1						1
PLT1-MW04	↓	↓			1						1
PLT1-MW06	↓	↓			1						1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers ___

Relinquished by: Sunny Xu Organization: Arcadis Date 7/28/10 Time 1700 Seal Intact? Yes No N/A
Received by: ___ Organization: ___ Date __/__/__ Time ___

Relinquished by: ___ Organization: ___ Date __/__/__ Time ___ Seal Intact? Yes No N/A
Received by: ___ Organization: ___ Date __/__/__ Time ___

Special Instructions/Remarks: ___

Delivery Method: ☐ In Person ☐ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other ___ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001496.0410.00002
Project Location BETHPAGE NY
Laboratory COLUMBIA ANALYTICAL SERV
Project Manager MIKE WOLFERT
Sampler(s)/Affiliation G.W.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOC 8260 (HCl)						Remarks	Total
GM-17I	L	7-29-10		3							3
GM-17D	✓	✓		3							3
DBCHG-1	✓	✓		3							3
TB 7-29-10	✓	✓		3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 12

Relinquished by: G.W.	Organization: ARC(ADIS)	Date 7/29/10	Time 6:30	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: REPORT TO MELISSA KERNAL

Delivery Method: ☐ In Person ☐ Common Carrier ______ (SPECIFY) ☐ Lab Courier ☒ Other FED-EX (SPECIFY)

AG 05-12/01

ARCADIS
Infrastructure, environment, buildings

ID#: 16513

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #

Send Results to:

Contact & Company Name: MESSINA ARCADIS ROLNDL	Telephone: 631-249-7600 x?
Address: SUITE 1510 2 HUNTINGTON QUAD	Fax: 631-249-7610
City: MELVILLE State: NY Zip: 11747	E-mail Address: @ARCADIS-US.COM
Project Name/Location (City, State): NORTHROP-GRUMMAN	Project #: NY001496.0410.00002
Sampler's Printed Name: GARY H. WILLIAMS	Sampler's Signature: G.H.W.

Preservative	B
Filtered (✓)	
# of Containers	3
Container Information	1

PARAMETER ANALYSIS & METHOD: 40ml Vial VOC (HCl)

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	40ml Vial VOC (HCl)							REMARKS
GM-18D	7/30/10				W	✓							
GM-39DA	↓				↓	✓							
GM-39DB	↓				↓	✓							
TB 7-30-10	↓				↓	✓							

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: ____
G. Other: ____
H. Other: ____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: ____
10. Other: ____

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil
W - Water, SL - Sludge, SW - Sample Wipe
T - Tissue, A - Air, Other: ____

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:	Cooler Custody Seal (✓)
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact
Specify Turnaround Requirements:	Sample Receipt:
Shipping Tracking #:	Condition/Cooler Temp: ____

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	GARY H. WILLIAMS			
Signature:	G.H.W.			
Firm/Courier:	ARCADIS			
Date/Time:	7-30-10 / 5:00			

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name NYOSHP96.0410.00002

Project Location BETHPAGE NY

Laboratory COLUMBIA ANALYTICAL SERVICES

Project Manager PAULE WOLFERT

Sampler(s)/Affiliation C.D.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ML VOA VOC						Remarks	Total
GM-73D	L	8-3-10		3							3
GM-73D-2	"	"		3							3
TB 8-3-10	"	"		3							3
REP 8-3-10	"	"		3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 12

Relinquished by: [signature]	Organization: ARCADIS	Date 8/3/10	Time 5:30	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No N/A

Special Instructions/Remarks:

REPORT TO MELISSA KENNEDY

Delivery Method: ☐ In Person ☒ Common Carrier FED-EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page _____ of _____

Project Number/Name NY000149604410.00002

Project Location BETHPAGE NY

Laboratory COLUMBIA ANALYTICAL SERV

Project Manager MIKE WOLFERT

Sampler(s)/Affiliation G.W.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml Vials Unpres (3) (HCl)						Remarks	Total
GM-13D	L	8-4-10		3							3
GM-21D	1	1		3							3
TB 8-4-10	1	1		3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 9

Relinquished by: [signature]	Organization: ARCADIS	Date 8/9/10	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A

Special Instructions/Remarks: REPORT TO MDL'S & RL'S

Delivery Method: ☐ In Person ☒ Common Carrier FED-EX SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. [illegible]

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NGC [illegible]

Project Location Bethpage, NY

Laboratory Columbia Analytical Services

Project Manager Mike Wolfert

Sampler(s)/Affiliation [illegible] / Sunny Xu

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TCL VOCs, Aqueous VOA w/ HCl						Remarks	Total
FB080510	L	8-5-10		3							3
TB080510	↓	↓		3							3
GM-21S	↓	↓		3							3
GM-21I	↓	↓		3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers

Relinquished by: Sunny Xu	Organization: Arcadis	Date [illegible]	Time [illegible]	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☐ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. 04-2

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name [illegible] / NGC

Project Location [illegible], NY

Laboratory [illegible]

Project Manager [illegible]

Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TCL VOCs [illegible] HCl						Remarks	Total
FB080610	W	8/16/10		3							3
TB080610	↓	↓		3							3
GM-20I	↓	↓		3							3
EW-03	↓	↓		3							3
MW-24I	↓	↓		~~3~~ 9 [illegible]							~~3~~ 9
								8	6		

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers [illegible]

Relinquished by: [illegible]	Organization: Arcadis	Date 8/16/10	Time 1630	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: * Please use this sample for all MS/MSD / QA/QC Sample

Delivery Method: ☐ In Person ☐ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. [illegible]

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name [illegible]

Project Location [illegible]

Laboratory [illegible] Analytical Services

Project Manager [illegible]

Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TCL VOCs [illegible] HCl	Total Cu/Cd [illegible]	Dissolved Cu/Cd [illegible]				Remarks	Total
TB0809-1010	W	8/9/10		3							3
FB081010		8/10/10		3	1						4
N-10626		8/10/10		3							3
N-10627		8/10/10		3							3
GM-20D		8/9/10		3							3
GM-75D2		8/10/10		3							3
N-10631	↓	8/10/10		3	1	1					5

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 24

Relinquished by: [illegible]	Organization: Arcadis	Date 8/10/10	Time [illegible]	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page _____ of _____

Project Number/Name: NY001496.0010.00002

Project Location: BETHPAGE N.Y.

Laboratory: COLUMBIA ANALYTICAL SERVICES

Project Manager: MIKE WOLFERT

Sampler(s)/Affiliation: G.W. / ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOC CLP (3)						Remarks	Total
GM-18I	L	8-11-10		3							3
GM-33D-2	L	8-11-10		3							3
TR 8-11-10	L	8-11-10		3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 9

Relinquished by: _____ Organization: ARCADIS Date 8/11/10 Time 5:30

Received by: _____ Organization: _____ Date / / Time _____

Seal Intact? Yes No N/A

Relinquished by: _____ Organization: _____ Date / / Time _____

Received by: _____ Organization: _____ Date / / Time _____

Seal Intact? Yes No N/A

Special Instructions/Remarks: REPORT TO MELISSA REDNOL

Delivery Method: ☐ In Person ☒ Common Carrier FED-EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page _____ of _____

Project Number/Name NYDOH96.0110.00002

Project Location BETHPAGE NY

Laboratory COLUMBIA ANALYTICAL SERVICES

Project Manager MIKE WOLFERT

Sampler(s)/Affiliation G.W. / ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml VOC HCl	500 ml PLASTIC TOTAL Cr (6010)	500 ml PLASTIC DISSOLVED Cr (6010)				Remarks	Total
EM-350-7	L	8-12-10		3							3
TB 8-12-10	"	"		3							3
MW-16F	"	"			1	1					2
MW-20F	"	"			1	1					2
TB 8-12-10	"	"			1						1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 11

Relinquished by:		Organization: ARCADIS	Date 8/12/10	Time 5:49	Seal Intact?	
Received by:		Organization:	Date / /	Time	Yes No N/A	
Relinquished by:		Organization:	Date / /	Time	Seal Intact?	
Received by:		Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks: REPORT TO MELISSA PERROW

Delivery Method: ☐ In Person ☑ Common Carrier FED-EX SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. NBC 002

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001496.0410.00002

Project Location Bethpage NY

Laboratory Columbia Analytical Servs

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation D. McCaffery / Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 ml Vials @HCl	NYSDEC 8000 8260 + TICs	GRAB	STD. T.A.T.			Remarks	Total
Well 19	L	8/30/10 1155		3							3
Well 19 MS		1155		3							3
Well 19 MSD		1155		3							3
Well 18		1248		3							3
Well 17		1236		3							3
Well 1		1057		3							3
Well 3		1116		3							3
Rep 083010				3						Rep off Well 18	3
96 Inf.		1212		3							3
96 Eff.		1215		3							3
102 Inf.		1310		3							3
102 Eff.		1315		3							3
Trip Blank				3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 39

Relinquished by: D. McCaffery Received by:	Organization: Arcadis Organization:	Date 8/30/10 Date / /	Time 1430 Time	Seal Intact? Yes No N/A
Relinquished by: Received by:	Organization: Organization:	Date / / Date / /	Time Time	Seal Intact? Yes No N/A

Special Instructions/Remarks: Attn: Mike Perry.

Delivery Method: ☐ In Person ☒ Common Carrier Fed. Ex. (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

ARCADIS

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project Number/Name N4001496.0410.00002

Project Location Bethpage NY.

Laboratory Columbia Analytical Services

Project Manager Mike Wolfert

Sampler(s)/Affiliation G.W. / Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml [illegible] 3x 40ml (HCl)						Remarks	Total
GM-38D	L	9-21-10 11:48		3							3
GM-38D-2	↓	[illegible] 11:30		3							3
TRG-21-10	↓	↓		3							3

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 9

Relinquished by: [illegible signature]	Organization: Arcadis	Date 9/21/10	Time 5:00	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Report to Melissa [illegible]

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NGC | Project No. NY001496.0110.00002

Site Location Bethpage, NY | Date 12/16/10

Well No. BPOW 1-1 | Replicate No. _____ | Weather _____

Sampling Personnel DT + XX | Sampling Time: Begin 0935 | End 0959

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	241
Depth to Water (ft bmp)	29.38
Depth to Packer (ft bmp)	169
Water Column in Well (ft)	72
Casing Diameter	4" (0.65)
Gallons in Well	46.8
Gallons Purged	x3
Prior to Sampling	140
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	120
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time Begin	End

Field Parameters

		1	1V	2V	3V
Color		Colorless	Colorless	Colorless	Colorless
Odor		none	none	none	none
Appearance		clear	clear	clear	clear
pH (s.u.)		5.62	5.31	5.28	5.16
Conductivity (mS/cm) or (µmhos/cm) [1]		143.5	133.5	134.9	133.7
Temperature (°C)		12.0	11.3	11.2	11.1
DO (mg/L)					
ORP (mV)					
Turbidity (NTU)					clear
Time					
DTW (ft bmp)		29.77	29.85	29.80	29.95

Remarks:

Parameter	Container	No.	Preservative
VOC USEPA 524.2	40ml VIAL	3	HCl

PID Reading

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NLC OU2 Quarterly Sampling Project No. NY001496.0410.00002
Site Location Bethpage, NY Date 12.16.10
Well No. BPOW 1-2 Replicate No. _____ Weather 28°F, Clear

Sampling Personnel XX + DT Sampling Time: Begin 1130 End _____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	335
Depth to Water (ft bmp)	298
Depth to Packer (ft bmp)	294
Water Column in Well (ft)	41
Casing Diameter	4" (0.65)
Gallons in Well	26.65
Gallons Purged	x 3
Prior to Sampling	80
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	147
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	SV
Purge Time	Begin 1100 End _____

Field Parameters

	I	1V	2V	3V
Color	Colorless	Brown/ Cloudy	colorless	colorless
Odor	none	none	none	none
Appearance	Clear	cloudy	clear	clear
pH (s.u.)	4.26	4.68	4.58	4.54
Conductivity (mS/cm) or (µmhos/cm)	25.2	120.4	111.8	105.9
Temperature (°C)	11.5	10.8	10.5	10.3
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				clear
Time	1104	1107	1110	
DTW (ft bmp)	32.00	31.98	31.98	

Remarks: _____

Parameter	Container	No.	Preservative
VOC, USEPA 524.2	40 mL VOA	3	HCl

PID Reading _____

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) **Circle one unit type**

ARCADIS
Infrastructure, environment, facilities

~~Low Flow~~ Groundwater Sampling Log

Project: NGC OU-2 split sampling with Navy
Project Number: NY001496.0410.00002 | Site Location: Bethpage, NY | Well ID: BPOW #-3
Date: 12-8-10 | Sampled By:
Sampling Time: 1425 | Recorded By: Sunny Xu
Weather: Clear 34°F | Coded Replicate No.: NA

Instrument Identification
Water Quality Meter(s): | Serial #:

Casing Material: | Purge Method: dedicated submersible
Casing Diameter: 2" | Screen Interval (ft bmp) Top: | Bottom:
Sounded Depth (ft bmp): 412 | Pump Intake Depth (ft bmp): 395'
Depth to Water (ft bmp): 29.99' | Purge Time Start: | Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (~~mL/min~~) gpm	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (~~umhos or~~ mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)	Salinity %
1305		2.75	1	11.11	4.14	0.083	303	5.61	1.6	30.20	0.0
1325		↓	45	10.89	4.11	0.095	316	4.77	0	30.22	0.0
1345			90	10.85	4.11	0.096	309	4.55	0	30.23	0.0
1405			135	10.83	4.12	0.096	304	4.48	0	30.23	0.0
1425		↓	180	10.81	4.11	0.096	305	4.52	0	30.23	0.0

Collected Sample Condition | Color: Colorless | Odor: none | Appearance: clear

Parameter	Container	No.	Preservative
VOCs SW8260	40 ml VOA	3	HCl

PID Reading:

Comments: 1 volume = 62.3 gal

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

~~Low Flow~~ Groundwater Sampling Log

Project: NFSC OU-2 split sampling with Navy
Project Number: NY001496.0410.00002 | Site Location: Bethpage, NY | Well ID: BPOW2-1
Date: 12-8-10 | Sampled By: Sunny Xu
Sampling Time: 10:00 | Recorded By:
Weather: clear, 32°F | Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): | Serial #:

Casing Material: | Purge Method: dedicated submersible pump.
Casing Diameter: 2" | Screen Interval (ft bmp) Top: | Bottom:
Sounded Depth (ft bmp): | Pump Intake Depth (ft bmp): 390'
Depth to Water (ft bmp): | Purge Time Start: | Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate ~~(mL/min)~~ gpm	Volume Purged gal	Temp (°C)	pH (s.u.)	Conductivity ~~(umhos or~~ mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)	Salinity %
0841		2.5	1	10.67	4.87	0.121	260	5.39	31.8	20.85	0.0
0900		↓	50	10.49	4.37	0.062	240	4.83	3.5	20.90	0.0
0920			100	10.45	4.32	0.058	251	4.87	0	20.91	0.0
0940			150	10.89	4.28	0.059	265	4.81	0	20.90	0.0
1000			200	11.18	4.25	0.059	263	4.86	0		0.0

Collected Sample Condition | Color: colorless | Odor: none | Appearance: clear

Parameter	Container	No.	Preservative
VOCs 524.2	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

~~Low Flow~~ Groundwater Sampling Log

Project: NGC OU-2 Spht sampling with Navy
Project Number: NY001496.0410.00002
Site Location: Bethpage, NY
Well ID: BPOW 2-2
Date: 12-8-10
Sampled By: Sunny Xu
Sampling Time: 12:30 pm
Recorded By:
Weather: clear 34°F
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s):
Serial #:

Casing Material:
Purge Method: dedicated submersible
Casing Diameter: 4"
Screen Interval (ft bmp) Top: Bottom:
Sounded Depth (ft bmp): 495'
Pump Intake Depth (ft bmp): 421'
Depth to Water (ft bmp): 20.66'
Purge Time Start: Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate ~~(mL/min)~~ gpm	Volume Purged gal	Temp (°C)	pH (s.u.)	Conductivity ~~(umhos or~~ mS/cm)[1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1106		3.0	2.0	12.05	4.31	0.146	254	5.80	8.2	~~27.15~~ S.X.
1120			60	11.38	4.20	0.109	270	6.21	6.0	27.15
1140			125	11.31	4.19	0.107	271	5.73	0	27.17
1200			190	11.29	4.17	0.106	273	5.13	0	27.17
1220			260	11.22	4.16	0.106	271	4.88	0	27.18
1230		↓	295	11.20	4.15	0.106	268	4.59	0	27.14

Collected Sample Condition
Color: Colorless
Odor: none
Appearance: clear

Parameter	Container	No.	Preservative
VOCs 524.2	40 mL VOA	3	HCl

PID Reading:

Comments: 1 Volume = 309 gal

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 Project No.: NY001496.0470.00002

Site Location: Bethpage, NY Date: 12/21/10

Well No.: BP[illegible] 3-1 Replicate No.: NA Weather: Windy, Mostly cloudy

Sampling Personnel: Present Sampling Time: Begin 1145 End

Purge Data		Field Parameters				
Measuring Point (describe)	TOC	Color	colorless	colorless	colorless	Colorless
Sounded Well Depth (ft bmp)	516	Odor	Moderate	None	None	None
Depth to Water (ft bmp)	>4.84	Appearance	clear	clear	clear	clear
Depth to Packer (ft bmp)	414					
Water Column in Well (ft)	102		I	1V	2V	3V
Casing Diameter	4" (0.65)	pH (s.u.)	5.11	5.38	5.40	5.41
Gallons in Well	66.3	Conductivity				
Gallons Purged	x3	(mS/cm) or				
Prior to Sampling	199	(µmhos/cm) [1]	151.2	132.1	117.1	113.2
Pump Intake						
Setting (ft bmp)		Temperature (°C)	12.2	12.2	12.0	12.2
Packer Pressure (psi)						
Pumping Rate (gpm)		DO (mg/L)				
Evacuation Method		ORP (mV)				
Sampling Method		Turbidity (NTU)				>20
Purge Time Begin 1113 End 1142		Time	11:13 AM	11:26 AM	11:35 AM	11:42
		DTW (ft bmp)				

Remarks: (414.4 - 26.04) x 0.43 + 50 = 220 psig rounded up

#Note: Before purging, have to fix leaking N2 airhose at well head

Parameter	Container	No.	Preservative
See COC			

PID Reading: too cold

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU2 Project No.: NY001496.0410.000 2

Site Location: Bethpage, NY Date: 12/21/10

Well No.: BPOW 2-2 Replicate No.: Weather: clear 34°F

Sampling Personnel: Pat Piwinski / Sunny Xu Sampling Time: Begin: End:

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	647
Depth to Water (ft bmp)	27.4
Depth to Packer (ft bmp)	503
Water Column in Well (ft)	144
Casing Diameter	4" (0.65)
Gallons in Well	93.60 x3
Gallons Purged Prior to Sampling	280
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	255 | 255
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time Begin / End	

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	None	Yes	Yes	Yes
Appearance	clear	clear	clear	clear
pH (s.u.)	6.06	6.11	6.42	5.74
Conductivity (mS/cm) or (µmhos/cm) [1]	69.6	88.9	82.0	66.8
Temperature (°C)	13.1	11.7	11.6	11.9
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	1530	1541		
DTW (ft bmp)				

Remarks: (503 − 27.40) × 0.43 + 50 = 255

Parameter	Container	No.	Preservative
VOCs SW.2	40ml Vial	3	HCl

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman gw-2 | Project No.: NY001496.0410.0002
Site Location: Bethpage, NY | Date: 12/20/10
Well No.: BPOW4-1 | Replicate No.: | Weather: clear 32°
Sampling Personnel: Gary Williams / Surv | Sampling Time: Begin 1610 End

Purge Data

Measuring Point (describe)	TOC	
Sounded Well Depth (ft bmp)	652	692
Depth to Water (ft bmp)	25.16	
Depth to Packer (ft bmp)	503	652
Water Column in Well (ft)	149	40
Casing Diameter	4"(0.65)	2"(0.16)
Gallons in Well	96.85 + 6.4	
	x3	
Gallons Purged Prior to Sampling	309	
Pump Intake Setting (ft bmp)		
Packer Pressure (psi)	255 PSI	
Pumping Rate (gpm)		
Evacuation Method		
Sampling Method		
Purge Time	Begin 1400	End 1610

Field Parameters

	I	1V	2V	3V
Color	Colorless	colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	4.14	4.24	4.51	4.48
Conductivity (mS/cm) or (µmhos/cm) 1)	60.9	93.8	65.3	59.8
Temperature (°C)	12.8	12.8	12.5	12.1
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	1400	1515	1533	
DTW (ft bmp)				

Remarks:

Parameter	Container	No.	Preservative
VOCs 524.2	40ml VOA	3	HCl

PID Reading:

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 12-20-10
Well No.: BPOW 4-2 | Replicate No.: MS/MSD REP 122110 | Weather: Clear 33°F
Sampling Personnel: Gary Williams / Sunny Xu | Sampling Time: Begin _____ End _____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	764
Depth to Water (ft bmp)	24.61
Depth to Packer (ft bmp)	503
Water Column in Well (ft)	261
Casing Diameter	4" (0.65)
Gallons in Well	169.65 x3
Gallons Purged Prior to Sampling	509
Pump Intake Setting (ft bmp)	
Packer Pressure (psi)	257
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 1107 End

Field Parameters

	I	1V	2V	3V
Color	colorless	colorless	colorless	colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	4.99	4.26	4.05	4.28
Conductivity (mS/cm) or (µmhos/cm) [1]	276	120.5	71.9	61.1
Temperature (°C)	11.7	12.8	13.5	12.3
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time	1107	1132	1244	1400
DTW (ft bmp)	24.61			

Remarks:

Parameter	Container	No.	Preservative
VOC, 524.2	40ml vial	3	HCl

PID Reading: _____

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 Project No. NY001496.0X19 OU2

Site Location: Bethpage, NY Date: 12-Dec-13

Well No.: GM-20 I Replicate No.: — Weather: clear 25°F

Sampling Personnel: David Tracy / Sunny Xu Sampling Time: Begin 1320 End

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	105.
Depth to Water (ft bmp)	36.72
Depth to Packer (ft bmp)	94
Water Column in Well (ft)	11
Casing Diameter	4" (0.65)
Gallons in Well	7.15
Gallons Purged	x 3
Prior to Sampling	21.45
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	80. psi
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 1154 End 1310

Field Parameters

	1	1V	2V	3V
Color	Colorless	Colorless	Colorless	colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	9.67	10.45	10.26	10.09
Conductivity (mS/cm) or (µmhos/cm) [1]	~~102~~ 186.5	177.8	169.2	153.5
Temperature (°C)	14.7	15.5	15.2	15.1
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				clear
Time				
DTW (ft bmp)	36.72	36.72		

Remarks: 1 X X X 1 1145

Parameter	Container	No.	Preservative

PID Reading

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001496.0410.00002
Site Location: Bethpage, NY | Date: 12-14-10
Well No.: GM-20D | Replicate No.: — | Weather: clear, 25°F
Sampling Personnel: David Tracy / Sunny Xu | Sampling Time: Begin 1515 End

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	226
Depth to Water (ft bmp)	
Depth to Packer (ft bmp)	215
Water Column in Well (ft)	11
Casing Diameter	4" (0.65)
Gallons in Well	7.15
Gallons Purged	x3
Prior to Sampling	21.45
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	130
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 1330 End 1515

Field Parameters

	1	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
pH (s.u.)	9.39	7.09	6.86	6.54
Conductivity (mS/cm) or (µmhos/cm) [1]	122.3	110.7	112.2	110.9
Temperature (°C)	14.4	13.2	12.9	13.1
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				clear
Time	1330	1400	1442	1515
DTW (ft bmp)				

Remarks: 1 1 1 / 1.45

Parameter	Container	No.	Preservative
TCL VOCs 1ASP2000	40ml VOA	3	HCl

PID Reading

Well Casing Volumes

Gal./Ft.				
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project NGC OU-2 Project No. NY001496.0410.0002

Site Location Bethpage, NY Date 12-14-10

Well No. GM-21I Replicate No. NA Weather clear, 25°F

Sampling Personnel David Tracy / Sunny Xu Sampling Time: Begin 0925 End

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	140
Depth to Water (ft bmp)	38.15
Depth to Packer (ft bmp)	129
Water Column in Well (ft)	4' (0.65)
Casing Diameter	7.15
Gallons in Well	21.45 x 3
Gallons Purged	
Prior to Sampling	
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	90 PSI
Pumping Rate (gpm)	
Evacuation Method	
Sampling Method	
Purge Time	Begin 0925 End

Field Parameters

		I	1V	2V	3V
Color		Colorless	Colorless	Colorless	Colorless
Odor		none	none	none	none
Appearance		clear	clear	clear	clear
pH (s.u.)		7.05	9.56	9.82	9.20
Conductivity	(mS/cm) or				
	(µmhos/cm) [1]	77.0	78.4	77.6	101.9
Temperature (°C)		14.8	13.4	13.2	13.7
DO (mg/L)					
ORP (mV)					
Turbidity (NTU)					
Time		0927			
DTW (ft bmp)		~~40.15~~ S.X.	40.15		

Remarks: XXXX 1.45

Parameter	Container	No.	Preservative

PID Reading

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0610.00002
Site Location: Bethpage, NY
Well ID: GM-21D
Date: 12-13-10
Sampled By: David Tracy / Sunny Xu
Sampling Time: 1425
Recorded By: Sunny Xu
Weather: Cloudy 40°F
Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): see calibration sheet
Serial #:

Casing Material:
Purge Method: Dedicated bladder pump
Casing Diameter: 4".
Screen Interval (ft bmp): Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 41.71
Purge Time: Start 1320 Finish 1920

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1320	0			13.8	5.06	68.4	276	5.24		41.71
1325	5			12.9	5.10	69.0	285	5.26		
1330	10			13.7	4.99	69.8	297	5.60		41.83
1335	15			13.7	4.99	70.1	300	5.65		
1340	20			13.7	4.98	70.3	301	5.74		41.83
1345	25			13.8	4.98	71.2	302	5.74		
1350	30			13.8	4.98	71.2	304	5.73		41.83
1355	35			13.8	4.96	71.4	306	5.75		
1400	40			13.4	4.97	71.2	309	5.74		41.83
1405	45			13.6	4.98	71.9	310	5.70		
1410	50			13.5	4.97	71.8	311	5.74		41.83
1415	55			13.4	4.95	72.0	312	5.75		
1420	60			13.4	4.96	72.3	313	5.76		41.83

Collected Sample Condition
Color: Colorless
Odor: none
Appearance: clear

Parameter	Container	No.	Preservative
VOCs 8260B	40-ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NYOU1498.0013.0002 Site Location: Bethpage, NY Well ID: GTW-33D2
Date: 12/15/10 Sampled By: David Tracy / Sunny Xu
Sampling Time: 1625 Recorded By: Sunny X.
Weather: clear 25°F Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): Serial #:

Casing Material: PVC Purge Method: decicated bladder pump
Casing Diameter: 4" Screen Interval (ft bmp) Top: Bottom:
Sounded Depth (ft bmp): Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 46.18 Purge Time Start: 1325 Finish: 1625

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1325	0			11.1	6.69	70.7	264	6.78		46.18
1330	5			10.5	7.41	72.9	240	5.20		
1335	10			10.4	7.42	72.6	239	5.22		
1340	15			10.4	7.45	72.2	233	5.24		46.18
1345	20			10.7	7.44	71.9	230	5.30		
1350	25			10.7	7.44	71.7	228	5.38		46.18
1355	30			10.6	7.54	73.2	224	5.44		
1400	35			10.6	7.53	73.9	221	5.44		46.21
1405	40			10.3	7.61	74.9	218	5.42		
1410	45			10.5	7.49	75.3	215	5.78		46.20
1415	50			10.4	7.00	74.0	217	6.27		
1420	55			10.4	6.58	73.5	222	6.44		46.20
1425	60			10.2	6.53	73.5	225	6.50		
1430	65			10.2	6.47	73.2	228	6.53		46.20

Collected Sample Condition Color: Colorless Odor: none Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs BSP 2ms	40ml VOA	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: N00164.96.0042W2 Site Location: Bethpage, NY Well ID: GM-34D
Date: 12/16/10 Sampled By: David Tracy / Sunny Xu
Sampling Time: 1300 Recorded By: Sunny Xu
Weather: clear 34°F Coded Replicate No.:

Instrument Identification
Water Quality Meter(s): Serial #:

Casing Material: Purge Method: dedicated bladder
Casing Diameter: 2" Screen Interval (ft bmp) Top: 309 Bottom: 319
Sounded Depth (ft bmp): 319 Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 12.71 Purge Time Start: 1210 Finish:

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1210	0	450		8.1	5.90	130.7	229	3.68		
1215	5	↓		11.9	7.34	183.8	194	1.23		
1220	10			12.8	8.18	184.9	174	0.91		13.04
1225	15			12.9	8.26	185.5	171	0.89		
1230	20			12.6	8.85	198.1	92	0.82		13.09
1235	25			12.7	9.85	177	89	0.82		
1240	30			12.8	9.41	179	90	0.84		13.00
1245	35			12.8	8.26	182	102	0.79		
1250	40			12.8	7.82	182	106	0.76		1300
1255	45			12.7	7.28	183	104	0.77		
1300	50			12.7	7.14	184	103	0.78		1300
1305	55			12.7	6.97	182	102	0.76		
1310	60			12.4	6.91	182	100	0.78		

Collected Sample Condition Color: Odor: Appearance:

Parameter	Container	No.	Preservative
TCL VOCs ASP200	40ml vial	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0410.0002 Site Location: Bethpage, NY Well ID: GM-34D2
Date: 12/16/10 Sampled By: David Tracy / Sunny Y
Sampling Time: ____ Recorded By: ____
Weather: cloudy 34°F Coded Replicate No.: ____

Instrument Identification
Water Quality Meter(s): ____ Serial #: ____

Casing Material: ____ Purge Method: ____
Casing Diameter: 4" Screen Interval (ft bmp) Top: ____ Bottom: ____
Sounded Depth (ft bmp): ____ Pump Intake Depth (ft bmp): ____
Depth to Water (ft bmp): 14.50 Purge Time Start: 1315 Finish: ____

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1315	0	200		9.1	7.15	156	67	3.02		
1320	5	↓		11.1	7.25	106	66	0.88		
1325	10			11.4	7.35	96	68	0.77		
1330	15			12.1	7.49	94	71	0.41		
1335	20			12.1	7.57	92	70	0.45		14.53
1340	25			11.8	7.65	93	72	0.43		
1345	30			11.6	7.68	94	75	0.62		
1350	35			11.5	7.69	96	77	0.88		14.50
1355	40			11.5	7.59	101	80	1.28		
1400	45	↓		11.3	7.49	104	80	1.59		14.53

Collected Sample Condition Color: Colorless Odor: none Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs 1SP2000	40ml vial	3	HCl

PID Reading: ____

Comments: ____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Water Sampling Log

Project: Northrop Grumman OU-2 | Project No.: NY001496.0410.00002

Site Location: Bethpage, NY | Date: 12-14-10

Well No.: GM-35D2 | Replicate No.: MS/MSD | Weather: clear 25°F

Split with H2M

Sampling Personnel: David Tracy / Sunny Xu | Sampling Time: Begin 11:00 | End ____

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	503
Depth to Water (ft bmp)	37.93
Depth to Packer (ft bmp)	480
Water Column in Well (ft)	23
Casing Diameter	4" (0.65)
Gallons in Well	14.95
Gallons Purged	x 3
Prior to Sampling	45.
Pump Intake	
Setting (ft bmp)	
Packer Pressure (psi)	250 psi.
Pumping Rate (gpm)	
Evacuation Method	dedicated bladder w/ packer.
Sampling Method	~~3wv~~
Purge Time	Begin ~~0836~~ 0836 End 11:00

Field Parameters

	I	1V	2V	3V
Color	Colorless	Colorless	Colorless	Colorless
Odor	none	none	none	none
Appearance	clear	clear	clear	clear
	I	1V	2V	3V
pH (s.u.)	8.03	6.24	6.52	6.13
Conductivity (mS/cm) or (µmhos/cm) [1]	37.5	82.3	80.9	82.3
Temperature (°C)	11.8	13.4	12.8	12.9
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				Clear.
Time	0836	0915.	10:05	11:00
DTW (ft bmp)	37.92	37.96	37.96	37.96.

Remarks: ~~X X XX X X X X X~~

split with H2M.

Parameter	Container	No.	Preservative
TCL VOCs ASP200	40ml Vial	3	HCl

PID Reading

Well Casing Volumes

Gal./Ft.				
	$1^{1/4}$" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	$1^{1/2}$" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop Grumman OU-2
Project Number: NY001496.0410.0002 Site Location: Bethpage, NY Well ID: GM-75D2
Date: 12/15/10 Sampled By: David Tracy / Sunny Xu
Sampling Time: 1250 Recorded By: Sunny Xu
Weather: clear 25°F Coded Replicate No.: ____

Instrument Identification
Water Quality Meter(s): ____ Serial #: ____

Casing Material: PVC Purge Method: dedicated bladder pump / low-flow
Casing Diameter: 4" Screen Interval (ft bmp) Top: ____ Bottom: ____
Sounded Depth (ft bmp): ____ Pump Intake Depth (ft bmp): ____ ____
Depth to Water (ft bmp): 33.31 Purge Time Start: 1140 Finish: 1250

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) [1]	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
1150	0	450		6.9	6.30	77.8	256	8.99		33.31
1155	5			8.2	5.96	80.1	273	7.21		
1200	10			10.0	5.78	84.8	279	5.61		33.31
1205	15			10.0	5.67	85.4	280	4.48		
1210	20			10.4	5.61	85.5	282	3.61		33.30
1215	25			10.5	5.60	85.5	288	3.29		
1220	30			10.5	5.60	85.5	289	3.18		33.28
1225	35			10.8	5.59	85.7	291	3.04		
1230	40			10.8	5.59	86.0	292	3.00		33.28
1235	45			10.4	5.58	86.3	294	2.98		
1240	50			10.4	5.58	86.5	295	2.93		33.28
1245	55			10.5	5.58	86.9	297	2.85		
1250	60	↓		10.9	5.58	86.9	297	2.80	clear	33.28

Collected Sample Condition Color: Colorless Odor: none Appearance: clear

Parameter	Container	No.	Preservative
TCL VOCs ASP 2000	40 ml VOA	3	HCl

PID Reading: ____

Comments: ____

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: NOC OU-2
Project Number: NY001496.0416.00002 Site Location: Bethpage, NY Well ID: GW-79I
Date: 12.13.10 Sampled By: D. Tran, Sunny Xu
Sampling Time: 1250 Recorded By: D. Tran, Sunny Xu
Weather: Cloudy, 42°F Coded Replicate No. —

Instrument Identification
Water Quality Meter(s): Serial #:

Casing Material: Purge Method: Dedicated bladder
Casing Diameter: 4" Screen Interval (ft bmp) Top: Bottom:
Sounded Depth (ft bmp): Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 38.23 Purge Time Start: 11:45 Finish: 1245

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos of ~~mS/cm~~ 1))	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
11:45		400		14.0	5.59	72.0	278	6.99	—	38.24
11:50	5			14.0	5.49	72.0	275	6.97	—	—
11:55	10			13.9	5.57	72.0	274	6.93	—	38.24
1200	15			13.8	5.60	72.0	273	6.93	—	—
1205	20			13.7	5.60	72.4	272	6.98	—	38.24
1210	25			13.7	5.61	72.4	272	6.97		
1215	30			13.7	5.63	72.4	271	6.97		38.24
1220	35			13.7	5.64	72.4	270	6.97		
1225	40			13.7	5.64	72.7	270	7.00		38.24
1230	45			13.7	5.64	72.4	270	7.00		
1235	50			13.7	5.64	72.7	269	7.00		38.24
1240	55			13.7	5.63	72.7	269	7.03		
1245	60			13.7	5.63	72.9	269	7.03		38.24

Collected Sample Condition Color: Colorless Odor: none Appearance: clear

Parameter	Container	No.	Preservative
VOC ASP 2000	40ml Vial	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project: Northrop - Grumman OU-2
Project Number: NY001496.0440.00002
Site Location: Bethpage, NY
Well ID: GM-79D
Date: 12-13-10.
Sampled By: David Tracy / Sunny Xu
Sampling Time: 1140
Recorded By: Sunny Xu
Weather: Cloudy 40°F
Coded Replicate No.: REP 12 13 10.

Instrument Identification
Water Quality Meter(s): See calibration log
Serial #:

Casing Material:
Purge Method: Dedicated bladder.
Casing Diameter: 4"
Screen Interval (ft bmp) Top: Bottom:
Sounded Depth (ft bmp):
Pump Intake Depth (ft bmp):
Depth to Water (ft bmp): 39.75.
Purge Time Start: 10:35 Finish: 11:35.

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (µmhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)
10:35		400		11.5	5.94	77.9	203	5.43		
10:40				11.7	5.73	72.4	260.	4.72		39.80
10:45				11.8	5.69	71.6	260	4.89		
10:50				12.0	5.64	70.1	262	4.94		39.80
10:55				12.2	5.53	69.7	264	5.30		
11:00				12.3	5.51	69.8	267	5.21		39.80
11:05				12.4	5.49	70.0	270.	5.26		
11:10				12.4	5.47	70.3	273	5.28		39.80
11:15				12.5	5.47	70.5	275	5.26		
11:20				12.6	5.47	70.6	276	5.31		39.80
11:25				12.7	5.46	70.5	279	5.24		
11:30				12.7	5.46	70.8	280	5.25		39.80
11:35				12.18	5.46	70.8	282	5.34		

Collected Sample Condition
Color: Colorless Odor: none Appearance: clear.

Parameter	Container	No.	Preservative
VOCs ASP 2000	40 ml vial	3	HCl

PID Reading:

Comments:

1) Circle one unit type

ARCADIS
Infrastructure, environment, buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Reindl / Arcadis	Telephone: 631-249-7610
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): NGC / Bethpage NY	Project #: NY001496.0415.00002
Sampler's Printed Name: Sunny Yun	Sampler's Signature:

Preservative	B						
Filtered (Y)							
# of Containers	3						
Container Information	1						

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil
W - Water, SL - Sludge, SW - Sample Wipe
T - Tissue, A - Air, Other: _____

Sample ID	Collection Date	Collection Time	Type (Y) Comp	Type (Y) Grab	Matrix	VOCs 8260	1,4-D	REMARKS
BPOW 2-1	12-8-14	1000		Y	W	1		
BPOW 2-2	"	1230		Y	W	1		
~~BPOW 3-1~~	"	1475		Y	W	1		BPOW 1-3 (sx.)
TB120810	"	0900		Y	W			

Special Instructions/Comments:

☐ Special QA/QC Instructions(Y):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (Y)	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☑ Cooler packed with ice (Y)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp:	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS

Laboratory Task Order No./P.O. No. NY-002 6WTS

CHAIN-OF-CUSTODY RECORD

Project Number/Name: NY001496.0410.00002

Project Location: BETHPAGE, NY

Laboratory: COLUMBIA ANALYTICAL

Project Manager: CARLO SANGIOVANNI

Sampler(s)/Affiliation: D. MCCAFFERTY/ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	6 LITER SUMMA'S	TO-15 MOD. + 20 TICS	6 LMB	STD. TAT.	ANALYSIS / METHOD / SIZE: GAUGE #	ANALYSIS / METHOD / SIZE: CAN #	Remarks	Total
TOWER 102 INF.	A	12/13/10 1227						AVG 01201	SEC 00137	INITVAC-29.00 END-5.0	1
TOWER 102 EFF.		1236						AVG 01195	SEC 00032	INITVAC-29.00 END-5.0	1
TOWER 96 INF.		1347						AVG 01082	SEC 00154	INITVAC-29.00 END-5.0	1
TOWER 96 EFF.		1336						AVG 01197	SEC 00142	INITVAC-29.00 END-5.0	1
OXIKMNOH EFF.		1327						AVG 01083	SEC 00039	INITVAC-29.00 END-5.0	1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 5

					Seal Intact?
Relinquished by: D. McCafferty	Organization: ARCADIS	Date 12/13/10	Time 1720		
Received by:	Organization:	Date / /	Time		Yes No N/A
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by:	Organization:	Date / /	Time		Yes No N/A

Special Instructions/Remarks: ATTN. MIKE PERRY

Delivery Method: ☐ In Person ☒ Common Carrier FED. EX. (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

ARCADIS NGC 002

Laboratory Task Order No./P.O. No. GWTS 002

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name: NY001496.0910.00002

Project Location: BETHPAGE NY

Laboratory: COLUMBIA ANALYTICAL

Project Manager: CARLO SANGIOVANNI

Sampler(s)/Affiliation: D. MCGUFFEN

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 mL VOAs	HCL	ASP2000 OLM4.3+10 TICs	6XAB	STD. TAT.		Remarks	Total
TOWER 102 INF.	L	12/13/10 1145		3	Y	Y	Y				
TOWER 102 EFF.		1149		3	Y	Y	X				
TOWER 102 EFF/MS		1149		3	Y	Y	X				
TOWER 102 EFF/MSD		1149		3	Y	Y	X				
WELL 19		1502		3	Y	Y	X				
WELL 18		1526		3	Y	Y	X			ALSO RETURNING	
WELL 17		1550		3	Y	Y	X			3 UNUSED VOA'S.	
WELL 3		1344		3	Y	Y	X				
REP121310				3	Y	Y	X			REP OFF WELL 19	
TRIP BLANK				3	Y	Y					
TOWER 96 INF.		1300		3	Y	Y	X				
TOWER 96 EFF.		1304		3	Y	Y	Y				

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 36

Relinquished by: [signature]	Organization: ARCADIS	Date 12/13/10	Time 1700	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: ATTN: MIKE PERRY

Delivery Method: ☐ In Person ☒ Common Carrier FED. EX. (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

ARCADIS
Infrastructure, environment, buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name:	Telephone:
Melissa Reinoll / Arcadis	631-249-7600
Address:	**Fax:**
2 Huntington Quad Suite 100	631-249-7610
City / State / Zip:	**E-mail Address:**
Melville NY 11747	
Project Name/Location (City, State):	**Project #:**
NGC / Bethpage, NY	NY000496.0010.00002
Sampler's Printed Name:	**Sampler's Signature:**
Sunny Xu / Dave & Tracy	

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (Y)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD: VOCs ASP 2003	REMARKS
GM-79D	12/13/10	1140		✓	W	B		3	1	1	
GM-79I	12/13/10	1250		✓	W					1	
GM-21D	12/13/10	1425		✓	W					1	
TB121310	12/13/10	1000		✓	W					1	
~~FB~~				~~✓~~	~~W~~						
REP121310	12/13/10			✓	W					1	

Keys

Preservation Key: A - H_2SO_4; B - HCl; C - HNO_3; D - NaOH; E - None; F - Other: ____; G - Other: ____; H - Other: ____

Container Information Key: 1 - 40 ml Vial; 2 - 1 L Amber; 3 - 250 ml Plastic; 4 - 500 ml Plastic; 5 - Encore; 6 - 2 oz. Glass; 7 - 4 oz. Glass; 8 - 8 oz. Glass; 9 - Other: ____; 10 - Other: ____

Matrix Key: SO - Soil; SE - Sediment; NL - NAPL/Oil; W - Water; SL - Sludge; SW - Sample Wipe; T - Tissue; A - Air; Other: ____

Special Instructions/Comments:

☐ **Special QA/QC Instructions(✓):**

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓): ☐ Intact ☐ Not Intact	Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)		Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: Arcadis	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: ____	Date/Time: 12/13/10 1730	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Deinell / Arcadis
Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10
Fax: 631-249-7610
City: Melville State: NY Zip: 11747
E-mail Address:
Project Name/Location (City, State): NGC / Bethpage, NY
Project #: NY001496.0410.00002
Sampler's Printed Name: Sunny Xu / David Tracy
Sampler's Signature: [signature]

	Preservative	B						
	Filtered (✓)							
	# of Containers	3						
	Container Information	1						

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	TCL VOCs 8260							REMARKS
TB 121410	12/14/10	0730		✓	W	1							
GM-21 I	12/14/10	1020		✓	W	1							
GM-20 I	12/14/10	1320		✓	W	1							
GM-20 D	12/14/10	1515		✓	W	1							

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other: ____ G. Other: ____ H. Other: ____

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: ____ 10. Other: ____

Matrix Key: SO - Soil, SE - Sediment, NL - NAPL/Oil, W - Water, SL - Sludge, SW - Sample Wipe, T - Tissue, A - Air, Other: ____

Special Instructions/Comments: Results to Melissa Deinell.

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓)	Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
☒ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature: [signature]	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: Arcadis	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: ____	Date/Time: 12/14/10 1730	Date/Time:	Date/Time:	Date/Time:

ARCADIS
Infrastructure, environment, buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results To:

Contact & Company Name:	Telephone:
Melissa Reinell / Arcadis	631-249-7607
Address:	**Fax:**
2 Huntington Quad Suite 3	631-249-7610
City / State / Zip	**E-mail Address:**
Melville NY 11747	
Project Name/Location (City, State):	**Project #:**
NFRC / Bethpage, NY	NY002149B.0010.00002
Sampler's Printed Name:	**Sampler's Signature:**
Sunny Xu / Brad Tracy	

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD: TCL VOCs ASP 2000	REMARKS
TB121510	12/15/10	0845		✓	W	B		3	1	1	
GM-35D2 *	12/15/10	1100		✓	W	B		3	1	3	MS/MSD
GM-75D2	12/11/10	1110		✓	W	B		3	1	[redacted]	
GM-23D2	12/14/10	1015		✓	W	B		3	1	[redacted]	

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other _____
G. Other _____
H. Other _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other _____
10. Other _____

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil
W - Water, SL - Sludge, SW - Sample Wipe
T - Tissue, A - Air, Other _____

Special Instructions/Comments:
* please use for QA/QC MS/MSD
* Results go to Melissa Reinell

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☒ Cooler packed with ice (✓)		Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

ARCADIS
Infrastructure, environment, buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Reindl / Arcadis
Telephone: 631-249-7600
Address: 2 Huntington Road Suite 1510
Fax: 631-249-7610
City: Melville State: NY Zip: 11747
E-mail Address:
Project Name/Location (City, State): NGC OU-2 / Bethpage, NY
Project #: NY001496.0410.00002
Sampler's Printed Name: Sunny Xu / David Tracy
Sampler's Signature: X

Preservative	B	B				
Filtered (✓)						
# of Containers	3	3				
Container Information	1	1				

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other: ____ G. Other: ____ H. Other: ____

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: ____ 10. Other: ____

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other: ____

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TCL VOCs ASP2000	VOCs EPA 524.2						REMARKS
TB121610	12/16/10	0830		✓	W		1						
FB121610	↓	1212		✓	W		1						
BPOW 1-1	↓	1010		✓	W		1						
BPOW 1-2	↓	1130		✓	W		1						
GM-34D	↓	1300		✓	W	1							
GM-34D2	↓	1400		✓	W	1							

Special Instructions/Comments: Results go to Melissa Reindl

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓) ☐ Intact ☒ Not Intact	Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
☒ Cooler packed with ice (✓)		Signature: X	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: Arcadis	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: ____	Date/Time: 12/16/10	Date/Time:	Date/Time:	Date/Time:

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:

Contact & Company Name: Melissa Randl	Telephone: 631-249-7600
Address: 2 Huntington Quadrangle Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): Bethpage, NY / NGC	Project #: NY001496.0410.00002
Sampler's Printed Name: D. Tracy, G. Williams	Sampler's Signature: [signature]

Preservative	B
Filtered (✓)	
# of Containers	3
Container Information	[illegible]

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	TCL VOC ASP 2000							REMARKS
GP-1	12.17.10	15:00		X	W	3							

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other ______
G. Other ______
H. Other ______

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other ______
10. Other ______

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil
W - Water, SL - Sludge, SW - Sample Wipe
T - Tissue, A - Air, Other ______

Special Instructions/Comments:
Please report to Melissa Randl

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name: Columbia Analytical Services
☒ Cooler packed with ice (✓)
Specify Turnaround Requirements: Standard
Shipping Tracking #:

Cooler Custody Seal (✓)
☐ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: ______

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	David Tracy			
Signature:	[signature]			
Firm/Courier:	ARCADIS			
Date/Time:	12.17.10 / 1510			

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CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Reindl / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1S10	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): NRC OU-2 / Bethpage, NY	Project #: NY001496.0010.00002
Sampler's Printed Name: Simon Xu / Gary O'Hara	Sampler's Signature:

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (Y)	# of Containers	Container Information	VOCs 8260	PAH 8270	REMARKS
TB122010	12/20/10	1000		✓	W	B		3	1	1		
REP122010	12/20/10			✓	W	B		3	1	1		
BPOW4-2 *	12/20/10	1405		✓	W	B		3	1	3		MS/MSD
BPOW4-1 *	12/20/10	1610		✓	W	B		3	1	1		

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other:
G. Other:
H. Other:

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other:
10. Other:

Matrix Key:
SO - Soil, SE - Sediment, NL - NAPL/Oil
W - Water, SL - Sludge, SW - Sample Wipe
T - Tissue, A - Air, Other:

Special Instructions/Comments: * please use for QA/QC MS/MSD

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact	Printed Name: Simon Xu	Printed Name:	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)		Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: Arcadis	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp:	Date/Time: 12/20/10 1830	Date/Time:	Date/Time:	Date/Time:

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CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #:

Send Results to:

Contact & Company Name: Melissa Reindl / Arcadis	Telephone: 631-249-7600
Address: 2 Huntington Quad Suite 1210	Fax: 631-249-7610
City: Melville State: NY Zip: 11747	E-mail Address:
Project Name/Location (City, State): NFGC / Bethpage NY	Project #: NY001496.0410.00002
Sampler's Printed Name: Xiuan Xu / Past Presence	Sampler's Signature:

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD							REMARKS
										VOA 2DA	624.2						
TB 122110	12/21/10	1100		✓	W			1									
BPOW 3-1	↓	1145		✓	W			1									
BPOW 3-2	↓	1140		✓	W			1									

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil; SE - Sediment; NL - NAPL/Oil
W - Water; SL - Sludge; SW - Sample Wipe
T - Tissue; A - Air; Other: _____

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: Columbia Analytical Services	Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact	Printed Name: Sunny Xu	Printed Name:	Printed Name:	Printed Name:
☑ Cooler packed with ice (✓)		Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: Arcadis	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp:	Date/Time: 12/21/10 1830	Date/Time:	Date/Time:	Date/Time:

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