RECEIVED
JUN 14 2004
BUREAU OF EASTERN
REMEDIAL ACTION

2003 Annual Groundwater Monitoring Report

Operable Unit 2
Northrop Grumman Corporation,
Bethpage, New York
NYSDEC Site #1-30-003A

ARCADIS
Infrastructure, buildings, environment, communications

NYSDEC 053436

ARCADIS

David E. Stern
Senior Hydrogeologist

Carlo San Giovanni
Associate Vice President/Project Manager

Michael F. Wolfert
Hydrogeologist/Project Director

2003 Annual Groundwater Monitoring Report

Operable Unit 2
Northrop Grumman Corporation,
Bethpage, New York
NYSDEC Site #1-30-003A

Prepared for:
Northrop Grumman Corporation

Prepared by:
ARCADIS G&M, Inc.
88 Duryea Road
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610

Our Ref.:
NY001348.0013.00004

Date:
9 June 2004

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. Any dissemination, distribution, or copying of this document is strictly prohibited.

1. Introduction 1

2. Monitoring Program 1

3. Performance Monitoring 2

3.1 Treatment Efficiencies and Mass Removal 2

3.2 Pumpage and Discharge 3

4. Groundwater Flow 4

4.1 Shallow and Intermediate Zones 4

4.2 Deep and D2 Zones 5

4.3 Summary of Groundwater Flow Conditions Observed in Year 2003 5

5. Groundwater Quality 5

5.1 Volatile Organic Compounds 6

5.1.1 Shallow and Intermediate Zones 7

5.1.2 Deep Zone 8

5.1.3 Deep2 Zone 10

5.2 Vinyl Chloride Monomer 12

5.3 Tentatively Identified Compounds 13

5.4 Quality Control Samples - VOCs 13

5.5 Semi-Volatile Organic Compounds (Plant 1 Fuel Depot) 13

5.6 Cadmium and Chromium 13

5.7 Quality Control Samples - Cadmium/Chromium 14

5.8 Data Validation 14

6. Findings and Conclusions 14

6.1 OU2 Groundwater Remedy 14

6.2 Groundwater Flow 15

6.3 Groundwater Quality 15

7. Recommendations 16

8 References 17

Tables

1 Operational Summary of the OU2 Remedial Wells and Industrial Well GP-3, Fourth Quarter 2003 and Year 2003, Northrop Grumman Corporation, Bethpage, New York.

2 OU2 Remedial Well Performance Data, Third and Fourth Quarters of 2003, Northrop Grumman Corporation, Bethpage, New York.

3 Water-Level Measurement Data, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

4 Comparison of Fourth Quarter 2003 Vertical Hydraulic Gradients to Model-Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

5 Total Volatile Organic Compounds and Cadimum/Chromium Concentrations and Comparision to SCGs for Selected Site Boundary Monitoring Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

6 Concentrations of Volatile Organic Compounds Detected In Shallow Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

7 Concentrations of Volatile Organic Compounds Detected In Intermediate Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

8 Concentrations of Volatile Organic Compounds Detected In Deep Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

9 Concentrations of Volatile Organic Compounds Detected In Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

10 Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater and Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

11 Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

12 Concentrations of Semi-Volatile Organic Compounds in Groundwater and Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

13 Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater and Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

Figures

1 Location of On-Site OU2 Groundwater Remedy and Wells, Northrop Grumman Corporation, Bethpage, New York.

2 Water-Table Configuration and Horizontal Groundwater Flow Directions in the Shallow Zone, December 23, 2003, Northrop Grumman Corporation, Bethpage, New York.

3 Potentiomeric Surface Elevation and Horizontal Groundwater Flow Directions in the Intermediate Zone, December 23, 2003, Northrop Grumman Corporation, Bethpage, New York.

4 Potentiometric Surface Elevation and Horizontal Groundwater Flow Directions in the D2 Zone, December 23, 2003, Northrop Grumman Corporation, Bethpage, New York.

5 Total Volatile Organic Compound Concentrations along the Southern and Southwestern Site Boundary in OU2 Remedial Wells, Industrial Well GP-3, and Monitoring Wells GM-33D2 and GM-73D2, Northrop Grumman Corporation, Bethpage, New York.

6 Total Volatile Organic Compound Concentrations along the Southeastern Site Boundary in On-site Deep and Deep2 Monitoring Wells and Remedial Wells ONCT-2 and ONCT-3, Northrop Grumman Corporation, Bethpage, New York.

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

8 Total Volatile Organic Compound Concentrations in Off-site Deep Monitoring Wells Southeast of the Site, Northrop Grumman Corporation, Bethpage, New York.

9 Total Volatile Organic Compound Concentrations in Off-site Deep2 Monitoring Wells Southeast of the Site, Northrop Grumman Corporation, Bethpage, New York.

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

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

12 Total Cadmium Concentrations in Monitoring Wells, Northrop Grumman Corporation, Bethpage, New York.

13 Total Chromium Concentrations in Monitoring Wells, Northrop Grumman Corporation, Bethpage, New York.

Appendices

A Water-Level Measurement Logs

B Groundwater Sampling Logs

C Chain Of Custody Records

D Recommended Modifications to the OU2 Groundwater Monitoring Plan

1. Introduction

This groundwater monitoring report was prepared to document the operation, maintenance, and monitoring (OM&M) activities for the on-site portion of the Operable Unit 2 (OU2) groundwater remedy at the Northrop Grumman Corporation (NGC) Bethpage, New York facility. These activities are currently being conducted by NGC, in accordance with the New York State Department of Environmental Conservation (NYSDEC)-approved OU2 Groundwater Monitoring Plan (ARCADIS G&M, Inc., 2001), to meet the remedial objectives set forth in the March 2001 Record of Decision (ROD) for OU2 (NYSDEC 2001). The complete description of the monitoring program and rationale/basis for evaluation of data can be found in the 2002 Annual Groundwater Monitoring Report (ARCADIS G&M, Inc. 2003).

This report describes the performance and effectiveness of the on-site portion of the OU2 groundwater remedy for the period October 1 through December 31, 2003, which corresponds to the Fourth Quarter of 2003. This report also constitutes the 2003 Annual Report, and compares the current data to Year 2003 data and, as applicable, to longer-term on-site remedial system operational data and groundwater quality data. The findings, conclusions, and recommendations made in this report will continue to be re-evaluated in future reports, as additional hydraulic and groundwater quality data become available. Recommendations made in this report, will be incorporated into the final OU2 OM&M Plan, as appropriate.

2. Monitoring Program

Monitoring activities conducted for this report and the results obtained are provided in Tables 1 through 13 and are described and discussed in the following report sections: Performance Monitoring (Section 3), Groundwater Flow (see Section 4), and Groundwater Quality (Section 5).

Except as described below and on Tables 1 through 13, the procedures, methodologies, and monitoring network utilized for the subject period are consistent with that described previously (see ARCADIS G&M, Inc. 2003) and the NYSDEC-approved OU2 Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2001).

For this annual report, and for all subsequent reports, ARCADIS has modified the way the remedial system performance monitoring data is reported. Specifically, Section 3.1 (Remedial Well's/System's Water Quality, Efficiencies, and Mass Removal) of this report was modified to include use of the water quality data generated by ARCADIS to evaluate remedial system performance, in place of the data generated by NGC. During

the initial startup of the system and for several years thereafter, NGC data were used to evaluate remedial system performance as they were collected weekly and the ARCADIS-generated data was collected quarterly (i.e., initially there was less data in the ARCADIS database). Currently we believe the quantity of ARCADIS-generated data in the database is sufficient to adequately monitor the system performance so these data are used herein and will be used in future reports.

The locations of the NGC site, the on-site portion of the OU2 groundwater remedy, the neighboring properties (i.e., the Naval Weapons Industrial Reserve Plant [NWIRP] and Occidental Chemical Corporation [OCC]/RUCO Polymer Corporation sites), and existing wells utilized in the monitoring program are shown on Figure 1. This report also includes the following appendices: Appendix A (water-level measurement logs); Appendix B (groundwater sampling logs); Appendix C (chain-of-custody records); Appendix D (Recommended Modifications to the OU2 Groundwater Monitoring Plan).

3. Performance Monitoring

The performance of the on-site portion of the OU2 groundwater remedy was monitored during the Fourth Quarter 2003 by measuring and documenting the following: (1) the remedial well, industrial supply well, and treatment systems influent and effluent water quality, as well as the treatment efficiency of the two air strippers, (2) the volume of water pumped by the remedial well and industrial supply well, and the volume of treatment system effluent discharged to on-site recharge basins, (3) the treatment system volatile organic compound (VOC) mass removal, and (4) the remedial well specific capacities.

3.1 Treatment Efficiencies and Mass Removal

Based on the ratio of the influent to effluent TCE concentrations (Table 9), the efficiencies of the ONCT and GP-1 air strippers have remained above 99.6 percent for the Fourth Quarter of 2003 and are consistent with the year-to-date percentages (ARCADIS G&M, Inc. 2004).

An approximate cumulative total of 3,782 pounds of VOC mass were removed from groundwater by the remedial wells and Well GP-3 during the Fourth Quarter of 2003 (Table 1). For Year 2003, approximately 9,410 lbs of VOCs were removed from groundwater and treated by the OU2 remedial systems. Since full-time system startup in November 1998, approximately 72,207 lbs of VOCs have been removed from groundwater and treated.

3.2 Pumpage and Discharge

Table 1 summarizes the pumpage of the remedial wells and Well GP-3 compared to design criteria. Based on weekly flow rate measurements, collected by ARCADIS, the OU2 remedial wells pumped a total of approximately 403.3 million gallons (MG) over the 93 day period of the Fourth Quarter 2003 (i.e., September 30 to December 31, 2003) and approximately 1,639 MG of water for Year 2003. Well GP-3 was operational for 99 percent of the Fourth Quarter 2003 and pumped at an average rate of 441 gpm. This equates to approximately 58 MG of water pumped in addition to the quantity pumped by the OU2 remedial wells for the Fourth Quarter 2003. For Year 2003, Well GP-3 pumped approximately 205 MG of water.

Table 2 summarizes the water-level measurement data, corresponding instantaneous pumping rates, and the calculated specific capacities of the remedial wells for the Fourth Quarter of 2003. The specific capacities of all the remedial wells exceeded the minimum values needed to maintain the design pumping rates and apparently increased compared to the previous round. Since pumping wells usually do not increase in specific capacity over time, the reasons for the apparent increase in specific capacity was evaluated and is explained below. Because a significant change in the static depth to water could make it appear that the specific capacity was changing and as a representative static water level cannot be a measured in the remedial wells as they are pumped, the long-term trend in groundwater levels (early 1980s to present) from a representative deep monitoring well, located approximately 3½ miles northeast of the NGC site (away from local pumping influences) was analyzed to determine whether regional changes in the static water level were occurring and if they were large enough to explain the apparent fluctuations in specific capacity as previously documented. Based on this analysis, it was determined that the regional static depth to water in this well has fluctuated by as much as 13 feet in the last ten years, and that these changes are likely due to effects of region-wide pumpage and seasonal hydrologic variations. The changes in regional static depth to water in this monitoring well were and will continue to be used to adjust the static water level measured in the subject remedial wells before they began pumping, to current conditions. The adjusted static water levels were and will continue to be used to calculate the remedial wells specific capacities to reflect values that are unbiased by fluctuating static water levels. Based on the comparison of current remedial well specific capacities to respective baseline values using the adjusted static water levels (Table 2), redevelopment of the remedial wells is not required. The specific capacities will continue to be calculated and compared to the baseline values to determine if significant decreases are occurring that would require well redevelopment.

4. Groundwater Flow

This report section describes the results of the hydraulic monitoring performed during the Fourth Quarter of 2003 (i.e., December 23, 2003). The evaluation of the hydraulic data was performed using methods described in previous quarterly reports (ARCADIS G&M, Inc. 2003).

4.1 Shallow and Intermediate Zones

The water-level measurement data for the Fourth Quarter of 2003 are provided in Table 3. Vertical hydraulic gradients calculated for select well pairs and a comparison of gradients to model-predicted gradients (Appendix B of the OU2 Feasibility Study; ARCADIS Geraghty & Miller, Inc. 2000) are provided in Table 4. Figures 2 and 3 depict the shallow zone water-table configuration and intermediate zone potentiometric surface configuration and groundwater flow directions during the Fourth Quarter of 2003, respectively.

In general, the vertical hydraulic gradients in shallow-intermediate well pairs are primarily oriented downward and are close to or greater than model predictions. Figure 2 shows the extent of the mounding of the water table (attributed to the discharge of treated water from the on-site OU2 remedial system) during the Fourth Quarter of 2003. The observed mounding extends beneath and around the South Recharge Basins and across the entire NGC site southern boundary. Figure 3 shows similar mounding in the intermediate zone. The extent of the mounding is consistent with prior rounds and produces a hydraulic barrier to groundwater flow in the shallow and intermediate zones during normal operation of the on-site portion of the OU2 groundwater remedy.

Overall, the hydraulic data described above (i.e., vertical gradients and water-level elevations) support the conclusion that mounding (attributed to the discharge of treated groundwater) at and in the vicinity of South Recharge Basins is sufficient to maintain the hydraulic barrier to groundwater flow that continues to be effective in achieving the OU2 remedial goal of preventing the off-site migration of VOC-impacted groundwater in the shallow and intermediate zones.

4.2 Deep and D2 Zones

Vertical hydraulic gradients in intermediate-deep and deep-deep2 (D2) well pairs are oriented downward and are either close to, or are greater than model predictions, and support the conclusion that groundwater is flowing in a predominantly vertical direction in the deep zone along the NGC site southern boundary (Table 4).

Figure 4 depicts the cumulative capture zone formed by the combined pumpage of the OU2 remedial wells and Well GP-3 during the Fourth Quarter of 2003. The maximum downgradient extent of the capture zone is approximately 650 ft south of the NGC site and extends across the entire NGC site southern boundary. These data are consistent with previous rounds and support the conclusion that the pumpage of the remedial wells forms a hydraulic barrier to groundwater flow that continues to be effective in preventing the off-site migration of VOC-impacted groundwater in the deep and D2 zones.

4.3 Summary of Groundwater Flow Conditions Observed in Year 2003

Treated water discharge and discharge of stormwater (collectively as recharge to the water table) have maintained the hydraulic barrier in the shallow and intermediate zones and the resultant downward component of groundwater flow near the South Recharge Basins. Deep/deep2 monitoring well pairs near the areas of pumping and recharging produced by the on-site portion of the OU2 groundwater remedy continue to exhibit downward vertical hydraulic gradients generally greater than model predictions. The area of capture in the D2 zone produced by the pumpage of the on-site OU2 remedial wells has not substantially changed in Year 2003 and extends across the entire southern boundary and downgradient of the NGC site. Overall, the hydraulic data presented in Year 2003 indicate that operation of the on-site portion of the OU2 groundwater remedy has achieved the remedial goal of creating and maintaining an effective hydraulic barrier throughout the shallow, intermediate, deep, and D2 zones that prevents the off-site migration of on-site, VOC-impacted groundwater.

5. Groundwater Quality

This report section describes and discusses the analytical results of the various groundwater quality monitoring activities that were carried out as specified in the NYSDEC-approved OU2 Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2001).

The main emphasis of this report section is the description of the VOC plume in the various aquifer horizons monitored. Also discussed is how the operation of the on-site portion of the OU2 groundwater remedy has affected the VOC plume distribution in the Fourth Quarter 2003, for Year 2003, and since full time startup of the remedy in November 1998. Because of variations in trends of VOCs in groundwater, as discussed in Section 5.1, the discussion of VOC concentrations and trends within each hydrogeologic zone will focus on the following three sub-regional areas of interest:

1. Upgradient of the NGC site southern boundary, within the capture zone of the on-site portion of the OU2 groundwater remedy.

2. At and near the NGC site southern boundary, within the capture zone of the on-site portion of the OU2 groundwater remedy.

3. Dowgradient of the NGC site, outside of the capture zone of the on-site portion of the OU2 groundwater remedy.

The analytical results and distribution of VCM, semi-volatile organic compounds (SVOCs), and cadmium/chromium (Cd/Cr) are discussed in Sections 5.2, 5.5, and 5.6, respectively, of this report.

Table 5 provides a summary of current total VOC and Cd/Cr concentrations (where appropriate) and a comparison to NYSDEC Standards, Criteria, and Guidance Values (SCGs) for selected wells at and near the NGC site southern boundary for the current sampling round and Year 2003. The complete analytical results for the Fourth Quarter 2003 round are summarized in Tables 6 through 13 and are discussed in subsequent subsections of this report.

5.1 Volatile Organic Compounds

A complete discussion of the expected effect of the on-site portion of the OU2 groundwater remedy on groundwater quality is provided in the 2002 Annual Report (ARCADIS G&M, Inc. 2003). In summary, changes in groundwater quality are generally expected to occur, slowly. Wells within the plume and that are located upgradient of the hydraulic barrier, in areas of the NGC and NWIRP sites that are not actively remediated, may exhibit several trend changes over the short- to mid-term that would be considered to be consistent with the VOC plume heterogeneity. Off-site wells, immediately downgradient of the hydraulic barrier, are expected to exhibit decreasing VOC concentrations as a result of the operation of the on-site portion of the OU2 groundwater remedy in the shortest timeframe. Wells located further

downgradient of the hydraulic barrier are expected to exhibit differing and varying trends in VOC concentrations in the short- to mid-term until the "clean zone", which results from the bifurcation of the VOC plume at the NGC site southern boundary, expands downgradient into the area of the VOC plume that is not actively remediated. When this occurs, the long-term trend in VOC concentrations in these off-site wells (resulting from operation of the on-site portion of the OU2 groundwater remedy) will be apparent.

Based on the above discussion, the analysis of VOC concentrations and trends over time are 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 NGC site southern boundary, and downgradient of the hydraulic barrier), (2) hydrogeologic zone (i.e., shallow, intermediate, deep, and D2 zones); and (3) short-term versus long-term trends. Specifically, the following subsections describe the groundwater VOC distribution during the Fourth Quarter of 2003 and compare the current data to: (1) NYDEC SCGs, (2) the current, year-to-date average concentration, and (3) the period of record to assess longer-term trends. Figures 5 through 11 depict VOC concentration trends in key wells for the period of record.

5.1.1 Shallow and Intermediate Zones

A summary of total VOCs detected in the shallow zone at the NGC site southern perimeter and a comparison to SCGs are provided in Table 5. The complete groundwater analytical results the Fourth Quarter of 2003 for shallow and intermediate monitoring wells are provided in Tables 6 and 7, respectively. The complete period of record of total VOC concentrations in select intermediate wells is shown on Figure 7.

The water quality data from the shallow and intermediate wells sampled this quarter and for Year 2003 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 shallow and intermediate zones. A detailed discussion of the water quality data for the shallow and intermediate zones follows.

5.1.1.1 Upgradient

Four of the six upgradient shallow wells (FW-03, HN-40S, HN-42S, and GM-16SR) exhibited no SCG exceedences. Wells GM-32S and MW-03R exhibited the only exceedences of SCGs (Table 6). In comparison to the year to date average

concentration, Well GM-32S exhibits a higher concentration and Well MW-03R exhibits a similar concentration.

Three of the five upgradient intermediate wells (HN-24I, HN-40I, and GM-16I) exhibited exceedences of SCGs (Table 7) while Wells HN-29I and HN-42I exhibited no exceedences. The former three wells exhibited TVOC concentrations ranging from 37.3 ug/L to 98.4 micrograms per liter (ug/L). In comparison to the year-to-date average TVOC concentration, Well GM-16I exhibits a similar concentration, Well HN-24I has decreased and Well HN-40I has increased in concentration. As shown on Figure 7, the trend in TVOC concentrations in select intermediate wells remains relatively flat at low to moderate concentrations for the period of record.

5.1.1.2 Site Southern Boundary

Five of the six shallow wells that are located at or immediately downgradient of the NGC site boundary (Table 5) exhibited no detections or trace concentrations of VOCs (below SCGs) and did not exhibit SCG exceedances. Six of the seven similarly located intermediate wells (Table 5) did not exhibit SCG exceedences for the Fourth Quarter and for Year 2003. During Year 2003, Wells GM-18S and GM-15I were the only wells exhibiting SCG exceedences. TVOC concentrations in these wells are higher this round in comparison to the year-to-date averages.

5.1.1.3 Downgradient

The single shallow well (N-10634) that is located downgradient of the hydraulic barrier, exhibited no detectable levels of VOCs, which is consistent with the historical trend for this well.

5.1.2 Deep Zone

The water quality data from the deep wells sampled during the Fourth Quarter of 2003 and for Year 2003 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. A detailed discussion of the water quality data for the deep zone follows.

5.1.2.1 Upgradient

One of the two upgradient deep monitoring wells (GM-13D) exhibited SCG exceedences (Well GM-13D is located approximately 2,850 feet upgradient of the ONCT remedial wells [Table 8]), while HN-29D exhibited no exceedences. Well MW-52I (deep zone well), exhibits a long-term overall declining trend with substantial TVOC reductions starting in early 2002. Well GM-13D exhibits a long-term increasing TVOC trend up to December 2000 however; the trend appears relatively flat since December 2000 (Figure 7). Three of the four deep wells (GM-39D_A, GM-39D_B, and GM-73D) located along the line of the remedial wells (Figure 1) exhibited SCG exceedences this quarter and all four wells (including GM-74D) exhibited SCG exceedences during the Year 2003, which is expected as they are located near the remedial wells. Well GM-74D exhibits relatively low TVOC concentrations with a decreasing trend for the period of record (Figure 6).

5.1.2.2 Site Southern Boundary

Of the five deep wells located at the NGC site southern property boundary (Table 5), Well GM-15D exhibited the only SCG exceedence in the Fourth Quarter. For Year 2003, Wells GM-15D and GM-18D exhibited SCG exceedences with current concentrations similar in comparison off the year-to-date averages. Well GM-15D exhibits relatively low TVOC concentrations with no discernable trend for the period of record (Figure 6).

5.1.2.3 Downgradient

Of the six deep wells located downgradient of the hydraulic barrier (N-10627, GM-34D, GM-36D, GM-37D, GM-38D, and GM-79D), two wells (N-10627 and GM-37D) exhibited no SCGs exceedences. The remaining wells exhibited SCGs exceedences and TVOC concentrations ranging from 14 ug/L to 834 ug/L (Table 8). Well GM-34D is the only well with a higher TVOC concentration in comparison to the year-to-date average. Wells N-10627 and GM-36D exhibit similar concentration while Wells GM-37D, GM-38D and GM-79D exhibit lower concentrations in comparison to the year-to-date averages.

Southeast and approximately 2,250 feet from the approximate midpoint of the NGC site property boundary, Well GM-79D exhibits an overall increasing trend for the period of record (Figure 8), although the last three sampling results have each shown a decrease from the immediately prior results. Approximately 3,400 feet southeast of the approximate midpoint of the NGC site southern boundary, Well GM-37D exhibited no discernable trend through February 2001(Figure 8), however a decreasing trend has been observed since that time. Well GM-36D has exhibited a decreasing trend for the

period of record; however the rate of decrease has slowed somewhat since February 2001 (Figure 8). Well GM-38D, the furthest deep well from the site in a southeast direction (approximately 4,750 feet) exhibits a decreasing trend for the period of record (Figure 11) with comparatively large yearly fluctuations in TVOC concentration.

Approximately 3,700 feet southwest of approximate midpoint of the NGC site southern boundary, Well GM-34D shows an increasing trend for the period of record (Figure 10).

5.1.3 Deep2 Zone

Groundwater monitoring data from the D2 zone are summarized in Table 9 and include groundwater samples collected from the OU2 remedial wells and Well GP-3, the total effluent water samples from the GP-1 and ONCT treatment systems, and samples from the network of D2 monitoring wells listed in the NYSDEC-approved Groundwater Monitoring Plan. These data, as well as the long-term trends are described in the following report subsections.

The water quality data from the D2 wells sampled during the Fourth Quarter of 2003 and for Year 2003 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 deep2 zone. A detailed discussion of the water quality data for the deep2 zone follows.

5.1.3.1 OU2 Remedial Wells, Well GP-3, and Associate Monitoring Wells.

In the area of the remedial wells, TVOC concentrations for the east (at and east of Well ONCT-2) were comparatively lower than to the west, with current concentrations ranging from 14 ug/L (Well GM-74D2) to 204 ug/L (Well ONCT-2). At the NGC site southwestern corner, TVOC concentrations ranged from 144 ug/L (Well GM-33D2) to 3,809 ug/L (Well GP-3). All monitoring and remedial wells in these areas exhibited one or more exceedences of SCGs (Table 9).

TVOC concentrations in Wells GP-1 and GP-3 are higher in comparison to the year to date average, while concentrations in the ONCT wells exhibited no discernable changes.

The trends in TVOC concentrations in the four remedial wells and Well GP-3 are shown on Figures 5 and 6. Well GP-1 continues to exhibit a relatively flat trend since

December 2000 (Figure 5) following an earlier decreasing trend. Well ONCT-1 continues to exhibit a downward trend in TVOC concentration (Figure 5). Well ONCT-2 exhibits no discernable trend since late 2000/early 2001 following an earlier increasing trend (Figure 6). Well ONCT-3 exhibits an increasing trend in TVOC concentrations in both the long and short term (Figure 6). Over the period of record, Well GP-3 shows a trend of increasing TVOC concentrations.

At the southwestern corner of the NGC site, TVOC concentrations in Well GM-33D2 continue to decrease, from approximately 15,000 ug/L in May 1997 to 144 ug/L in the Fourth Quarter of 2003 (Figure 5). TVOC concentrations this round, are lower in comparison to the year-to-date average. These data confirm the hydraulic information discussed in Section 4.2 of this report, which indicates that operation of the on-site portion of the OU2 groundwater remedy continues to prevent the off-site migration of VOC-impacted groundwater in the D2 zone. The current data indicate a 99 percent decrease in TVOC concentration in this well, which is attributable primarily to the pumping of the on-site portion of the OU2 groundwater remedy (which has been in full time operation since November 1998), and specifically Well ONCT-1. These data are strong evidence that remedial well pumping is causing groundwater to flow from the area around Well GM-33D2 toward the remedial wells. Well GM-73D2 exhibits elevated TVOC levels with no discernable trend for the period of record (Figure 5). The TVOC concentration in GM-73D2 this round is higher in comparison to the year-to-date average.

Near the NGC site southeast corner, Wells GM-15D2 and GM-74D2 exhibit relatively low TVOC concentrations consistent throughout 2003, with no discernable trends for the period of record (Figure 6).

5.1.3.2 Downgradient

TVOC concentrations in the eight off-site D2 wells (GM-34D2, GM-35D2, GM-36D2, GM-37D2, GM-38D2, GM-70D2, GM-71D2, and GM-75D2) ranged from non-detect (Well GM-36D2) to 985 ug/L (in Well GM-38D2), with six of the eight wells having one or more exceedences of SCGs; Wells GM-36D2 and GM-71D2 did not exhibit SCG exceedences. TVOC concentrations in wells exhibiting SCG exceedences this round are generally lower or the same in comparison to the year-to-date average (Table 9).

Approximately 3,400 and 2,850 ft southeast of the approximate midpoint of the NGC site southern boundary, respectively, Wells GM-36D2 and GM-71D2 exhibit no discernable trends with low TVOC concentrations for the period of record (Figure 9).

Well GM-37D2 exhibits relatively low TVOC concentrations with an increasing trend through late 2000, however the trend appears downward since that time (Figure 9). Well GM-70D2 exhibits a decreasing trend for the period of record although since approximately late 2000 the rate of decline has apparently decreased. Well GM-38D2 (Figure 11) exhibits a long term increasing trend with considerable short-term variations. In addition, although the last six quarterly results have shown a steady decline in TVOC concentrations, it is premature, given the short term variations, to conclude that the data indicates the start of a long-term declining trend. The complete record indicates an overall improving trend in VOC concentrations southeast of the NGC site in the D2 zone.

Approximately 3,700 and 2,200 ft south of the approximate midpoint of the NGC site southern boundary, respectively, Wells GM-34D2 and GM-35D2 exhibit increasing trends over the period of record with Well GM-35D2 exhibiting an apparent increase in the trend rate after December 2000 (Figure 10). Well GM-75D2, which is likely located beyond the remedial well capture zone and is upgradient of Wells GM-34D2 and GM-35D2, exhibits an apparent downward trend for the period of record, with substantial short-term fluctuations. The downward trend in TVOC concentrations in Well GM-75D2 (Figure 10) may be an early indication of the propagation of the "clean zone" caused by VOC plume bifurcation in the D2 zone in this area that is directly related to on-site remedial pumpage, as discussed above.

5.2 Vinyl Chloride Monomer

In accordance with the NYSDEC-approved Groundwater Monitoring Plan, monitoring of the VCM groundwater subplume emanating from the former RUCO Polymer site (Figure 1) is performed by sampling Monitoring Wells GM-23S, GM-23I, MW-52S, MW-52I, and MW-52D on a semi-annual basis (i.e., twice yearly during the First and Third Quarter rounds) and Wells GM-17SR, GM-17I, GM-17D, GM-18S, GM-18I, and GM-18D on a quarterly basis. Additionally, VCM is analyzed for in all wells sampled for VOCs. This section discusses the results of the Fourth Quarter 2003 monitoring round. Tables 6 through 9 include VCM concentrations in groundwater for the Fourth Quarter 2003.

VCM was not detected in the shallow zone, intermediate zone, or deep zone (Tables 5, 6, and 7, respectively) this round. In the D2 zone, VCM was detected in Well GP-3 above the SCG at 75 µg/L. VCM concentrations in Well GP-3 have remained essentially the same in comparison to the year-to-date average and were not detected in Well GP-1 or the ONCT Wells. VCM has not been detected in Well GP-1 since July

2003 nor has it not ever been detected in the ONCT Wells. VCM was not detected in any other D2 zone well (Table 9).

ARCADIS is aware that consultants to OCC is continuing near-term groundwater data collection efforts south of the former RUCO Polymer site to better define the horizontal and vertical extent of VCM in groundwater. VCM historically has accounted for greater than 95 percent of the VOC mass in Wells MW-52S and MW-52I; Well MW-52D historically has exhibited trace to non-detectable concentrations of VCM. TVOC concentrations in Wells MW-52S and MW-52I have decreased over the period of record (Figure 5). The substantial decrease in MW-52I is attributable to the use of this well for injection of high volumes of air and other gases into the formation in a pilot-scale demonstration of in-situ biosparging technology. This was performed by RUCO in the period between the First and Third Quarters of 2002.

5.3 Tentatively Identified Compounds

For all groundwater samples collected during this round, in addition to the TCL VOCs, the laboratory was asked to perform an analysis and library search to identify and evaluate whether volatile tentatively identified compounds (TICs) exist in the groundwater samples. TICs detected in groundwater samples collected during the Fourth Quarter 2003 round are summarized in Table 10.

5.4 Quality Control Samples - VOCs

Based on the analytical results (Table 11) for the Fourth Quarter 2003 round, low levels of VOCs (e.g., acetone, carbon disulfide, and methylene chloride) were detected. These results were used to validate groundwater sample results for this round.

5.5 Semi-Volatile Organic Compounds (Plant 1 Fuel Depot)

Well GM-14, located downgradient of the NGC Plant 1 Fuel Depot, is monitored on a quarterly basis for SVOCs. As shown on Table 12, SVOCs were not detected in Well GM-14 or the associated blank sample this round.

5.6 Cadmium and Chromium

Groundwater monitoring data from shallow and intermediate monitoring wells for the Fourth Quarter 2003 for cadmium (Cd) and chromium (Cr) are provided in Table 13. The complete record of Cd and Cr concentrations in select wells are shown on Figures 12 and 13, respectively. Based on the current round of data, Well MW-3R exhibited

Cd and Cr (total and dissolved) concentrations exceeding SCGs. Wells GM-15S, MW-5, and MW-6 exhibited Cr (total) concentrations exceeding the SCG. The remaining wells exhibited no exceedences of SCGs. For the period of record, the data indicate that the wells shown on Figure 12 exhibit stable to decreasing Cd concentrations trends with no off-site exceedences since December 1998. Wells monitored for Cr, shown on Figure 13, also exhibit stable to decreasing concentration trends for the period of record with no exceedences off-site since mid-2001. The results this round generally show little difference overall between the filtered and unfiltered samples results, indicating that the metals analyzed for exist predominantly in the dissolved phase. The complete record indicates an overall improving trend in groundwater Cd/Cr concentrations.

5.7 Quality Control Samples - Cadmium/Chromium

With the exception a single detection of chromium in one equipment blank, cadmium and chromium were not detected in the equipment blank samples collected this quarter (Table 13). These results were used to validate groundwater sample results for this round. The data validation memorandum for Cd/Cr is provided in Appendix D.

5.8 Data Validation

ARCADIS performed validation of the groundwater quality data (including TICs) collected from wells 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 6 through 13.

6. Findings and Conclusions

6.1 OU2 Groundwater Remedy

1. During the 93 days of the Fourth Quarter 2003, the OU2 groundwater remedy pumped and treated approximately 403.3 MG of water. Well GP-3 supplemented the total pumpage by an approximate additional 58 MG. For Year 2003, approximately 1,639 MG of water were pumped by the OU2 remedial wells.

2. During the Fourth Quarter 2003, approximately 3,782 lbs of VOCs were removed from groundwater and treated by the on-site portion of the OU2 groundwater remedy and Well GP-3. In Year 2003, approximately 9,410 lbs of VOCs were removed and treated, and approximately 72,207 lbs of VOCs were removed and treated since full time system startup in November 1998.

3. Based on the performance sampling data collected by ARCADIS from the OU2 groundwater remedy treatment systems influent/effluent streams, treatment system efficiencies were greater than 99.6 for the current record and for Year 2003.

4. Specific capacities of the OU2 remedial wells remain above the minimum required to maintain the design pumping rates.

6.2 Groundwater Flow

1. Water-level data for the shallow and intermediate zones for the Fourth Quarter and all of 2003 indicate that operation of the on-site portion of the OU2 groundwater remedy has maintained the hydraulic barrier in the shallow and intermediate zones, which prevents off-site migration of VOC-impacted groundwater in these zones.

2. For the Fourth Quarter and all of 2003, downward vertical hydraulic gradients near the NGC southern boundary area remain close to or greater than those predicted by the groundwater flow model. This indicates that the mounding of the water table coupled with pumpage from the D2 zone is continuing to force water to move downward through the deep zone and prevent VOC-impacted groundwater from flowing off-site in the deep zone.

3. The configuration of the potentiometric surface in the D2 zone in the Fourth Quarter and all of 2003 indicates that the capture zone, due to pumpage of the OU2 remedial wells, extends across the entire NGC southern property boundary and to the northwest toward Well GP-3 and continues to fully control and contain groundwater on-site and approximately 650 ft south of the site in the D2 zone.

6.3 Groundwater Quality

1. Shallow and intermediate wells in areas within the VOC plume on the NGC and NWIRP sites upgradient of the OU2 groundwater remedy exhibited the highest VOC concentrations. At the NGC southern boundary and immediately south of it, shallow and intermediate wells exhibited low or non-detectable VOC concentrations. These results are consistent with the hydraulic data for these zones and confirm the effectiveness of the OU2 groundwater remedy in preventing the off-site migration of VOC-impacted groundwater in the shallow and intermediate zones.

2. Deep wells along the NGC southern boundary exhibit low to non-detectable VOC concentrations and are consistent with the hydraulic data for this zone and confirm that the off-site migration of VOC-impacted groundwater in the deep zone is not occurring.

3. In the D2 zone, Well GM-33D2, which is the closest monitoring well to Remedial Well ONCT-1, exhibits a continuing decrease in TVOC concentration, providing strong evidence that the on-site portion of the OU2 groundwater remedy continues to be effective in preventing on-site VOC-impacted groundwater from moving off-site in the D2 zone in this area.

4. For the Fourth Quarter and Year 2003, VCM was detected only in Wells MW-52S, MW-52I (VCM monitoring well cluster located nearest to the RUCO property), and Well GP-3. The MW-52 wells historically have exhibited persistent concentrations of VCM exceeding the SCG and are located more than 4,000 ft north of Remedial Well GP-1. Well GP-3 (north of Well GP-1) exhibited the highest VCM concentrations in the D2 zone in the Fourth Quarter and in Year 2003.

5. The collective network of wells monitored for Cd/Cr exhibits stable to declining trends for the period of record. Wells monitored for Cd exhibited no off-site exceedences of the SCG since December 1998. Off-site wells monitored for Cr have not exhibited exceedences of the SCG since mid-2001. The results generally show little difference overall between the filtered and unfiltered sample results, indicating that the metals analyzed for exist predominantly in the dissolved phase.

7. Recommendations

ARCADIS makes the following recommendation for modification to the groundwater monitoring program at this time.

1. Based on the substantial volume of data and trends developed for wells in the current, NYSDEC-approved groundwater monitoring plan over the last ten years, it is clear that a reduction in sample collection frequency in selected upgradient and more distant downgradient monitoring wells is warranted. These changes are described and substantiated in Appendix E.

8 References

ARCADIS G&M, Inc. 2004. Quarterly Groundwater Monitoring Report for Quarters 1 to 3 of 2003, Northrop Grumman Corporation, Bethpage, New York. February 5, 2004.

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

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

ARCADIS Geraghty & Miller, Inc. 2000. Groundwater Feasibility Study, Grumman Aerospace - Bethpage, New York Site (#130003A) and Naval Weapons Industrial Reserve Plant, Bethpage, New York Site (#130003B). October 16, 2000.

New York State Department of Environmental Conservation (NYSDEC). 2002. Division of Environmental Remediation. Draft DER-10 Technical Guidance for Site Investigation and Remediation. December 25, 2002.

New York State Department of Environmental Conservation (NYSDEC). 2001. Record of Decision, Operable Unit 2 Groundwater Northrop Grumman and Naval Weapons Industrial Reserve Plant Sites, Nassau County Site Numbers 1-30-003A & B.

New York State Department of Environmental Conservation (NYSDEC). 1998. Division of Water Technical and Operation Guidance Series (TOGS 1.1.1). Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. Promulgated October 22, 1993. Re-issued June 1998.

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

TABLES

NYSDEC 053459

ARCADIS

Table 1. Operational Summary of the OU2 Remedial Wells and Industrial Well GP-3, Fourth Quarter 2003 and Year 2003, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Design Pumping Rate [a] (gpm)	Current Actual Average Pumping Rate [b] (gpm)	Design Total Pumpage (MG)	Current Actual Total Pumpage [b] (MG)	Cumulative Year-to-Date Actual Total Pumpage [b] (MG)	Current Percent of Design Pumpage	Current TVOC Concentration [c] (ug/L)	Year-to-Date Mean TVOC Concentration [c] (ug/L)	Current Estimated TVOC Mass Removed [d,f] (lbs)	Cumulative Year-to-Date TVOC Mass Removed [e,f] (lbs)	Cumulative TVOC Mass Removed [e,f] (lbs)
OU2 Wells											
GP-1	1,075	1,058	144.0	140.0	551	97%	748	678	872	2,188	17,236
ONCT-1	1,000	914	133.9	116.6	477	87%	910	864	883	2,432	34,615
ONCT-2	600	632	80.4	78.7	331	98%	204	200	134	459	2,337
ONCT-3	700	598	93.7	68.1	280	73%	81	72	46	96.2	624
Industrial Well											
GP-3	--	441	--	58.3	204.9	--	3,809	3,375	1,848	4,235	17,395
OU2 WELLS ROUNDED TOTALS: (f)	**3,375**	**3,203**	**452.0**	**403.3**	**1,638.6**	**89%**	--	--	**3,782**	**9,410**	**72,207**

Fourth Quarter GP-1 System Air Stripping Efficiency :	99.8%
Fourth Quarter ONCT System Air Stripping Efficiency :	99.6%

See Footnotes on next page.

NYSDEC 053460

Table 1. Operational Summary of the OU2 Remedial Wells and Industrial Well GP-3, Fourth Quarter 2003 and Year 2003, Northrop Grumman Corporation, Bethpage, New York.

(a) - Based on computer modeling.

(b) - Actual Average Pumping Rates were calculated based on Actual Total Pumpage and hours of operation from September 30, 2003 to December 31, 2003 (93 Days) (Northrop Grumman records).
- OU2 wells ONCT-1 (95%), ONCT-2 (93%), ONCT-3 (85%), and GP-1 (99%) were operational at the percentage noted during the 93 day operation period from September 30, 2003 to December 31, 2003 and Industrial Well GP-3 was 99 percent operational during this time. Therefore, the Actual Average Pumping Rates estimated above are for when the wells are pumping.
- Actual Total Pumpage and Actual Average Pumping Rate are accurate to +/-15% due to limitations in flow metering. Therefore, calculated Actual Average Pumping Rates are best approximations and may not exactly equal the measured Actual Total Pumpage in all instances.

(c) - TVOC concentration in each well were calculated based on Fourth Quarter 2003 groundwater monitoring (Table 9).

(d) - TVOC mass removed during the Fourth Quarter 2003 was 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) Cumulative Year to date TVOC mass removed includes the record from 1/1/03 to 12/31/03.
Cumulative TVOC mass removed includes mass removed since startup of the ONCT system in September 1998

(f) Current, total, and cumulative TVOC mass removed includes the OU2 wells and Well GP-3.

--	Not Available or Not Applicable
TVOC	Total Volatile Organic Compounds
g/ug	grams per microgram
gpm	gallons per minute
L/gal	Liters per gallon
lb/g	pounds per gram
lbs	pounds
MG	Million Gallons
ug/L	micrograms per liter

NYSDEC 053461

Table 2. OU2 Remedial Well Performance Data, Baseline and Fourth Quarter of 2003, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Adjusted Static Depth to Water[1] (ft bmp)	Adjusted Baseline Specific Capacity [2] (gpm/ft)	Water-Level Measurement Date(s)	Pumping Depth to Water (ft bmp)	Pumping Rate (gpm)	Adjusted Drawdown [1] (ft)	Specific Capacity [3] (gpm/ft)
ONCT-1	41.28	39.0	December 23, 2003	67.9	1049	26.7	39.4
ONCT-2	47.31	32.9	December 23, 2003	67.35	696	20.04	34.7
ONCT-3	46.29	34.8	December 23, 2003	65.33	598	19.04	31.4
GP-1	55.78	28.6	October 16, 2003 [4]	92	1100	36.22	30.4
			December 23, 2003	NM	1070	NM	NM

Notes:

(1) Static depth to groundwater in Wells ONCT-1, ONCT-2, and ONCT-3 was measured on January 7, 1999. Well GM-4D, was used to monitor changes in the regional static depth to water. Based on the data collected from this well during the baseline round and subject monitoring period, the static depth to water in the remedial wells was adjusted by +2.84 ft to correct for the effects of regional pumpage and seasonal hydrologic flucuations, except for Well GP-1 which was adjusted by -.03. This value was also used to adjust the drawdown and therefore provides specific capacities that are unbaised by fluctuating static depth to water. Static depth to groundwater in Well GP-1 was measured on May 24, 2001.

(2) Baseline specific capacity for Wells ONCT-1, ONCT-2,and ONCT-3 was calculated from the measurements taken on January 7, 1999. Baseline specific capacity for Well GP-1 was calculated from the measurements taken on May 24, 2001.

(3) Specific capacity is calculated by dividing the pumping rate by the drawdown.

(4) Third Quarter 2003 adjusted specific capacity given for reference purposes as well was not measured in Fourth Quarter 2003.

OU2	Operable Unit 2
gpm	gallons per minute
ft bmp	feet below measuring point
ft	feet
gpm/ft	gallons per minute per foot of drawdown
NM	Not Measured

Table 3. Water-Level Measurement Data, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water December 23, 2003 (ft bmp)	Water-Level Elevation December 23, 2003 (ft msl)
Shallow Wells			
FW-03	124.30	59.79	64.51
N-9921	94.23	NM	NM
N-10597	109.85	43.59	66.26
N-10600	102.41	42.55	59.86
N-10631 [6]	103.47	NM	NM
N-10633	103.80	41.25	62.55
N-10634	101.20	42.47	58.73
N-10821	91.58	37.14	54.44
GM-15S	109.44	47.42	62.02
GM-16SR	115.86	51.53	64.33
GM-17SR	115.79	51.41	64.38
GM-18S [6]	107.60	NM	NM
GM-19S	109.86	45.14	64.72
GM-21S	105.81	36.03	69.78
GM-78S	104.94	44.53	60.41
GM-79S (N-10628)	100.88	42.44	58.44
HN-40S	116.35	52.42	63.93
HN-42S	120.32	55.00	65.32
MW-3R	101.45	38.75	62.70
Intermediate Wells			
N-10624 [1]	93.61	NM	NM
GM-15I	109.25	47.21	62.04
GM-16I	115.81	51.71	64.10
GM-17I	115.83	51.61	64.22
GM-18I	109.03	46.31	62.72
GM-19I	109.86	45.64	64.22
GM-20I	103.88	39.65	64.23
GM-21I	105.72	39.12	66.60
GM-74I	107.42	41.05	66.37
GM-78I	105.06	44.79	60.27
GM-79I [4]	100.88	42.60	58.28
HN-24I	125.80	59.53	66.27
HN-29I	116.42	50.58	65.84
HN-40I	115.91	52.19	63.72
HN-42I	119.61	54.29	65.32

See notes on last page

Table 3. Water-Level Measurement Data, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water December 23, 2003 (ft bmp)	Water-Level Elevation December 23, 2003 (ft msl)
Deep Wells			
N-10627 [5]	93.70	35.35	58.35
GM-13D	113.97	49.80	64.17
GM-15D	109.84	49.70	60.14
GM-17D	115.68	53.47	62.21
GM-18D	108.88	48.72	60.16
GM-20D	103.92	41.27	62.65
GM-21D	105.66	45.39	60.27
GM-34D [3]	71.19	16.91	54.28
GM-36D	91.63	37.39	54.24
GM-37D	97.26	41.47	55.79
GM-38D	91.75	40.34	51.41
GM-39D$_A$ [7]	102.23	41.99	60.24
GM-39D$_B$ [7]	102.08	44.74	57.34
GM-73D	104.87	46.85	58.02
GM-74D	107.43	47.64	59.79
GM-79D [4]	101.25	43.90	57.35
HN-29D	115.11	50.71	64.40
Deep2 Wells			
GM-15D2	109.78	52.09	57.69
GM-33D2 [5]	106.85	52.20	54.65
GM-34D2 [3]	71.19	18.30	52.89
GM-35D2	96.28	41.50	54.78
GM-36D2	91.60	39.34	52.26
GM-37D2	97.17	42.12	55.05
GM-38D2	91.56	42.54	49.02
GM-70D2	99.58	43.31	56.27
GM-71D2	98.45	43.50	54.95
GM-73D2	104.62	48.86	55.76
GM-74D2	107.36	53.73	53.63
GM-75D2 [5]	93.63	38.17	55.46
GP-1 [2]	116.78	NM	NM
ONCT-1	104.10	67.93	36.17
ONCT-2	110.00	67.35	42.65
ONCT-3	108.70	65.33	43.37

(1) Water-level measurements collected from Well N-10624 are considered anomalous due to silt in the well screen.

(2) Water-levels were measured by inflating airline set at 120 ft bmp (gauge at wellhead) and subtracting the reading on the gauge from 120 to obtain the depth to water in feet.

(3) Depth to water measurements for GM-34D and GM-34D2 were collected on 12/29/2003.

(4) Depth to water measurements for GM-79I and GM-79D were collected on 12/30/2003.

(5) Depth to water measurements for GM-33D2, N-10627, and GM-75D2 were collected on 1/30/2004.

(6) Wells N-10631 and GM 18S were not measured due to inclement weather conditions.

(7) Wells GM-39$_A$ and GM-39D$_B$ are set in the approximate midpoint and basal portion of the deep zone, respectively.

ft msl feet relative to mean sea level

ft bmp feet below measuring point

NM Not Measured

G:\APROJECT\Northrop Grumman\Superfund\NY001348.0013 OMM\Reports\waterlevels_4Q03.xls- correct mps

ARCADIS

Table 4. Comparison of Fourth Quarter 2003 Vertical Hydraulic Gradients to Model Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well ID	Well Screen Midpoint Elevation (ft msl)	December 23, 2003 Water-Level Elevation (ft msl)	Vertical Gradient (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	62.02			
GM-15I	9.29	62.04	-0.79	4.20	-4.99
GM-16SR	66.77	64.33			
GM-16I	-24.19	64.10	2.53	1.11	1.42
GM-17SR	50.79	64.38			
GM-17I	5.83	64.22	3.56	4.50	-0.95
GM-21S	40.81	69.78			
GM-21I	-29.28	66.60	45.37	18.44	26.93
GM-78S	39.94	60.41			
GM-78I	5.56	60.27	4.07	8.73	-4.65
GM-79S	35.88	58.44			
GM-79I	-73.91	58.28	1.46	0.91	0.55
Intermediate-Deep Wells					
GM-15I	9.29	62.04			
GM-15D	-227.34	60.14	8.03	6.52	1.51
GM-17I	5.83	64.22			
GM-17D	-172.32	62.21	11.28	7.86	3.42
GM-18I	9.03	62.72			
GM-18D	-186.12	60.16	13.12	7.74	5.38
GM-20I	3.88	64.23			
GM-20D	-117.08	62.65	13.06	18.22	-5.16
GM-21I	-29.28	66.60			
GM-21D	-177.34	60.27	42.75	43.97	-1.22
GM-74I	8.42	66.37			
GM-74D	-192.57	59.79	32.74	20.17	12.57
GM-79I	-73.91	58.28			
GM-79D	-183.75	57.35	8.47	15.48	-7.01

See notes on last page

Table 4. Comparison of Fourth Quarter 2003 Vertical Hydraulic Gradients to Model Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well ID	Well Screen Midpoint Elevation (ft msl)	December 23, 2003 Water-Level Elevation (ft msl)	Vertical Gradient (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	60.14			
GM-15D2	-436.41	57.69	11.72	14.19	-2.47
GM-18D	-186.12	60.16			
GM-33D2	-403.15	54.65	25.39	12.30	13.09
GM-36D	-117.37	54.24			
GM-36D2	-443.40	52.26	6.07	2.75	3.32
GM-37D	-154.74	55.79			
GM-37D2	-282.83	55.05	5.78	3.88	1.90
GM-38D	-238.25	51.41			
GM-38D2	-393.44	49.02	15.40	6.08	9.32
GM-39D_A[(1)]	-169.77	60.24			
GM-39D_B[(1)]	-312.92	57.34	20.26	13.46	6.80
GM-73D	-301.13	58.02			
GM-73D2	-437.38	55.76	16.59	18.78	-2.19
GM-74D	-192.57	59.79			
GM-74D2	-444.64	53.63	24.44	28.26	-3.82
N-10627	-198.80	58.35			
GM-75D2	-421.37	55.46	12.98	2.25	10.74

Notes:

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

ft msl feet relative to mean sea level

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.

Table 5. Total Volatile Organic Compound and Cadmium/Chromium Concentrations and Comparison to SCGs for Select Site Boundary Monitoring Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York. [1] [2]

Shallow Zone

Well Identification:	N-10631	GM-15S	GM-17SR	GM-18S	GM-21S	GM-78S
Fourth Quarter TVOC Concentration (ug/L):	NS	6.4	0	39	0	0
No. of Fourth Quarter VOC SCG Exceedences:	–	0	0	2	0	0
No. of Year 2003 Quarters with VOC SCG Exceedences:	0	0	0	1	0	0
Fourth Quarter Total Cd Concentration (ug/L):	NS	–	0	0	–	0
No. of Fourth Quarter Total Cd SCG Exceedences:	–	–	0	0	–	0
No. of Year 2003 Quarters with Total Cd SCG Exceedences:	0	–	0	0	–	0
Fourth Quarter Total Cr Concentration (ug/L):	NS	111	0	0	–	0
No. of Fourth Quarter Total Cr SCG Exceedences:	–	1	0	0	–	0
No. of Year 2003 Quarters with Total Cr SCG Exceedences:	0	4	0	0	–	0

Intermediate Zone

Well Identification:	GM-15I	GM-17I	GM-18I	GM-20I	GM-21I	GM-74I	GM-78I
Fourth Quarter TVOC Concentration (ug/L):	11.5	0.6	2.0	1.8	0	0	0.8
No. Fourth Quarter 2003 VOC SCG Exceedences:	1	0	0	0	0	0	0
No. Year 2003 Rounds with SCG Exceedences:	2	0	0	0	0	0	0
Fourth Quarter Total Cd Concentration (ug/L):	–	–	–	–	–	–	0
No. of Fourth Quarter Total Cd SCG Exceedences:	–	–	–	–	–	–	0
No. of Year 2003 Quarters with Total Cd SCG Exceedences:	–	–	–	–	–	–	0
Fourth Quarter Total Cr Concentration (ug/L):	–	–	–	–	–	–	3
No. of Fourth Quarter Total Cr SCG Exceedences:	–	–	–	–	–	–	0
No. of Year 2003 Quarters with Total Cr SCG Exceedences:	–	–	–	–	–	–	0

Deep Zone

Well Identification:	GM-15D	GM-17D	GM-18D	GM-20D	GM-21D
Fourth Quarter TVOC Concentration (ug/L):	34	0	5	0.6	2
No. Fourth Quarter 2003 VOC SCG Exceedences:	3	0	0	0	0
No. Year 2003 Rounds with SCG Exceedences:	4	0	3	0	0

(1) Wells are shown on Figure 1. Analytical results from shallow, intermediate, deep, and deep2 wells are provided in Tables 6 through 9, respectively.

(2) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.

NS Not Sampled
– Not Applicable
VOC Volatile Organic Compound
Cd Cadmium
Cr Chromium
TVOC Total Volatile Organic Compound

NYSDEC 053467

Table 6. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	10634 N-10634 12/30/03	FW-03 FW-03 01/07/04	GM-14 GM-14 01/12/04	GM-15S GM 15S 01/06/04	GM-16SR GM-16SR 01/09/04
Chloromethane	5		<5	<5	<10	<5	<5
Bromomethane	5		<5	<5	<10	<5	<5
Vinyl Chloride	2		<2	<2	<10	<2	<2
Chloroethane	5		<5	<5	<10	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	**3 J**	<10
Carbon disulfide	50		<5	<5	<10	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	**0.4 J**	<5
Chloroform	7		<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5
Trichloroethene	5		**0.8 J**	**1 J**	<5	**3 J**	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<5	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	**3 J**	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<10	<5	<5
Freon-113 *	5		<5	<5	–	<5	<5
Fourth Quarter Total VOCs			**0.8**	**4.0**	0.0	**6.4**	0.0
Average Total VOCs for Quarters 1-3			0.0	**11.7**	0.0	**2.7**	0.0

Note: Well N-10631 was not sampled this round due to incement weather conditions.
All results analyzed and reported as a NYSDEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 6. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-17SR GM-17SR 01/08/04	GM-18S GM 18S 01/30/04	GM-21S GM 21S 12/30/03	GM-32S MW-32S 01/12/04	GM-78S GM-78S 01/08/04
Chloromethane	5		<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	**3 J**	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	**12**	<5	**2 J**	<5
Chloroform	7		<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	**3 J**	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5
Trichloroethene	5		<5	**21**	<5	**66**	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	**0.9 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5
Fourth Quarter Total VOCs			0.0	**39.0**	0.0	**68.9**	0.0
Average Total VOCs for Quarters 1-3			0.0	**0.2**	0.0	**36.8**	**2.3**

Note: Well N-10631 was not sampled this round due to incement weather conditions.
All results analyzed and reported as a NYSDEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 6. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	HN-40S HN-40S 12/22/03	HN-42S HN-42S 12/22/03	MW-03R MW-3R 01/09/04
Chloromethane	5		<5	<5	<5
Bromomethane	5		<5	<5	<5
Vinyl Chloride	2		<2	<2	<2
Chloroethane	5		<5	<5	<5
Methylene chloride	5		<5	<5	<5
Acetone	50		<10	<10	<10
Carbon disulfide	50		<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	**1 J**
Chloroform	7		<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5
2-Butanone	50		<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5
Bromodichloromethane	50		<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5
Trichloroethene	5		<5	<5	6
Dibromochloromethane	5		<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5
Bromoform	50		<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10
2-Hexanone	50		<10	<10	<10
Tetrachloroethene	5		<5	<5	**0.7 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5
Toluene	5		<5	<5	<5
Chlorobenzene	5		<5	<5	<5
Ethylbenzene	5		<5	<5	<5
Styrene	5		<5	<5	<5
Xylene (total)	5		<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5
Freon-113 *	5		<5	<5	<5
Fourth Quarter Total VOCs			0.0	0.0	**7.7**
Average Total VOCs for Quarters 1-3			**0.7**	**2.5**	**7.7**

Note: Well N-10631 was not sampled this round due to incement weather conditions.
All results analyzed and reported as a NYSDEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 7. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-15I GM 15I 01/06/04	GM-16I GM-16I 01/09/04	GM-17I GM 17I 12/30/03	GM-18I GM 18I 01/21/04	GM-20I GM 20I 01/05/04
Chloromethane	5		<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	**2 J**	<5	<5	<5
1,1-Dichloroethane	5		<5	**0.9 J**	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		**1 J**	**4 J**	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	**0.9 J**	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5
Trichloroethene	5		**10**	**22**	**0.6 J**	**2 J**	**0.8 J**
Dibromochloromethane	5		<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10
Tetrachloroethene	5		**0.5 J**	**7**	<5	<5	**1 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5	<5
Freon-113 *	5		<5	**0.5 J**	<5	<5	<5
Fourth Quarter Total VOCs			**11.5**	**37.3**	**0.6**	**2.0**	**1.8**
Average Total VOCs for Quarters 1-3			**4.5**	**32.4**	**0.8**	**0.93**	**1.1**

All results analyzed and reported as a NYS DEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds

ug/L Micrograms per liter

J Estimated value

NYSDEC New York State Department of Environmental Conservation

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

* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.

[ ] Value exceeds associated SCG value.

NE No SCG established

Bold value indicates a detection.

Table 7. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-21I GM 21I 01/05/04	GM-74I GM-74I 01/13/04	GM-78I GM-78I 01/08/04	GM-79I GM 79I 12/30/03	HN-24I HN-24I 01/07/04
Chloromethane	5		<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	**4 J**
1,1-Dichloroethane	5		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	**0.4 J**
Chloroform	7		<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	**3 J**
Carbon tetrachloride	5		<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5
Trichloroethene	5		<5	<5	**0.8 J**	**0.4 J**	**62**
Dibromochloromethane	5		<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	**4 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	**25**
Fourth Quarter Total VOCs			0.0	0.0	**0.8**	**0.4**	**98.4**
Average Total VOCs for Quarters 1-3			0.0	**0.1**	**3.0**	**0.7**	**165.8**

All results analyzed and reported as a NYS DEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 7. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	HN-29I HN-29I 01/07/04	HN-40I HN-40I 12/22/03	HN-42I HN-42I 12/22/03
Chloromethane	5		<5	<5	<5
Bromomethane	5		<5	<5	<5
Vinyl Chloride	2		<2	<2	<2
Chloroethane	5		<5	<5	<5
Methylene chloride	5		<5	<5	<5
Acetone	50		<10	<10	**21**
Carbon disulfide	50		**2 J**	<5	<5
1,1-Dichloroethene	5		<5	**1 J**	<5
1,1-Dichloroethane	5		<5	**0.7 J**	<5
cis-1,2-Dichloroethene	5		<5	<5	<5
trans-1,2-Dichloroethene	5		<5	**1 J**	<5
Chloroform	7		<5	**0.6 J**	<5
1,2-Dichloroethane	5		<5	<5	<5
2-Butanone	50		<10	<10	<10
1,1,1-Trichloroethane	5		<5	**5 J**	<5
Carbon tetrachloride	5		<5	<5	<5
Bromodichloromethane	50		<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5
Trichloroethene	5		**2 J**	**35**	**0.6 J**
Dibromochloromethane	5		<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5
Bromoform	50		<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10
2-Hexanone	50		<10	<10	<10
Tetrachloroethene	5		**1 J**	**10**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5
Toluene	5		<5	<5	<5
Chlorobenzene	5		<5	<5	<5
Ethylbenzene	5		<5	<5	<5
Styrene	5		<5	<5	<5
Xylene (total)	5		<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5
Freon-113 *	5		<5	<5	<5
Fourth Quarter Total VOCs			**5.0**	**53.3**	**21.6**
Average Total VOCs for Quarters 1-3			**1.5**	**27.7**	**0.5**

All results analyzed and reported as a NYS DEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 8. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	10627 N-10627 01/30/04	GM-13D GM-13D 01/14/04	GM-15D GM 15D 12/29/03	GM-17D GM17D 01/14/04	GM-18D GM18D 01/14/04
Chloromethane	5		<5	<25	<5	<5	<5
Bromomethane	5		<5	<25	<5	<5	<5
Vinyl Chloride	2		<2	<10	<2	<2	<2
Chloroethane	5		<5	<25	<5	<5	<5
Methylene chloride	5		<5	<25	<5	<5	<5
Acetone	50		<10	<50	<10	<10	<10
Carbon disulfide	50		<5	<25	<5	<5	<5
1,1-Dichloroethene	5		<5	**74**	**4 J**	<5	<5
1,1-Dichloroethane	5		<5	**43**	**7**	<5	<5
cis-1,2-Dichloroethene	5		<5	<25	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	**170**	**0.7 J**	<5	<5
Chloroform	7		<5	<25	**0.6 J**	<5	<5
1,2-Dichloroethane	5		<5	<25	<5	<5	<5
2-Butanone	50		<10	<50	<10	<10	<10
1,1,1-Trichloroethane	5		<5	**66**	**3 J**	<5	<5
Carbon tetrachloride	5		<5	<25	<5	<5	<5
Bromodichloromethane	50		<5	<25	<5	<5	<5
1,2-Dichloropropane	5		<5	<25	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<25	<5	<5	<5
Trichloroethene	5		**0.8 J**	**200**	**10**	<5	**5 J**
Dibromochloromethane	5		<5	<25	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<25	<5	<5	<5
Benzene	0.7		<0.7	<4	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<25	<5	<5	<5
Bromoform	50		<5	<25	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<50	<10	<10	<10
2-Hexanone	50		<10	<50	<10	<10	<10
Tetrachloroethene	5		<5	**600**	**8**	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<25	<5	<5	<5
Toluene	5		<5	<25	<5	<5	<5
Chlorobenzene	5		<5	<25	<5	<5	<5
Ethylbenzene	5		<5	<25	<5	<5	<5
Styrene	5		<5	<25	<5	<5	<5
Xylene (total)	5		<5	<25	<5	<5	<5
Vinyl Acetate	NE		<5	<25	<5	<5	<5
Freon-113 *	5		<5	**9 J**	**0.7 J**	<5	<5
Fourth Quarter Total VOCs			**0.8**	**1,162.0**	**34.0**	**0.0**	**5.0**
Average Total VOCs for Quarters 1-3			**1.5**	**1,478.0**	**28.6**	**1.3**	**9.5**

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
– Not applicable.
Bold value indicates a detection.

Table 8. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-20D GM 20D 01/05/04	GM-20D REP010504 01/05/04	GM-21D GM 21D 12/30/03	GM-34D GM 34D 12/29/03	GM-36D GM 36D 01/19/04
Chloromethane	5		<5	<5	<5	<10	<5
Bromomethane	5		<5	<5	<5	<10	<5
Vinyl Chloride	2		<2	<2	<2	<4	<2
Chloroethane	5		<5	<5	<5	<10	<5
Methylene chloride	5		<5	<5	<5	<10	<5
Acetone	50		<10	<10	<10	<20	<10
Carbon disulfide	50		<5	<5	<5	<10	<5
1,1-Dichloroethene	5		<5	<5	<5	**6 J**	<5
1,1-Dichloroethane	5		<5	<5	<5	**2 J**	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<10	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	**8 J**	<5
Chloroform	7		<5	<5	<5	<10	<5
1,2-Dichloroethane	5		<5	<5	<5	<10	<5
2-Butanone	50		<10	<10	<10	<20	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<10	<5
Carbon tetrachloride	5		<5	<5	<5	<10	<5
Bromodichloromethane	50		<5	<5	<5	<10	<5
1,2-Dichloropropane	5		<5	<5	<5	<10	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<10	<5
Trichloroethene	5		<5	<5	**2 J**	**380**	**14**
Dibromochloromethane	5		<5	<5	<5	<10	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<10	<5
Benzene	0.7		<0.7	<0.7	<0.7	<1	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<10	<5
Bromoform	50		<5	<5	<5	<10	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<20	<10
2-Hexanone	50		<10	<10	<10	<20	<10
Tetrachloroethene	5		**0.6 J**	**0.5 J**	<5	**8 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<10	<5
Toluene	5		<5	<5	<5	<10	<5
Chlorobenzene	5		<5	<5	<5	<10	<5
Ethylbenzene	5		<5	<5	<5	<10	<5
Styrene	5		<5	<5	<5	<10	<5
Xylene (total)	5		<5	<5	<5	<10	<5
Vinyl Acetate	NE		<5	<5	<5	<10	<5
Freon-113 *	5		<5	<5	<5	**41**	<5
Fourth Quarter Total VOCs			**0.6**	**0.5**	**2.0**	**445.0**	**14.0**
Average Total VOCs for Quarters 1-3			**0.4**	--	**2.7**	**348.3**	**15.5**

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
-- Not applicable.
Bold value indicates a detection.

G:\APROJECT\Northrop Grumman\Superfund\NY001348.0013 OM&M\Reports\voc4qtr only2003-04-03de

Table 8. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-37D GM37D 01/14/04	GM-38D GM-38D 01/13/04	GM-39D GM-39D 01/20/04	GM-73D GM-73D 01/15/04	GM-74D GM-74D 01/13/04
Chloromethane	5		<5	<25	<5	<10	<5
Bromomethane	5		<5	<25	<5	<10	<5
Vinyl Chloride	2		<2	<10	<2	<4	<2
Chloroethane	5		<5	<25	<5	<10	<5
Methylene chloride	5		<5	<25	<5	<10	<5
Acetone	50		<10	**25 J**	<10	<20	<10
Carbon disulfide	50		<5	<25	<5	<10	<5
1,1-Dichloroethene	5		<5	**8 J**	<5	<10	<5
1,1-Dichloroethane	5		**2 J**	**4 J**	<5	<10	<5
cis-1,2-Dichloroethene	5		<5	<25	<5	<10	<5
trans-1,2-Dichloroethene	5		<5	**3 J**	<5	<10	<5
Chloroform	7		<5	<25	<5	<10	<5
1,2-Dichloroethane	5		<5	<25	<5	<10	<5
2-Butanone	50		<10	<50	<10	<20	<10
1,1,1-Trichloroethane	5		<5	**4 J**	<5	<10	<5
Carbon tetrachloride	5		<5	<25	<5	<10	<5
Bromodichloromethane	50		<5	<25	<5	<10	<5
1,2-Dichloropropane	5		<5	<25	<5	<10	<5
cis-1,3-Dichloropropene	5		<5	<25	<5	<10	<5
Trichloroethene	5		<5	**790**	**29**	**260**	**4 J**
Dibromochloromethane	5		<5	<25	<5	<10	<5
1,1,2-Trichloroethane	5		<5	<25	<5	<10	<5
Benzene	0.7		<0.7	<4	<0.7	<1	<0.7
trans-1,3-Dichloropropene	5		<5	<25	<5	<10	<5
Bromoform	50		<5	<25	<5	<10	<5
4-Methyl-2-pentanone	50		<10	<50	<10	<20	<10
2-Hexanone	50		<10	<50	<10	<20	<10
Tetrachloroethene	5		<5	<25	<5	<10	**1 J**
1,1,2,2-Tetrachloroethane	5		<5	<25	<5	<10	<5
Toluene	5		<5	<25	<5	<10	<5
Chlorobenzene	5		<5	<25	<5	<10	<5
Ethylbenzene	5		<5	<25	<5	<10	<5
Styrene	5		<5	<25	<5	<10	<5
Xylene (total)	5		<5	<25	<5	<10	<5
Vinyl Acetate	NE		<5	<25	<5	<10	<5
Freon-113 *	5		<5	<25	<5	<10	<5
Fourth Quarter Total VOCs			**2.0**	**834.0**	**29.0**	**260.0**	**5.0**
Average Total VOCs for Quarters 1-3			**10.1**	**920.7**	**19.3**	**421.7**	**6.73**

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
-- Not applicable.
Bold value indicates a detection.

Table 8. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-79D / GM 79D / 12/30/03	HN-29D / HN-29D / 01/07/04
Chloromethane	5		<5	<5
Bromomethane	5		<5	<5
Vinyl Chloride	2		<2	<2
Chloroethane	5		<5	<5
Methylene chloride	5		<5	<5
Acetone	50		<10	<10
Carbon disulfide	50		<5	<5
1,1-Dichloroethene	5		**0.9 J**	<5
1,1-Dichloroethane	5		<5	<5
cis-1,2-Dichloroethene	5		<5	<5
trans-1,2-Dichloroethene	5		**1 J**	<5
Chloroform	7		<5	<5
1,2-Dichloroethane	5		<5	<5
2-Butanone	50		<10	<10
1,1,1-Trichloroethane	5		**0.8 J**	<5
Carbon tetrachloride	5		<5	<5
Bromodichloromethane	50		<5	<5
1,2-Dichloropropane	5		<5	<5
cis-1,3-Dichloropropene	5		<5	<5
Trichloroethene	5		**75**	**1 J**
Dibromochloromethane	5		<5	<5
1,1,2-Trichloroethane	5		<5	<5
Benzene	0.7		<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5
Bromoform	50		<5	<5
4-Methyl-2-pentanone	50		<10	<10
2-Hexanone	50		<10	<10
Tetrachloroethene	5		**2 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5
Toluene	5		<5	<5
Chlorobenzene	5		<5	<5
Ethylbenzene	5		<5	<5
Styrene	5		<5	<5
Xylene (total)	5		<5	<5
Vinyl Acetate	NE		<5	<5
Freon-113 *	5		**2 J**	<5
Fourth Quarter Total VOCs			**81.7**	**1.0**
Average Total VOCs for Quarters 1-3			**105.7**	**0.97**

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
– Not applicable.
Bold value indicates a detection.

G:\APROJECT\Northrop Grumman\Superfund\NY001348.0013 OM&M\Reports\voc4qtr only2003-04-03de

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-15D2 GM 15D2 01/06/04	GM-33D2 GM 33D2 01/30/04	GM-34D2 GM 34D2 12/29/03	GM-35D2 GM-35D2 01/20/04	GM-36D2 GM 36D2 01/26/04
Chloromethane	5		<5	<5	<5	<20	<5
Bromomethane	5		<5	<5	<5	<20	<5
Vinyl Chloride	2		<2	<2	<2	<8	<2
Chloroethane	5		<5	<5	<5	<20	<5
Methylene chloride	5		<5	<5	<5	<20	<5
Acetone	50		<10	<10	<10	<40	<10
Carbon disulfide	50		<5	<5	<5	<20	<5
1,1-Dichloroethene	5		**1 J**	<5	**3 J**	<20	<5
1,1-Dichloroethane	5		<5	<5	**0.6 J**	<20	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<20	<5
trans-1,2-Dichloroethene	5		**0.6 J**	**2 J**	**7**	**4 J**	<5
Chloroform	7		<5	<5	<5	<20	<5
1,2-Dichloroethane	5		<5	<5	<5	<20	<5
2-Butanone	50		<10	<10	<10	<40	<10
1,1,1-Trichloroethane	5		**0.5 J**	<5	**0.6 J**	<20	<5
Carbon tetrachloride	5		<5	<5	<5	<20	<5
Bromodichloromethane	50		<5	<5	<5	<20	<5
1,2-Dichloropropane	5		<5	<5	<5	<20	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<20	<5
Trichloroethene	5		**13**	**120**	**120**	**350**	<5
Dibromochloromethane	5		<5	<5	<5	<20	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<20	<5
Benzene	0.7		<0.7	<0.7	<0.7	<3	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<20	<5
Bromoform	50		<5	<5	<5	<20	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<40	<10
2-Hexanone	50		<10	<10	<10	<40	<10
Tetrachloroethene	5		**19**	**9**	**10**	**8 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<20	<5
Toluene	5		<5	<5	<5	<20	<5
Chlorobenzene	5		<5	<5	<5	<20	<5
Ethylbenzene	5		<5	<5	<5	<20	<5
Styrene	5		<5	<5	<5	<20	<5
Xylene (total)	5		<5	<5	<5	<20	<5
Vinyl Acetate	NE		<5	<5	<5	<20	<5
Freon-113 *	5		**2 J**	**13**	**9**	**10 J**	<5
Fourth Quarter Total VOCs			**36.1**	**144.0**	**150.2**	**372.0**	0.0
Average Total VOCs for Quarters 1-3			**32.9**	**189.7**	**193.8**	**354.7**	**0.3**

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-37D2 GM37D2 01/14/04	GM-38D2 GM-38D2 01/13/04	GM-39D2 GM-39D2 01/20/04	GM-70D2 GM 70D2 01/16/04	GM-71D2 GM 71D2 01/19/04
Chloromethane	5		<5	<50	<5	<5	<5
Bromomethane	5		<5	<50	<5	<5	<5
Vinyl Chloride	2		<2	<20	<2	<2	<2
Chloroethane	5		<5	<50	<5	<5	<5
Methylene chloride	5		<5	<50	<5	<5	<5
Acetone	50		<10	<100	<10	<10	<10
Carbon disulfide	50		<5	<50	<5	<5	<5
1,1-Dichloroethene	5		<5	<50	<5	<5	<5
1,1-Dichloroethane	5		**4 J**	<50	<5	<5	**2 J**
cis-1,2-Dichloroethene	5		<5	<50	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	**5 J**	<5	<5	<5
Chloroform	7		**0.5 J**	<50	<5	<5	**0.8 J**
1,2-Dichloroethane	5		<5	<50	<5	<5	<5
2-Butanone	50		<10	<100	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<50	<5	<5	<5
Carbon tetrachloride	5		<5	<50	<5	<5	<5
Bromodichloromethane	50		<5	<50	<5	<5	<5
1,2-Dichloropropane	5		<5	<50	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<50	<5	<5	<5
Trichloroethene	5		**2 J**	**980**	**85**	**21**	**2 J**
Dibromochloromethane	5		<5	<50	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<50	<5	<5	<5
Benzene	0.7		<0.7	<7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<50	<5	<5	<5
Bromoform	50		<5	<50	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<100	<10	<10	<10
2-Hexanone	50		<10	<100	<10	<10	<10
Tetrachloroethene	5		**1 J**	<50	<5	**1 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<50	<5	<5	<5
Toluene	5		<5	<50	<5	<5	**0.6 J**
Chlorobenzene	5		<5	<50	<5	<5	<5
Ethylbenzene	5		<5	<50	<5	<5	<5
Styrene	5		<5	<50	<5	<5	<5
Xylene (total)	5		<5	<50	<5	<5	<5
Vinyl Acetate	NE		<5	<50	<5	<5	<5
Freon-113 *	5		<5	<50	<5	<5	<5
Fourth Quarter Total VOCs			**7.5**	**985.0**	**85.0**	**22.0**	**5.4**
Average Total VOCs for Quarters 1-3			**15.7**	**1,193.7**	**49.8**	**81.7**	**9.8**

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-73D2 GM-73D2 01/13/04	GM-74D2 GM-74D2 01/13/04	GM-75D2 GM 75D2 01/30/04	GP-1 GP-1 01/20/04	GP-3 GP-3 01/20/04
Chloromethane	5		<50	<5	<5	<5	<100
Bromomethane	5		<50	<5	<5	<5	<100
Vinyl Chloride	2		<20	<2	<2	<2	**75**
Chloroethane	5		<50	<5	<5	<5	<100
Methylene chloride	5		<50	<5	<5	<5	<100
Acetone	50		**38 J**	<10	<10	<10	<200
Carbon disulfide	50		<50	<5	<5	<5	<100
1,1-Dichloroethene	5		<50	<5	**20**	**6**	**19 J**
1,1-Dichloroethane	5		<50	<5	**4 J**	<5	<100
cis-1,2-Dichloroethene	5		<50	<5	<5	<5	<100
trans-1,2-Dichloroethene	5		<50	<5	**2 J**	**10**	**10 J**
Chloroform	7		<50	<5	<5	<5	<100
1,2-Dichloroethane	5		<50	<5	<5	<5	<100
2-Butanone	50		<100	<10	<10	<10	<200
1,1,1-Trichloroethane	5		<50	<5	**7**	<5	<100
Carbon tetrachloride	5		<50	<5	<5	<5	<100
Bromodichloromethane	50		<50	<5	<5	<5	<100
1,2-Dichloropropane	5		<50	<5	<5	**1 J**	<100
cis-1,3-Dichloropropene	5		<50	<5	<5	<5	<100
Trichloroethene	5		**1100**	**8**	**880 D**	**590 D**	**3600 D**
Dibromochloromethane	5		<50	<5	<5	<5	<100
1,1,2-Trichloroethane	5		<50	<5	<5	<5	<100
Benzene	0.7		<7	<0.7	<0.7	<0.7	<14
trans-1,3-Dichloropropene	5		<50	<5	<5	<5	<100
Bromoform	50		<50	<5	<5	<5	<100
4-Methyl-2-pentanone	50		<100	<10	<10	<10	<200
2-Hexanone	50		<100	<10	<10	<10	<200
Tetrachloroethene	5		**5 J**	**6**	**7**	**130**	**74 J**
1,1,2,2-Tetrachloroethane	5		<50	<5	<5	<5	<100
Toluene	5		<50	<5	<5	<5	<100
Chlorobenzene	5		<50	<5	<5	<5	<100
Ethylbenzene	5		<50	<5	<5	<5	<100
Styrene	5		<50	<5	<5	<5	<100
Xylene (total)	5		<50	<5	<5	<5	<100
Vinyl Acetate	NE		<50	<5	<5	<5	<100
Freon-113 *	5		<50	<5	**5**	**11**	**31 J**
Fourth Quarter Total VOCs			**1,143.0**	**14.0**	**925.0**	**748.0**	**3,809.0**
Average Total VOCs for Quarters 1-3			**956.3**	**14.9**	**1,034.0**	**654.7**	**3,230.4**

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Syste
Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GP-1/3 EFFLUENT GP-1/3 EFFL 01/20/04	ONCT-1 ONCT-1 01/20/04	ONCT-2 ONCT-2 01/20/04	ONCT-3 ONCT-3 01/20/04
Chloromethane	5		<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10
Carbon disulfide	50		<5	<5	<5	<5
1,1-Dichloroethene	5		<5	**3 J**	**4 J**	**1 J**
1,1-Dichloroethane	5		<5	<5	**2 J**	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	**3 J**	**2 J**	**16**
Chloroform	7		<5	<5	<5	**1 J**
1,2-Dichloroethane	5		<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	**3 J**	<5
Carbon tetrachloride	5		<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5
Trichloroethene	5		**3 J**	**880 D**	**180**	**51**
Dibromochloromethane	5		<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10
Tetrachloroethene	5		<5	**15**	**11**	**11**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5
Freon-113 *	5		<5	**9**	**2 J**	**0.8 J**
Fourth Quarter Total VOCs			**3.0**	**910.0**	**204.0**	**80.8**
Average Total VOCs for Quarters 1-3			0.0	**848.6**	**198.3**	**69.5**

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	ONCT EFFLUENT ONCT EFFL 01/20/04
Chloromethane	5		<5
Bromomethane	5		<5
Vinyl Chloride	2		<2
Chloroethane	5		<5
Methylene chloride	5		<5
Acetone	50		<10
Carbon disulfide	50		<5
1,1-Dichloroethene	5		<5
1,1-Dichloroethane	5		<5
cis-1,2-Dichloroethene	5		<5
trans-1,2-Dichloroethene	5		**1 J**
Chloroform	7		<5
1,2-Dichloroethane	5		<5
2-Butanone	50		<10
1,1,1-Trichloroethane	5		<5
Carbon tetrachloride	5		<5
Bromodichloromethane	50		<5
1,2-Dichloropropane	5		<5
cis-1,3-Dichloropropene	5		<5
Trichloroethene	5		**0.9 J**
Dibromochloromethane	5		<5
1,1,2-Trichloroethane	5		<5
Benzene	0.7		<0.7
trans-1,3-Dichloropropene	5		<5
Bromoform	50		<5
4-Methyl-2-pentanone	50		<10
2-Hexanone	50		<10
Tetrachloroethene	5		<5
1,1,2,2-Tetrachloroethane	5		<5
Toluene	5		<5
Chlorobenzene	5		<5
Ethylbenzene	5		<5
Styrene	5		<5
Xylene (total)	5		<5
Vinyl Acetate	NE		<5
Freon-113 *	5		<5
Fourth Quarter Total VOCs			**1.9**
Average Total VOCs for Quarters 1-3			0.0

All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 10. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater and Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

WELL/BLANK SAMPLE IDENTIFICATION:	HN-29D	HN-42S	GM-15I	GM-16I	GM-17D	TRIP BLANK
SAMPLE ID:	HN-29D	HN-42S	GM-15I	GM-16I	GM-17D	TB010504
DATE:	01/07/04	12/22/03	01/06/04	01/09/04	01/14/04	01/05/04
Tentatively Identified Compounds (Units in ug/L)						
2-Methoxy-2-methyl-propane	--	--	--	10 JN	--	--
Diphenyl ether	--	--	--	--	--	25 JN
Unknown	--	38 J	--	--	146 J	7 J
Unknown Alkane	--	--	--	--	14 J	--
Unknown Siloxane	54 J	--	49 J	--	--	--

TICs are identified based on review of mass spectrometry results via a comprehensive library search of all organic compounds.
All results analyzed and reported as a NYS DEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYS DEC 2002).

ug/L	Micrograms per liter
--	Not Detected
J	Estimated value
N	Presumtive evidence of this constituent. Calibrations were not run for this constituent; therefore, the results should be used for qualitative purposes only.

NYSDEC 053483

Table 11. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE:	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
	SAMPLE ID:	TB122203	TB122903	TB123003	TB010504	TB010604	TB010704
	DATE:	12/22/03	12/29/03	12/30/03	01/05/04	01/06/04	01/07/04
Chloromethane		<5	<5	<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		**2 J B**	**1 J**	**1 J**	**1 J B**	**1 J B**	**1 J B**
Acetone		<10	<10	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		**2**	**1**	**1**	**1**	**1**	**1**

All results analyzed and reported as a NYSDEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
EQ. Equipment
Bold **Indicates detection.**

Table 11. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB010804 01/08/04	TRIP BLANK TB010904 01/09/04	TRIP BLANK TB011204 01/12/04	TRIP BLANK TB011304 01/13/04	TRIP BLANK TB011404 01/14/04	TRIP BLANK TB011504 01/15/04
Chloromethane		<5	<5	<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		**1 J B**	**2 J B**	**3 J B**	**2 J B**	**2 J B**	**1 J**
Acetone		<10	<10	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		**1**	**2**	**3**	**2**	**2**	**1**

All results analyzed and reported as a NYSDEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
EQ. Equipment
Bold **Indicates detection.**

Table 11. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB011604 01/16/04	TRIP BLANK TB011904 01/19/04	TRIP BLANK TB012004 01/20/04	TRIP BLANK TB012104 01/21/04	TRIP BLANK TB012604 01/26/04	TRIP BLANK TB13004 01/30/04
Chloromethane		<5	<5	<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		**1 J**	**1 J**	**1 J**	**1 J**	**1 J**	**2 J B**
Acetone		<10	<10	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	**4 J**	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		**1**	**1**	**1**	**5**	**1**	**2**

All results analyzed and reported as a NYSDEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
EQ. Equipment
Bold **Indicates detection.**

Table 11. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE:	WATER EQ. BLANK	WATER EQ. BLANK	WATER EQ. BLANK	WATER EQ. BLANK
	SAMPLE ID:	FB122203	FB122903	FB123003	FB010604
	DATE:	12/22/03	12/29/03	12/30/03	01/06/04
Chloromethane		<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5
Methylene chloride		**1 J B**	**1 J**	**2 J**	**2 J B**
Acetone		<10	<10	**4 J**	<10
Carbon disulfide		**2 J**	**0.5 J**	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5
Chloroform		<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5
Bromoform		<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5
Toluene		<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5
Styrene		<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5
Total VOCs		**3**	**1.5**	**6**	**2**

All results analyzed and reported as a NYSDEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
EQ. Equipment
Bold **Indicates detection.**

Table 11. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	WATER EQ. BLANK FB010704 01/07/04	WATER EQ. BLANK FB010804 01/08/04	WATER EQ. BLANK FB010904 01/09/04	WATER EQ. BLANK FB011204 01/12/04
Chloromethane		<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5
Methylene chloride		**1 J B**	**1 J B**	**2 J B**	**3 J B**
Acetone		<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5
Chloroform		<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5
Bromoform		<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5
Toluene		<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5
Styrene		<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5
Total VOCs		**1**	**1**	**2**	**3**

All results analyzed and reported as a NYSDEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
EQ. Equipment
Bold **Indicates detection.**

Table 11. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	WATER EQ. BLANK FB011504 01/15/04	WATER EQ. BLANK FB012004 01/20/04	WATER EQ. BLANK FB13004 01/30/04
Chloromethane		<5	<5	<5
Bromomethane		<5	<5	<5
Vinyl Chloride		<2	<2	<2
Chloroethane		<5	<5	<5
Methylene chloride		**0.9 J**	**1 J**	**1 J B**
Acetone		<10	<10	<10
Carbon disulfide		<5	<5	<5
1,1-Dichloroethene		<5	<5	<5
1,1-Dichloroethane		<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5
Chloroform		<5	<5	<5
1,2-Dichloroethane		<5	<5	<5
2-Butanone		<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5
Carbon tetrachloride		<5	<5	<5
Bromodichloromethane		<5	<5	<5
1,2-Dichloropropane		<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5
Trichloroethene		<5	<5	<5
Dibromochloromethane		<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5
Benzene		<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5
Bromoform		<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10
2-Hexanone		<10	<10	<10
Tetrachloroethene		<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5
Toluene		<5	<5	<5
Chlorobenzene		<5	<5	<5
Ethylbenzene		<5	<5	<5
Styrene		<5	<5	<5
Xylene (total)		<5	<5	<5
Vinyl Acetate		<5	<5	<5
Freon-113 *		<5	<5	<5
Total VOCs		**0.9**	**1**	**1**

All results analyzed and reported as a NYSDEC category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
EQ. Equipment
Bold **Indicates detection.**

Table 12. Concentrations of Semi-Volatile Organic Compounds in Groundwater and Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	WELL/SAMPLE TYPE: / SAMPLE ID: / DATE:	GM-14 GM-14 01/12/2004	WATER EQ. BLANK FB011204 01/12/2004
Phenol		<10	<10
Bis(2-chloroethyl)ether		<10	<10
2-Chlorophenol		<10	<10
1,3-Dichlorobenzene		<10	<10
1,4-Dichlorobenzene		<10	<10
1,2-Dichlorobenzene		<10	<10
2-Methylphenol		<10	<10
Propane, 2,2'-oxybis[1-chloro-		<10	<10
4-Methylphenol		<10	<10
N-Nitroso-di-n-propylamine		<10	<10
Hexachloroethane		<10	<10
Nitrobenzene		<10	<10
Isophorone		<10	<10
2-Nitrophenol		<10	<10
2,4-Dimethylphenol		<10	<10
Bis(2-chloroethoxy)methane		<10	<10
2,4-Dichlorophenol		<10	<10
1,2,4-Trichlorobenzene		<10	<10
Naphthalene		<10	<10
4-Chloroaniline		<10	<10
Hexachlorobutadiene		<10	<10
4-Chloro-3-methylphenol		<10	<10
2-Methylnaphthalene		<10	<10
Hexachlorocyclopentadiene		<10	<10
2,4,6-Trichlorophenol		<10	<10
2,4,5-Trichlorophenol		<50	<50
2-Chloronaphthalene		<10	<10
2-Nitroaniline		<50	<50
Dimethylphthalate		<10	<10
Acenaphthylene		<10	<10
2,6-Dinitrotoluene		<10	<10
3-Nitroaniline		<50	<50
Acenaphthene		<10	<10
2,4-Dinitrophenol		<50	<50
4-Nitrophenol		<50	<50
Dibenzofuran		<10	<10
2,4-Dinitrotoluene		<10	<10
Diethylphthalate		<10	<10
CPPE4		<10	<10
Fluorene		<10	<10
4-Nitroaniline		<50	<50
4,6-Dinitro-2-methylphenol		<50	<50
N-Nitrosodiphenylamine (1)		<10	<10
Benzene, 1-bromo-4-phenoxy-		<10	<10
Hexachlorobenzene		<10	<10
Pentachlorophenol		<50	<50
Phenanthrene		<10	<10
Anthracene		<10	<10
Carbazole		<10	<10
Di-n-butylphthalate		<10	<10

See next page for footnotes.

Table 12. Concentrations of Semi-Volatile Organic Compounds in Groundwater and Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	WELL/SAMPLE TYPE: SAMPLE ID: DATE:	GM-14 GM-14 01/12/2004	WATER EQ. BLANK FB011204 01/12/2004
Fluoranthene		<10	<10
Pyrene		<10	<10
Butylbenzylphthalate		<10	<10
3,3'-Dichlorobenzidine		<20	<20
Benzo(a)anthracene		<10	<10
Chrysene		<10	<10
Bis(2-ethylhexyl)phthalate (BEHP)		<10	<10
Di-n-octylphthalate		<10	<10
Benzo(b)fluoranthene		<10	<10
Benzo(k)fluoranthene		<10	<10
Benzo(a)pyrene		<10	<10
Indeno(1,2,3-cd)pyrene		<10	<10
Dibenz(a,h)anthracene		<10	<10
Benzo(g,h,i)perylene		<10	<10
Benzoic acid		<50	<50
Benzyl alcohol		<10	<10
Sum of Constituents		0	0

All results analyzed and reported as a NYSDEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).
ug/L Micrograms per liter.

ARCADIS

Table 13. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater and Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	N-10631 / N-10631 / --	GM-15S / GM-15S / 01/06/2004	GM-16SR / GM-16SR / 01/09/2004	GM-17SR / GM-17SR / 01/08/2004	GM-18S / GM 18S / 01/30/2004	GM-18S / REP013004 / 01/30/2004	GM-32S / GM-32S / 01/12/2004	GM-78S / GM-78S / 01/08/2004	GM-78I / GM-78I / 01/08/2004	MW-1GF / MW-1GF / 01/26/2004
Cadmium, Total	5		--	--	<0.94	<0.94	<0.94	<0.94	<0.94	<0.94	<0.94	<0.94
Cadmium, Dissolved	5		--	--	<0.94	<0.94	<0.94	--	<0.94	--	--	<0.94
Average Cadmium, Total for Quarters 1-3			3	--	<0.94	<0.94	<0.94	--	<0.94	<0.94	<0.94	<0.94
Average Cadmium, Dissolved for Quarters 1-3			2.6	--	<0.94	<0.94	<0.94	--	<0.94	--	--	<0.94
Chromium, Total	50		--	111	<1.4	<1.4	<1.4	3.8 B	43.4	<1.4	3.1 B	<2.4
Chromium, Dissolved	50		--	--	<1.4	<1.4	<1.4	--	43.1	--	--	<1.4
Average Chromium, Total for Quarters 1-3			23.7	356.7	<1.4	<1.4	<1.4	--	58	<1.4	<1.4	1.27
Average Chromium, Dissolved for Quarters 1-3			16.4	--	<1.4	<1.4	<1.4	--	55.2	--	--	<1.4

Note: Well N-10631 was not sampled this round due to incement weather conditions.
All results analyzed and reported as a NYSDEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
ug/L Micrograms per liter
B Detected between the IDL and CRDL
IDL Instrument detection limit
CRDL Contract-required detection limit
NYSDEC New York State Department of Environmental Conservation
EQ. Equipment
[ ] Value exceeds associated SCG value.
Bold Constituent detected above IDL.
-- Not analyzed

NYSDEC 053492

Table 13. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater and Blank Samples, Third and Fourth Quarters 2003, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	MW-2GF / MW-2GF / 01/12/2004	MW-03R / MW-03R / 01/09/2004	MW-04 / PLT1MW-04 / 01/06/2004	MW-05 / PLT1MW-05 / 01/06/2004	MW-06 / PLT1MW-06 / 01/06/2004
Cadmium, Total	5		<0.94	**43.4**	--	--	--
Cadmium, Dissolved	5		<0.94	**42.1**	--	--	--
Average Cadmium, Total for Quarters 1-3			<0.94	**37.7**	--	--	--
Average Cadmium, Dissolved for Quarters 1-3			<0.94	**37.2**	--	--	--
Chromium, Total	50		**31**	**67.2**	<1.4	**704**	**253**
Chromium, Dissolved	50		**28.8**	**66.5**	--	--	--
Average Chromium, Total for Quarters 1-3			**36.2**	**70.7**	**12.9**	**736.7**	**283.3**
Average Chromium, Dissolved for Quarters 1-3			**33.1**	**68.7**	--	--	--

Note: Well N-10631 was not sampled this round due to incement weather conditions.
All results analyzed and reported as a NYSDEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
ug/L Micrograms per liter
B Detected between the IDL and CRDL
IDL Instrument detection limit
CRDL Contract-required detection limit
NYSDEC New York State Department of Environmental Conservation
EQ. Equipment
[ ] Value exceeds associated SCG value.
Bold Constituent detected above IDL.
-- Not analyzed

Table 13. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater and Blank Samples, Fourth Quarter 2003, Northrop Grumman Corporation, Bethpage, New York.

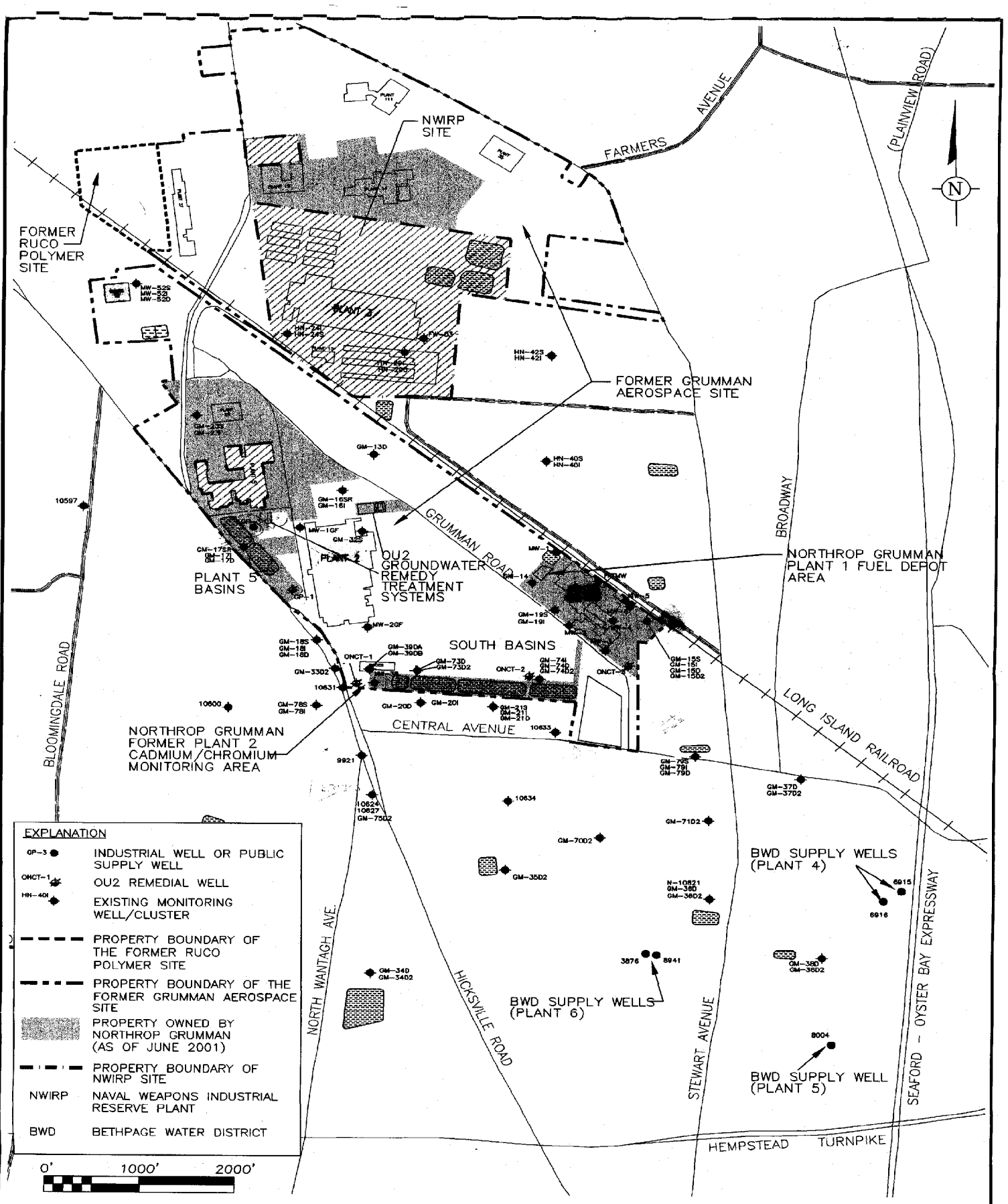
CONSTITUENT (Units in ug/L)	NYSDEC SCGs (1)	WELL: SAMPLE ID: DATE:	WATER EQ. BLANK FB010604 01/06/2004	WATER EQ. BLANK FB010804 01/08/2004	WATER EQ. BLANK FB010904 01/09/2004	WATER EQ. BLANK FB011204 01/12/2004	WATER EQ. BLANK FB012604 01/26/2004	WATER EQ. BLANK FB13004 01/30/2004
Cadmium, Total	5		–	<0.94	<0.94	<0.94	<0.94	<0.94
Cadmium, Dissolved	5		–	–	–	–	–	–
Chromium, Total	50		<1.4	<1.4	<1.4	<1.4	**2.8 B**	<1.4
Chromium, Dissolved	50		–	–	–	–	–	–

Note: Well N-10631 was not sampled this round due to incement weather conditions.
All results analyzed and reported as a NYSDEC Category A deliverable in accordance with NYS DER-10 Guidance Document (NYSDEC 2002).

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

ug/L Micrograms per liter
B Detected between the IDL and CRDL
IDL Instrument detection limit
CRDL Contract-required detection limit
NYSDEC New York State Department of Environmental Conservation
EQ. Equipment
[ ] Value exceeds associated SCG value.
Bold Constituent detected above IDL.
-- Not analyzed

FIGURES



ARCADIS G&M

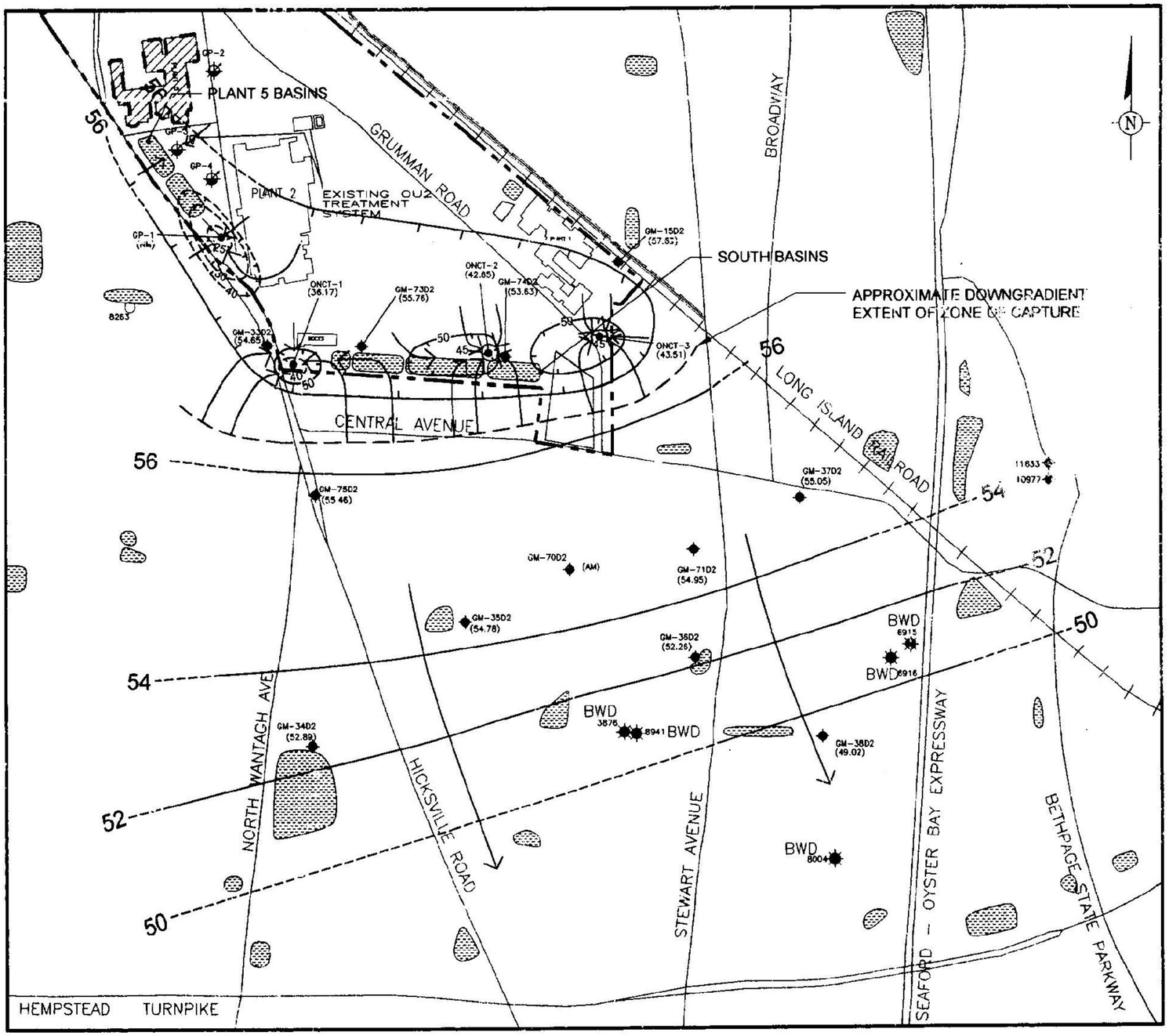
NORTHROP GRUMMAN CORPORATION

BETHPAGE, NEW YORK

LOCATION OF ON-SITE OU2 GROUNDWATER REMEDY AND WELLS

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
A.G.	12/3/03	CSG	
		LEAD DESIGN PROF.	CHECKED
			D.S.
		PROJECT NUMBER	DRAWING NUMBER
		NY001348.001	1

NYSDEC 053496



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION SITE
- RECHARGE BASIN
- GM-36D2 (52.26) — LOCATION AND DESIGNATION OF D2 (VERY DEEP) MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL.
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL
- 8263 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-3 — LOCATION AND DESIGNATION OF GRUMMAN INDUSTRIAL SUPPLY
- ONCT-3 (43.51) — LOCATION AND DESIGNATION OF ON-SITE OU2 REMEDIAL WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- 52 — LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)
- LINE OF EQUAL WATER-LEVEL ELEVATION DENOTING A DECREASE IN POTENTIOMETRIC SURFACE ELEVATION IN FT. MSL.

OU2 OPERABLE UNIT 2
GPM GALLONS PER MINUTE
BWD BETHPAGE WATER DISTRICT
USGS UNITED STATES GEOLOGICAL SURVEY
AM ANOMALOUS MEASUREMENT
NM NOT MEASURED THIS ROUND

NOTES:

1. THIS FIGURE INCLUDES LOCATIONS OF MONITORING WELLS AND PUBLIC SUPPLY WELLS AS OF SEPTEMBER 25, 2001.
2. OU2 REMEDIAL WELLS GP-1, ONCT-1, ONCT-2, AND ONCT-3 ARE SCREENED IN THE D2 ZONE AND WERE PUMPING AT 1,070 GPM, 1049 GPM, 696 GPM, AND 598 GPM, RESPECTIVELY AT THE TIME OF WATER LEVEL MEASUREMENT.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.
5. INDUSTRIAL SUPPLY WELL GP-3 IS SCREENED IN THE D2 ZONE AND WAS PUMPING AT A RATE OF 454 GPM AT THE TIME OF WATER LEVEL MEASUREMENT.
6. BASIN LOCATIONS OBTAINED FROM USGS TOPOGRAPHIC MAPS (HICKSVILLE, AMITYVILLE, HUNTINGTON, AND FREEPORT QUADRANGLES), AND INFORMATION PROVIDED BY NORTHROP GRUMMAN.
7. ALTHOUGH THE DEPTH TO WATER IN WELL GP-1 COULD NOT BE MEASURED THIS ROUND, THE PUMPING RATE IS SIMILAR TO PREVIOUS ROUNDS AND IT IS REASONABLE TO ASSUME THAT THE CONE OF DEPRESSION AROUND THE WELL IS ALSO CONSISTENT.

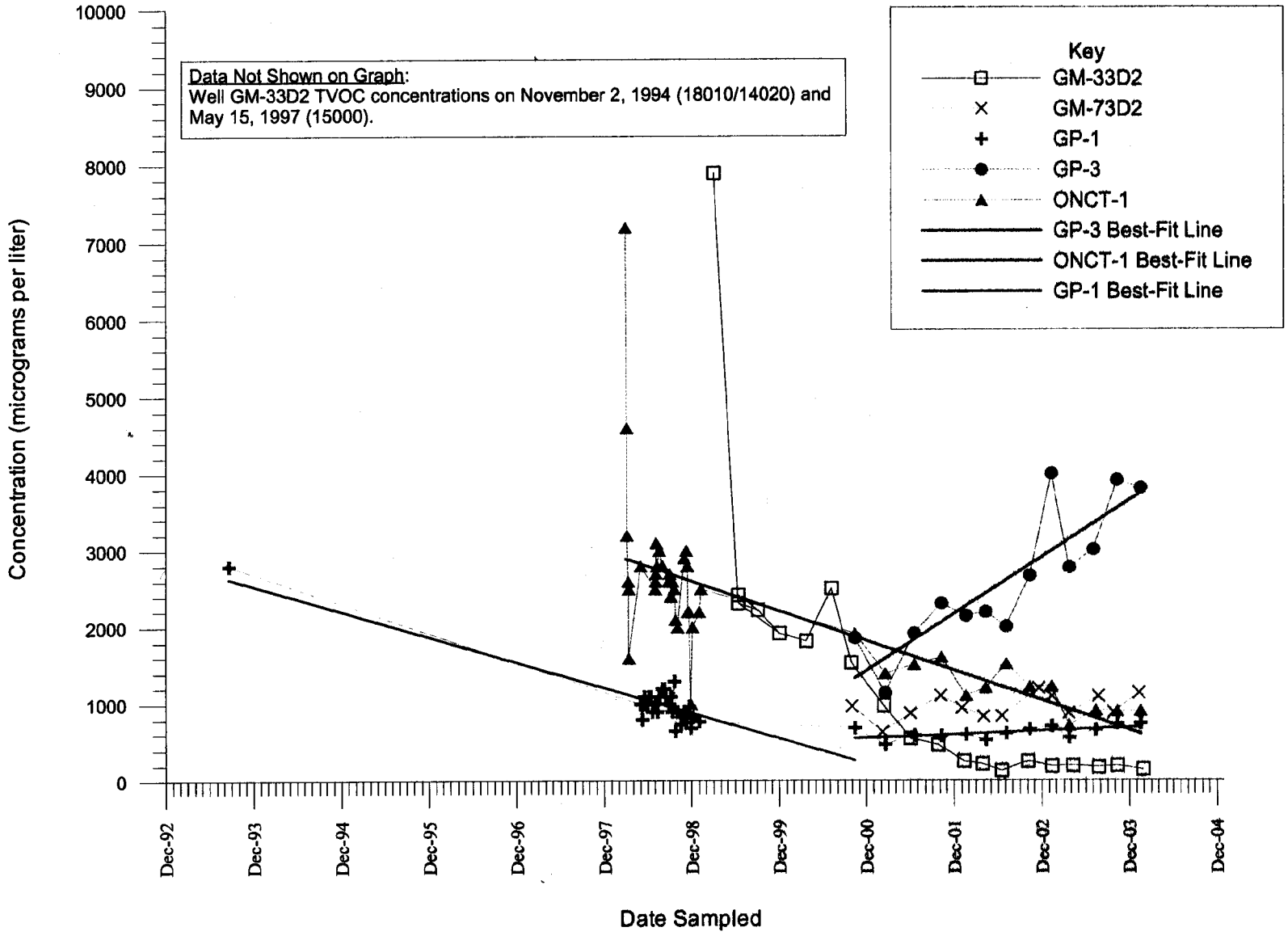
FILE: G:\PROJECT\NORTHROP GRUMMAN\CADD\DEEP-10-04.DWG, DATE: 04/07/2004 01:37:08PM

ARCADIS G&M
88 Duryea Road
Melville, New York 11747
Tel: 631/249-7600 Fax: 631/249-7610

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE ELEVATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE D2 ZONE DECEMBER 23, 2003

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	02/08/04	CGS	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001348.0013	4



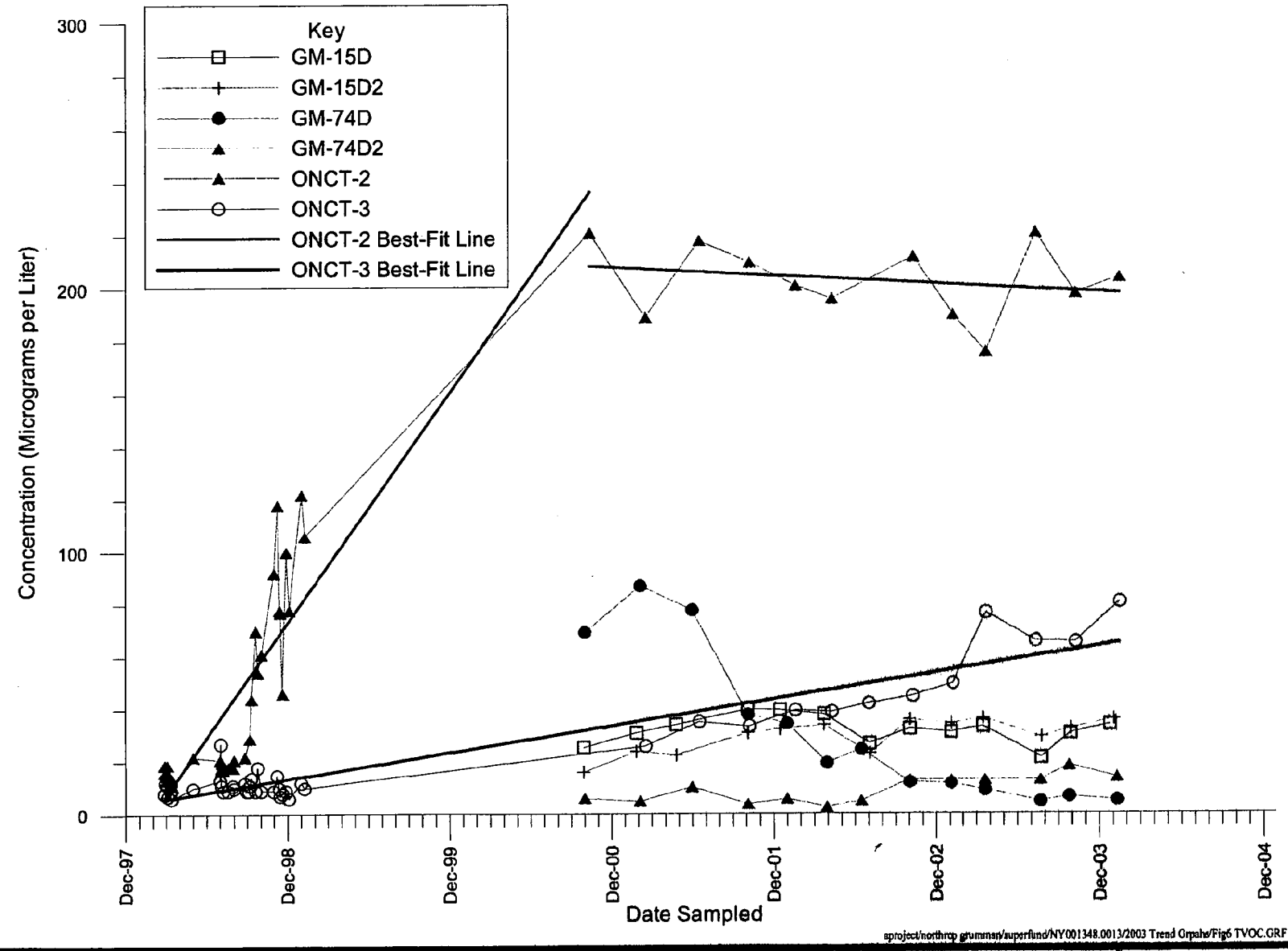
g:\project\northropgrumman\superfund\NY001348.0013\2003TrendGraphs\TVOC OU2 Wells.GRF

ARCADIS

Total Volatile Organic Compound Concentrations along the Southern and Southwestern Site Boundary in OU2 Remedial Wells, Industrial Well GP-3, and Monitoring Wells GM-33D2 and GM-73D2 Northrop Grumman Corporation, Bethpage, New York

FIGURE 5

NYSDEC 053498

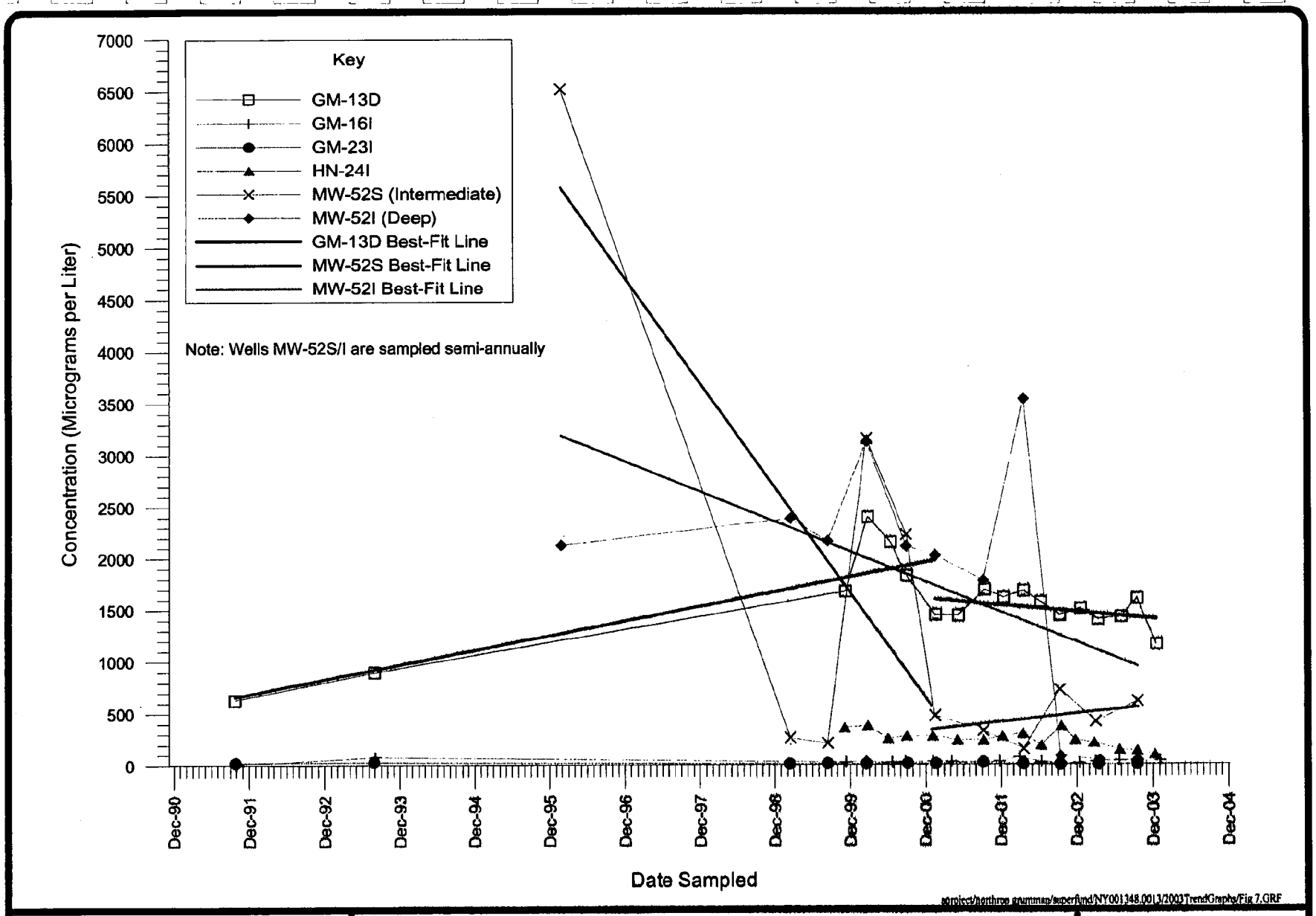


ARCADIS

Total Volatile Organic Compound Concentrations along the Southeastern Site Boundary in On-site Deep and Deep2 Monitoring Wells and OU2 Remedial Wells ONCT-2 and ONCT-3 Northrop Grumman Corporation, Bethpage, New York

FIGURE 6

NYSDEC 053499

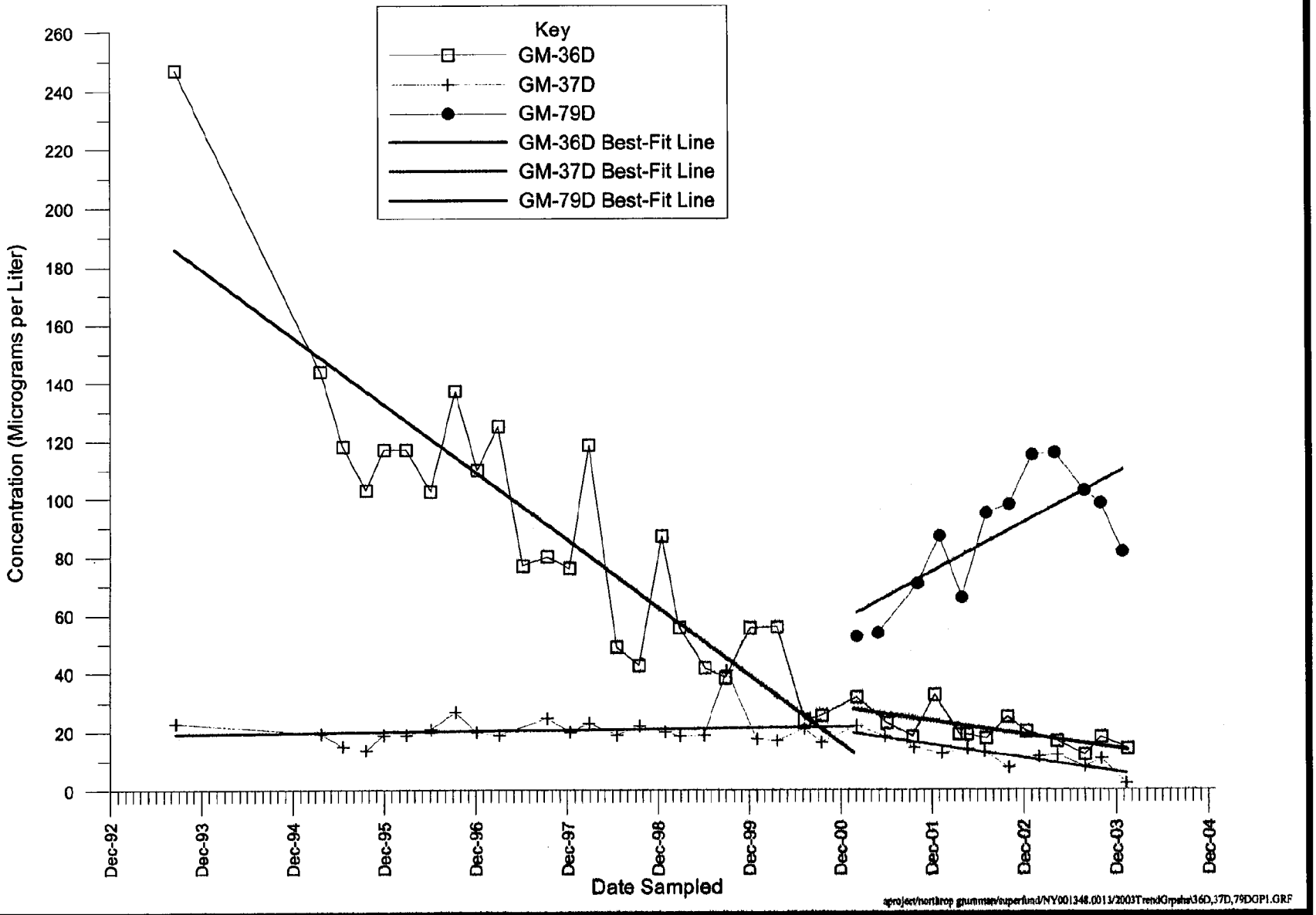


ARCADIS

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

FIGURE 7

NYSDEC 053500

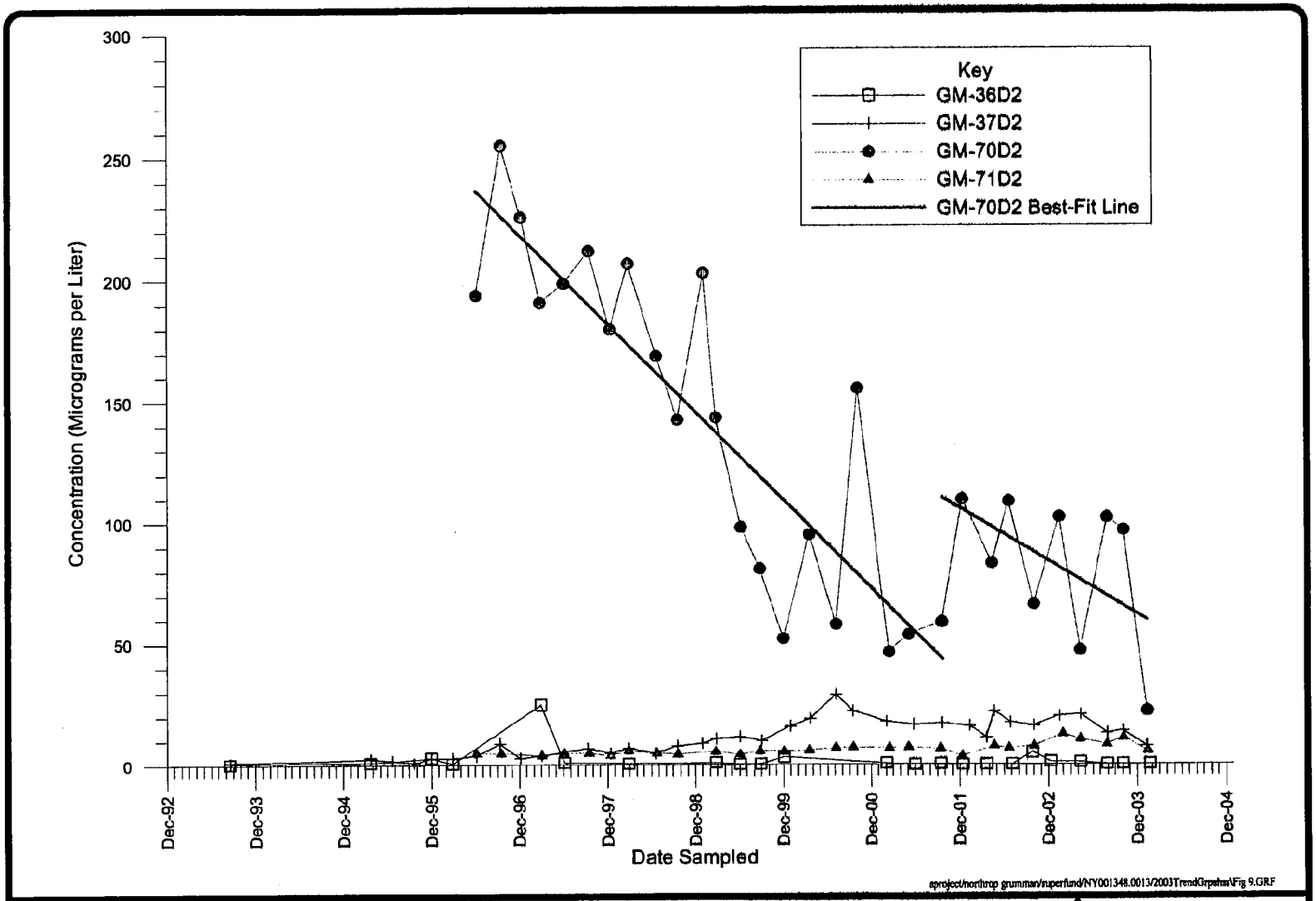


ARCADIS

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

FIGURE 8

NYSDEC 053501

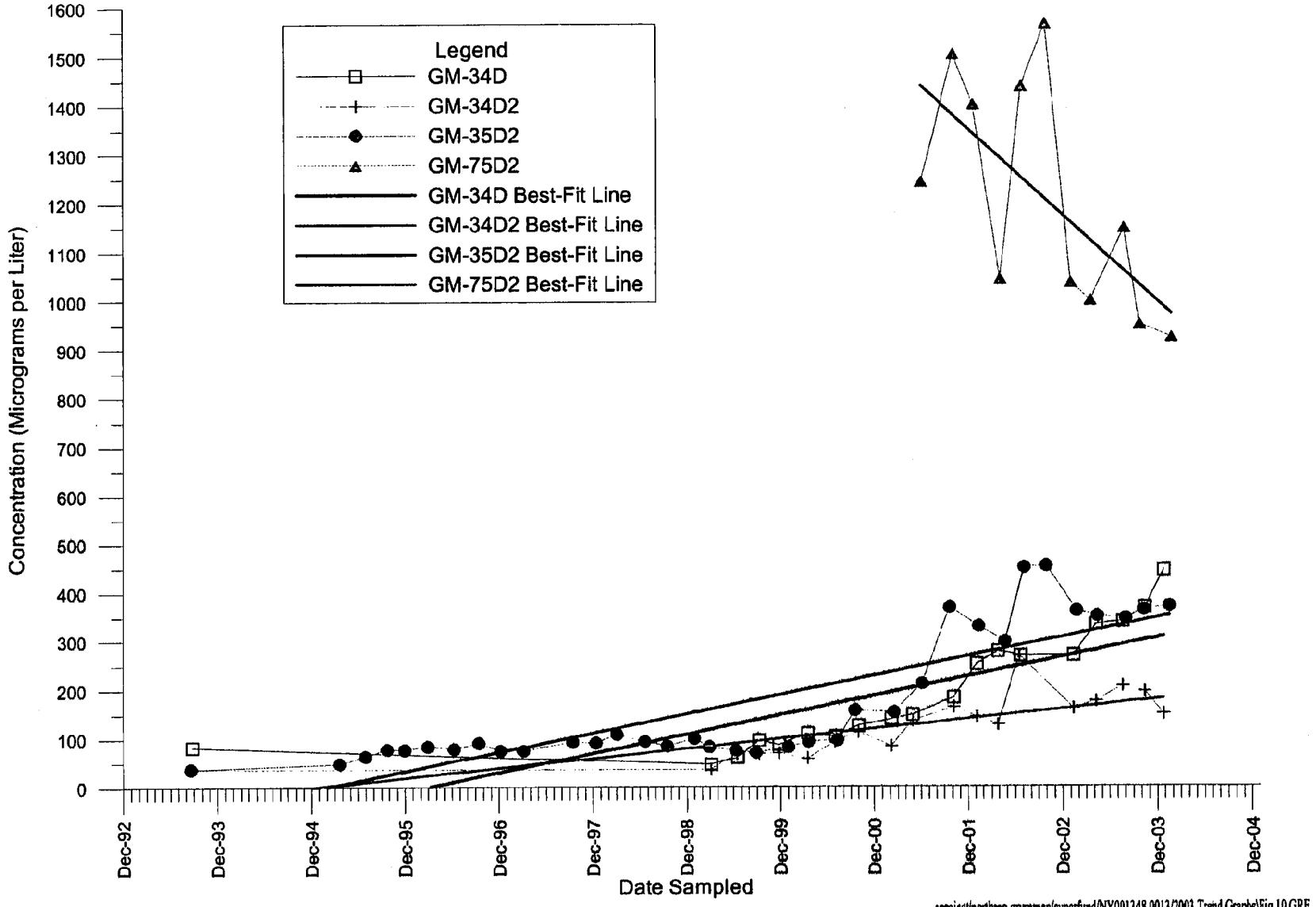


ARCADIS

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

FIGURE 9

NYSDEC 053502

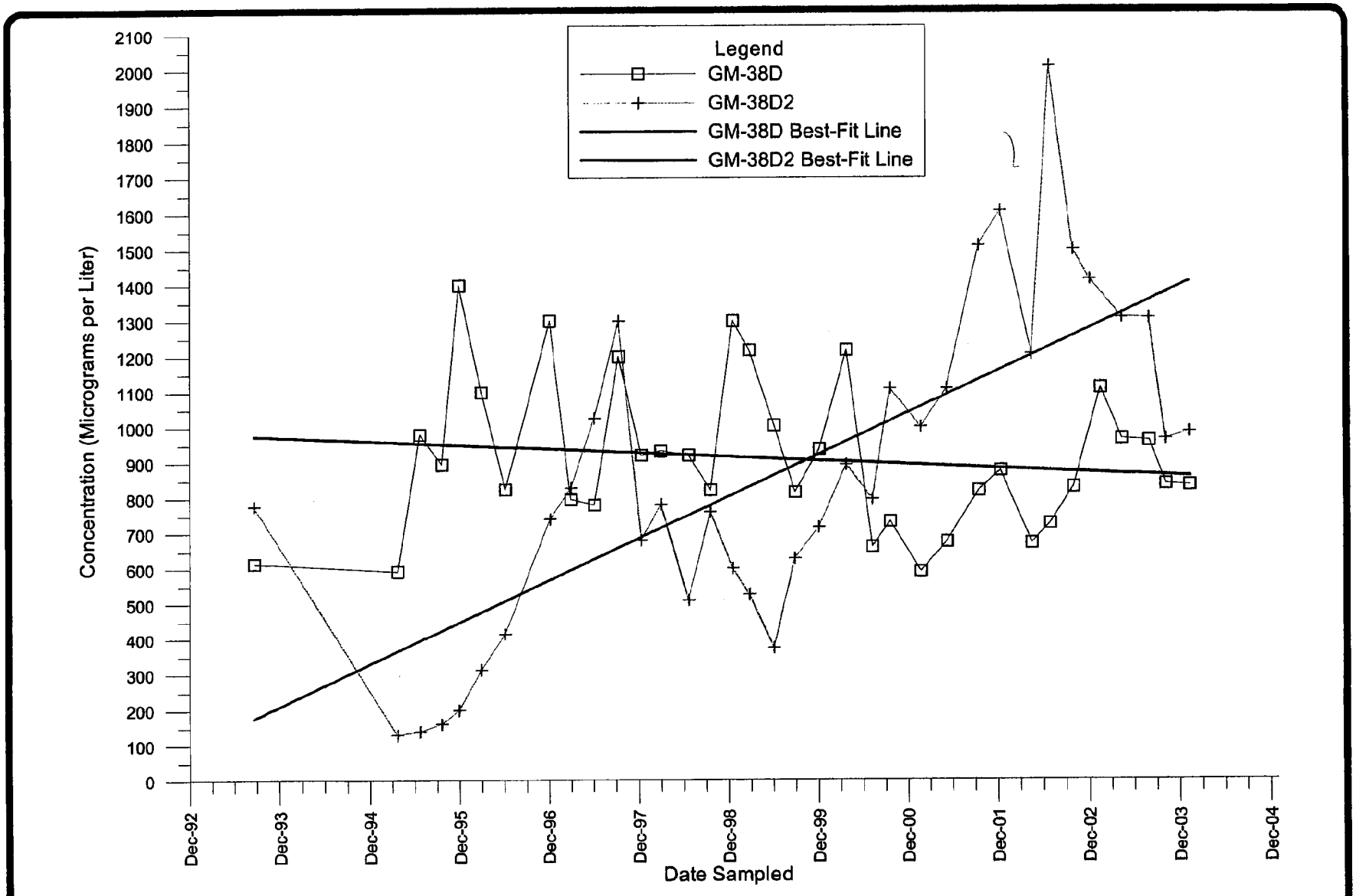


ARCADIS

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

FIGURE 10

NYSDEC 053503

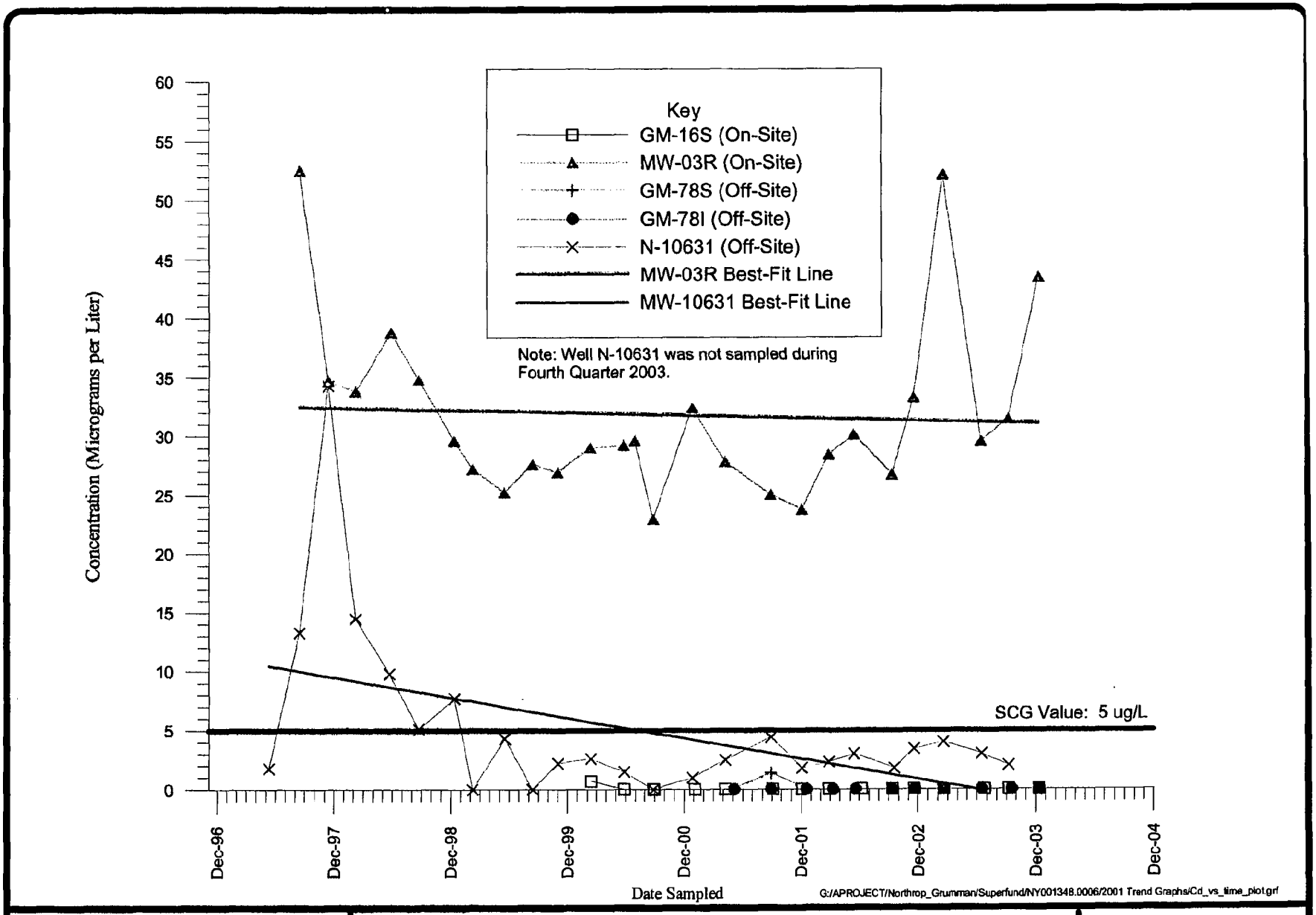


ARCADIS

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

FIGURE 11

NYSDEC 053504

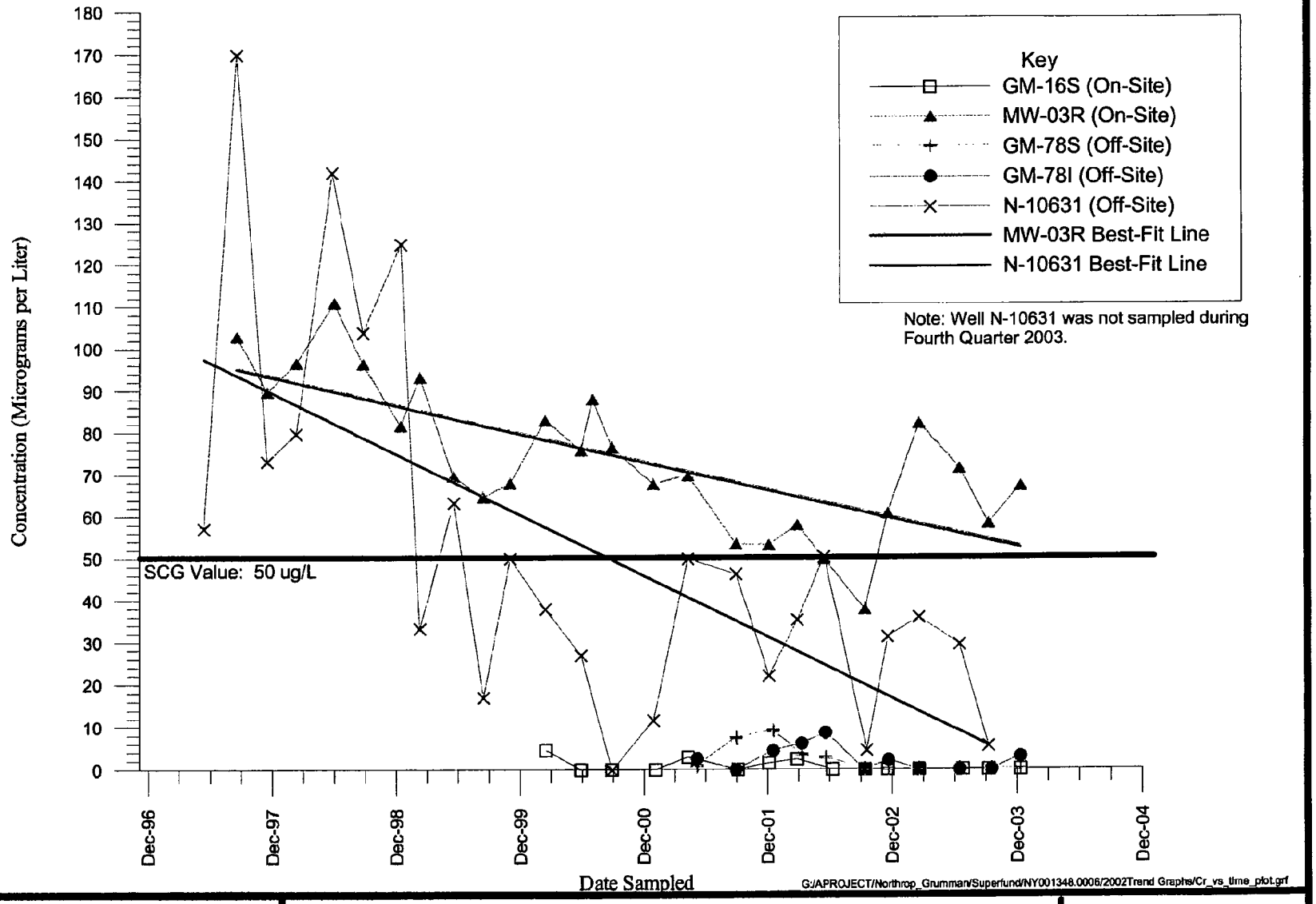


ARCADIS

Total Cadmium Concentrations in Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

FIGURE
12

NYSDEC 053505



ARCADIS

Total Chromium Concentrations in Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

FIGURE
13

NYSDEC 053506

NYSDEC 053507

APPENDIX A

Appendix A

Water-Level Measurement Logs

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Page 1 of 3

Project MW00838.0013.0000 Well _____ Site _____

Screen Setting _____ Measuring Point Description _____ Height Above Ground Surface _____

Static Water Level _____ Measured With _____ Date/Time 12-23-08

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

Distance From Well Measured To Pumping Well® _____ Discharge Rate _____ Orifice ✓

Date & Time	Well Or t (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
GP-3				—					454 g/min		→ took Fluid above
FW-03				59.79							
HW-19D				50.71							
HW-19I				50.58							mud & lock
HW-24I				59.53							
10597				43.59							
10600				42.55							
GM78S				44.53							
GM78I				44.79							
GM35D2				41.50							
N-10634				42.47							
GM71D2				43.50							
GM70D2				43.31							
N-10821				37.14							
GM-36D				37.39							
GM-36D2				39.34							
GM-38D				40.34							
GM-38D2				42.54							
GM-37D				41.47							
GM-37D2				42.12							
HW-40S				52.42							
HW-40I				52.19							
HW-42I				54.29							
HW-42S				55.00							
GM79S				42.44							
GM79I				42.60							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

WtlMptr.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Project NYD01398.0013.00002 Well _____ Site _____

Screen Setting _____ Measuring Point Description _____ Height Above Ground Surface _____

Static Water Level _____ Measured With _____ Date/Time 12/23/03

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

Distance From Well Measured To Pumping Well ⊕ _____ Discharge Rate _____ Orifice _____

Date & Time	Well Or t (mins)	Head (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Manometer (in) ~~Gravity~~	Remarks 3)
ONCT-3				65.33					598.2	610	
GM-15D				49.70							
GM-15D2				52.09							
GM-15S				47.42							needs new sanitary seal + lock
GM-15I				47.21							
GM-19I			(KT)	~~45.64~~	45.64						
GM-19S				45.14							
GM-13D				49.80							needs lock
ONCT-1				67.93					1049.4	1.080	
MW-3R				38.75							
GM 74I				41.05							
GM 74D				47.64							
GM 74D2				53.73					(KT)		
ONCT-2				67.35				696	~~582~~	650	
GM 73D2				48.86						needs lock/cap broken/METAL	
GM 73D				46.85							
GM 39D				41.99							needs lock
GM 39D2				44.74							
GM 18I				46.31							needs lock
GM 18D				48.72							
GM 16I				51.71							
GM 16SR				51.53						send packer & sound well bottled to 51' bls	
GP-1				—					1070 G/M	- did 5 minute run test	
GM-17SR				51.41							
GM-17I				51.61							
GM-17D				53.47							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

Wtlvlptr.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Page 3 of 3

Project NY001348.0013.00002 Well _____ Site _____

Screen Setting _____ Measuring Point Description _____ Height Above Ground Surface _____

Static Water Level _____ Measured With _____ Date/Time 12-23-03

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

Distance From Well Measured To Pumping Well® _____ Discharge Rate _____ Orifice _____

Date & Time	Well Or t (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
1/30/03 GM 79P				43.90							
N-10633				41.25							
GM 21S				36.03							
GM 21I				39.12							
GM 21D				45.39							
GM 20I				39.65							
GM 20D				41.27							
2/3/03 GM 34D				16.91							
GM 34D2				18.30							
GM 18S				—							couldn't get rod any more steps problems
GM 33D2				52.20							
2/04 ~~N-10624~~				—							
N-10627				35.35							
GM 75D2				38.17							
N-9921				—							
N-10631				—							couldn't find — snow
											talked to dave
2/04 MW-16F				48.12							
2/04 MW-26F				48.10							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

Wthvlptr.xls.xls
10/20/98

NYSDEC 053512

APPENDIX B

ARCADIS

Appendix B

Groundwater Sampling Logs

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. NY001348.0013.0003 | Page 1 of

Site Location: bethpage, ny | Date: 1/26/01

Site/Well No.: mw-16F | Replicate No. | Code No.

Weather: cold, 20 | Sampling Time: Begin 3:07 End 3:24

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	58'	pH (s.u.)	7.25	6.86	6.56	6.14
Depth to Water (ft bmp)	48.12'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	567	568	566	556
Water Column in Well (ft)	9.88'	Turbidity (NTU)	7100	66.3	56.0	38.6
Casing Diameter/Type	4" (.65)	Temperature (°C)	13.1	16.3	17.5	17.1
Gallons in Well	6.42 g	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	19.26 g	~~Salinity (%)~~ DTW	3:08	3:12	3:16	3:20
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 3:07 end 3:24	Remarks				
Pumping Rate (gpm)	G=1.5 T=13 1V=4					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
VOC	40mL VOA VIAL	2	—
total cdlcr	500 ml plastic	1	HNO_3
dissolved cdlcr	500 ml plastic	1	HNO_3

Sampling Personnel: KT GV

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Glenmore | Project No. 10/001348.0013.00002 | Page 1 of ____

Site Location: bethpage, NY | Date 1/12/04

Site/Well No. MW-26S | Replicate No. ____ | Code No. ____

Weather: cold snow, 25 | Sampling Time: Begin 1241 | End 1255

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				colorless
MP Elevation (ft)		Odor				odorless
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	59'	pH (s.u.)	6.27	7.09	7.15	6.94
Depth to Water (ft bmp)	48.1'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	605	565	563	556
Water Column in Well (ft)	10.9	Turbidity (NTU)	57.6	68.2	30.6	24.5
Casing Diameter/Type	4" (65)	Temperature (°C)	15.5	14.1	14.9	15.2
Gallons in Well	7.085	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	21.25	Salinity (%)	12.41	12.45	12.47	12.52
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 1241 end 1255	Remarks				
Pumping Rate (gpm)	Q=2 I=11 IV=4					
Evacuation Method	I					

Constituents Sampled	Container Description	Number	Preservative
Total cd/Cr			
dissolved cd/cr			

Sampling Personnel: KT KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No. NY001348.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 1/7/04

Site/Well No.: FW-03 | Replicate No. ____ | Code No. ____

Weather: cold, 15° | Sampling Time: Begin 11:41 End 11:55

Evacuation Data		Field Parameters	1	1V	2V	3V
Measuring Point		Color				Turbid
MP Elevation (ft)		Odor				odor
Land Surface Elevation (ft)		Appearance				sediment
Sounded Well Depth (ft bmp)	64'	pH (s.u.)	5.98	6.46	6.75	7.28
Depth to Water (ft bmp)	59.77	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	413	451	435	445
Water Column in Well (ft)	4.23	Turbidity (NTU)				>200
Casing Diameter/Type	2" (.16)	Temperature (°C)	11.8	11.5	12.9	11.1
Gallons in Well	.68	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	2.03	Salinity (%)	11:45	11:47	11:51	11:53
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 11:44 end	Remarks				
Pumping Rate (gpm)	Q = 1/4 T: 8 1V: 3					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
VOC			

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project	Glymmer	Project No.	NY003432.0003	Page	1 of
Site Location	Dethpage NY			Date	1/9/04
Site/Well No.	MW-3R	Replicate No.		Code No.	
Weather	Cold, IS	Sampling Time: Begin	7:25	End	3:50

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	55'
Depth to Water (ft bmp)	38.77
Water-Level Elevation (ft)	
Water Column in Well (ft)	16.23
Casing Diameter/Type	2" (16)
Gallons in Well	2.59
Gallons Pumped/Bailed Prior to Sampling	7.77
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 7:25 end 7:50
Pumping Rate (gpm)	Q = 1/2 T = 16 V = 5
Evacuation Method	

Field Parameters	1	1V	2V	3V	
Color				color less	
Odor				odorless	
Appearance				clear	
pH (s.u.)	5.63	5.67	5.50	5.58	5.57
Conductivity (mS/cm)					
(µmhos/cm)	176.2	166.5	172.6	172.3	170.2
Turbidity (NTU)	>200	>200	177	42.8	49.3
Temperature (°C)	11.2	11.7	14.6	14.4	15.1
Dissolved Oxygen (mg/L)					
Salinity (%)	3.26	3.31	3.36	3.42	3.45
Sampling Method					
Remarks				changed to 1 gpm	

Constituents Sampled	Container Description	Number	Preservative
VOC			
total cd/cr			
dissolved cd/cr			

Sampling Personnel: KG GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No.: 30013041.0013000 | Page 1 of ____

Site Location: Bethpage, NY | Date: 1/6/04

Site/Well No.: PLT MW-4 | Replicate No.: ____ | Code No.: ____

Weather: Clear, 30 | Sampling Time: Begin 3:37 | End 3:48

Evacuation Data		Field Parameters	I	II	III	IV
Measuring Point	____	Color	____	____	____	Colorless
MP Elevation (ft)	____	Odor	____	____	____	odorless
Land Surface Elevation (ft)	____	Appearance	____	____	____	clear
Sounded Well Depth (ft bmp)	56.5	pH (s.u.)	5.79	5.82	5.85	5.89
Depth to Water (ft bmp)	46.46	Conductivity (mS/cm)				
Water-Level Elevation (ft)	____	(µmhos/cm)	303	300	298	299
Water Column in Well (ft)	10.04	Turbidity (NTU)	52.3	7.71	3.14	2.65
Casing Diameter/Type	2" (6)	Temperature (°C)	12.9	15.0	15.5	15.5
Gallons in Well	1.60	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	4.82	Salinity (%)	3.38	3.41	3.44	3.47
Sample Pump Intake Setting (ft bmp)	____	Sampling Method	____			
Purge Time	begin 3:37 end ____	Remarks	____			
Pumping Rate (gpm)	Q = 1/- T: 10 W=3					
Evacuation Method	____					

Constituents Sampled	Container Description	Number	Preservative
Cr Only	____	____	____
____	____	____	____
____	____	____	____
____	____	____	____
____	____	____	____

Sampling Personnel: GW KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No. NY001348.0013.00002 | Page 1 of 1

Site Location: Bethpage, NY | Date 1/6/04

Site/Well No. PLT1mw-5 | Replicate No. | Code No.

Weather: clear, 35 | Sampling Time: Begin 2:31 End 2:41

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	58'
Depth to Water (ft bmp)	44.95'
Water-Level Elevation (ft)	
Water Column in Well (ft)	13.05
Casing Diameter/Type	2" (.16)
Gallons in Well	2.09
Gallons Pumped/Bailed Prior to Sampling	6.264
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	Q=1/2 T=12 IV=4
Evacuation Method	After IV changed to Q=1 T=5 IV=2.5

Field Parameters

Field Parameters	I	IV	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	5.06	5.20	5.18	5.18
Conductivity (mS/cm)				
(µmhos/cm)	263	281	276	277
Turbidity (NTU)	>200	90.9	36.7	46.3
Temperature (°C)	13.5	14.5	16.0	16.4
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ TIME	2:32	2:39	2:40	2:43

Sampling Method

Remarks: WELL CASING, WELL VAULT IN CONSTRUCTION AREA

Constituents Sampled	Container Description	Number	Preservative
Cr Only			

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No. NY000734F.0013.00001 | Page 1 of ____

Site Location: Bethpage | Date: 1/6/09

Site/Well No.: PLT MW-6 | Replicate No.: ____ | Code No.: ____

Weather: Clear, 35 | Sampling Time: Begin 3:08 End 3:24

Evacuation Data		Field Parameters	I	1L	2L	3L
Measuring Point	____	Color				color (gw)
MP Elevation (ft)	____	Odor				odor (gw)
Land Surface Elevation (ft)	____	Appearance				clear
Sounded Well Depth (ft bmp)	62	pH (s.u.)	5.41	5.39	5.32	5.32
Depth to Water (ft bmp)	47.34	Conductivity (mS/cm)				
Water-Level Elevation (ft)	____	(µmhos/cm)	314	346	348	346
Water Column in Well (ft)	14.66	Turbidity (NTU)	>200	>200	26.8	5.45
Casing Diameter/Type	2" (16)	Temperature (°C)	12.1	14.9	15.5	16.8
Gallons in Well	2.35	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	7.03	Salinity (%)	3.08	3.13	3.18	~~3.14~~ 3.22
Sample Pump Intake Setting (ft bmp)	____	Sampling Method	____			
Purge Time	begin 3:08 end 3:24	Remarks	____			
Pumping Rate (gpm)	Q= 1/2 T= 14 V=5					
Evacuation Method	____					

Constituents Sampled	Container Description	Number	Preservative
Cr only			

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001398.0013 Task: 0002 Well ID: GM 13D
Date: 01-14-04 Sampled By: BJ
Sampling Time: 1530 Recorded By: BJ
Weather: Cloudy 10°F Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Dedicated Low Flow
Casing Diameter: 4" Purge Rate: 456 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 49.55 Pump Intake Depth
Water Column: Pump on: 1530 Off: 1530
Gallons/Foot: Parameters Sampled: VOCs
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1430	450			301	6.28	211	7.4	49.55	1.60	
1435	↓			302	6.24	210	7.6		1.29	
1440				304	6.22	211	7.7		1.19	
1445				310	6.16	206	8.4		0.80	
1450				319	6.19	208	7.2	49.55	0.97	
1455				322	6.18	208	7.1		1.01	
1500				321	6.12	208	6.8		1.15	
1505				321	6.15	207	6.9		1.17	
1510				323	6.15	206	7.0	49.50	1.16	
1515				321	6.17	208	6.8		1.19	
1520				322	6.17	208	6.8		1.26	
1525				322	6.17	208	6.8		1.25	
1530	↓		<50	322	6.17	208	6.8	49.50	1.24	

Well Secure: Yes Purge Water Disposal:
Color: Colorless Turbidity(qualitative): Clear

.SG:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmpfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Germania | Project No.: NY003MF.0013.00002 | Page: 1 of ____

Site Location: Peekskill, NY | Date: 1/12/07

Site/Well No.: GM 14 | Replicate No.: ____ | Code No.: ____

Weather: cold, 25 | Sampling Time: Begin 3:48 | End 4:04

Evacuation Data

Measuring Point	____
MP Elevation (ft)	____
Land Surface Elevation (ft)	____
Sounded Well Depth (ft bmp)	55'
Depth to Water (ft bmp)	45.27'
Water-Level Elevation (ft)	____
Water Column in Well (ft)	9.73
Casing Diameter/Type	4" (SS)
Gallons in Well	6.32
Gallons Pumped/Bailed Prior to Sampling	18.97
Sample Pump Intake Setting (ft bmp)	____
Purge Time	begin 3:48 end 4:04
Pumping Rate (gpm)	Q = 1½ T = 13 16:4
Evacuation Method	____

Field Parameters

Field Parameters	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	5.82	5.93	5.23	5.24
Conductivity (mS/cm)				
(µmhos/cm)	270	267	266	270
Turbidity (NTU)	8.97	4.26	2.95	—
Temperature (°C)	13.5	14.2	14.8	14.6
Dissolved Oxygen (mg/L)				
Salinity (%)	3.49	3:53	3:52	4.02

Sampling Method: ____

Remarks: ____

Constituents Sampled	Container Description	Number	Preservative
SVOC			
TVOC			

Sampling Personnel: KT KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No. NY000348.0013.00002 | Page 1 of ____

Site Location: Bethpage | Date: 1/6/04

Site/Well No.: GM 15S | Replicate No. ____ | Code No. ____

Weather: clear, 35 | Sampling Time: Begin 1:40 End 2:17

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point	____	Color				colorless
MP Elevation (ft)	____	Odor				odorless
Land Surface Elevation (ft)	____	Appearance				clear
Sounded Well Depth (ft bmp)	80'	pH (s.u.)	5.60	5.48	5.16	5.01
Depth to Water (ft bmp)	47.35	Conductivity (mS/cm)				
Water-Level Elevation (ft)	____	(µmhos/cm)	33.9	42.7	73.2	97.4
Water Column in Well (ft)	32.65	Turbidity (NTU)	56.8	42.1	44.3	34.2
Casing Diameter/Type	4"(ss)	Temperature (°C)	13.6	13.1	14.5	14.8
Gallons in Well	21.22	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	63.66	Salinity (%)	1.43	1.54	2:03	2:14
Sample Pump Intake Setting (ft bmp)	____	Sampling Method	____			
Purge Time	begin 1:40 end 2:17	Remarks	____			
Pumping Rate (gpm)	Q=2 T=32 IV=10.5					
Evacuation Method	redi flo (nondedicated)					

Constituents Sampled	Container Description	Number	Preservative
VOC 95-1 MS			
CT Only			HNO3

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-⅛" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. NY003346.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date 1/6/04

Site/Well No. GM 15I | Replicate No. ____ | Code No. ____

Weather clear 35 | Sampling Time: Begin 11:43 | End 1:23

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point	____	Color				colorless
MP Elevation (ft)	____	Odor				odorless
Land Surface Elevation (ft)	____	Appearance				clear
Sounded Well Depth (ft bmp)	105'	pH (s.u.)	5.11	5.09	5.00	4.88
Depth to Water (ft bmp)	94'	Conductivity (mS/cm)				
Water-Level Elevation (ft)	____	(µmhos/cm)	268	266	262	262
Water Column in Well (ft)	11'	Turbidity (NTU)				.44
Casing Diameter/Type	4"(.65)	Temperature (°C)	5.9	14.1	14.9	14.9
Gallons in Well	7.15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	21.45	Salinity (%)	12:11	12:41	12:57	1:19
Sample Pump Intake Setting (ft bmp)	90 DO 85	Sampling Method	____			
Purge Time	begin 11:43 end 1:23	Remarks	DTW 94.06			
Pumping Rate (gpm)	____		5 gallon containers			
Evacuation Method	dedicated bladder		1 1/2 + 2 gallons			

Constituents Sampled	Container Description	Number	Preservative
VOC	* shut off @ 11:54 b/c water up → air hose broke on compressor * turned back on @ 12:08	3	stopped coming

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.			
1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 04001348.0013 Task: 00002 Well ID: GM 15D
Date: 12/19/05 Sampled By: CW CT
Sampling Time: 3:32 Recorded By: CT
Weather: clear, 45 Coded Replicate No.:

WELL IMFORMATION

Casing Material: Purge Method: dedicated low flow
Casing Diameter: Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 49.70 Pump Intake Depth
Water Column: Pump on: 2:27 Off: 3:33
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:30	450			194	7.28	178.9	13.5	49.70	7.06	
2:35	↓			233	6.90	180.2	14.0		5.82	
2:40				283	4.71	180.4	15.5		1.54	
2:45				286	4.63	180.8	15.4	49.77	1.66	
2:50				291	4.57	180.4	15.3		1.54	
2:55				293	4.57	179.9	15.3		1.55	
3:00				297	4.55	179.5	15.4	49.77	1.51	
3:05				300	4.51	178.8	15.4		1.56	
3:10				303	4.54	177.9	15.4		1.53	
3:15				306	4.54	177.8	15.2	49.77	1.50	
3:20				308	4.55	178.1	15.3		1.49	
3:25				309	4.54	177.7	15.2		1.51	
3:30	↓		3.0	310	4.57	177.6	15.2	49.75	1.58	

Well Secure: YES Purge Water Disposal:
Color: clear, colorless, colorless Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: [illegible] 003 Task: 0002 Well ID: CM 15D2
Date: 1/6/09 Sampled By: GL KT
Sampling Time: 11:33 Recorded By: KT
Weather: clear, 35 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: dedicated bailer
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 556 Total Volume Purged:
Depth to Water: 52.03 Pump Intake Depth
Water Column: Pump on: 10:27 Off: 11:34
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
10:30	450			272	8.76	98.5	9.8	52.03	8.29	
10:35				286	8.27	97.4	12.4		3.67	
10:40				302	7.54	92.7	13.3		2.72	
10:45				304	7.22	88.9	13.1	52.06	3.88	
10:50				317	6.81	89.7	13.2		4.48	
10:55				315	6.46	87.9	13.3		1.54	
11:00				319	6.06	86.5	13.3	52.04	4.69	
11:05				324	5.66	85.1	13.0		4.56	
11:10				327	5.38	84.8	13.0		4.48	
11:15				330	5.18	84.6	12.8	52.04	4.69	
11:20				331	5.02	84.5	12.9		4.55	
11:25				336	4.88	84.5	12.8		5.01	
11:30			.11	342	4.83	84.4	12.8	51.04	4.33	

Well Secure: Y(E)
Color: Red, colorless, odorless
Purge Water Disposal:
Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Yummco | Project No.: NY000313.0013.00001 | Page: 1 of ____

Site Location: Hillsdale, NY | Date: 1/9/04

Site/Well No.: GM 16SR | Replicate No.: ____ | Code No.: ____

Weather: cold, is | Sampling Time: Begin 1:38 End 2:22

Evacuation Data		Field Parameters	I	II	III	IV
Measuring Point		Color				color (w)
MP Elevation (ft)		Odor				odor (w)
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	70'	pH (s.u.)	7.28	5.85	5.32	5.33
Depth to Water (ft bmp)	51.25	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	138	139.5	135.3	131.1
Water Column in Well (ft)	18.75	Turbidity (NTU)	41.1	7.85	4.43	3.33
Casing Diameter/Type	4" (.65)	Temperature (°C)	13.4	13.5	13.6	15.6
Gallons in Well	12.18	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	36.56	Salinity (%)	1:40	1:52	2:04	2:16
Sample Pump Intake Setting (ft bmp)		Sampling Method	redflo			
Purge Time	begin ____ end ____	Remarks				
Pumping Rate (gpm)	Q=1 T=37 IV=12					
Evacuation Method	redflo					

Constituents Sampled	Container Description	Number	Preservative
VOC			
total cd lcr			
dissolved cd lcr			

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: gumm c- | Project No. NY001348.0012.0002 | Page 1 of ____

Site Location: pelhpkg | Date: 1/9/04

Site/Well No.: GM 16I | Replicate No. ____ | Code No. ____

Weather: cold, 15° | Sampling Time: Begin 11:49 End 1 20

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				colorless
MP Elevation (ft)		Odor				odorless
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	145'	pH (s.u.)	7.14	8.52	8.51	8.36
Depth to Water (ft bmp)	134'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	233	291	288	284
Water Column in Well (ft)	11'	Turbidity (NTU)				304
Casing Diameter/Type	4"(PVC)	Temperature (°C)	12.6	13.3	15.4	15.7
Gallons in Well	7.15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	21.45	Time Salinity (%)	11:55	12:20	12:46	1.17
Sample Pump Intake Setting (ft bmp)	90 PSI	Sampling Method				
Purge Time	begin 11:49 end ____	Remarks	DTW 51.37			
Pumping Rate (gpm)	450ml/min		5 gallon pails			
Evacuation Method	dedicated pacl		1811			

Constituents Sampled	Container Description	Number	Preservative
VOC			

Sampling Personnel: KT CW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Gilman | Project No.: NY001348.0013.00007 | Page: 1 of

Site Location: Hathaway, NY | Date: 1/8/04

Site/Well No.: GM 175K | Replicate No.: | Code No.:

Weather: cold, 20 | Sampling Time: Begin 2:34 End 3:18

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	70'
Depth to Water (ft bmp)	50.05
Water-Level Elevation (ft)	
Water Column in Well (ft)	19.95
Casing Diameter/Type	4" (.65)
Gallons in Well	12.96
Gallons Pumped/Bailed Prior to Sampling	38.9
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 2:34 end 318
Pumping Rate (gpm)	Q = 1 T = ~~30~~ IV = 13
Evacuation Method	bailer

Field Parameters	I	IV	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	6.48	6.19	5.77	5.93
Conductivity (mS/cm)				
(µmhos/cm)	118.9	115.6	113.7	113.6
Turbidity (NTU)	3.90	1.27	1.06	0.89
Temperature (°C)	13.2	13.7	14.2	14.8
Dissolved Oxygen (mg/L)				
Salinity (%) Time	2:36	249	3:02	3:15
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative
VOC			
dissolved cd/cr			
total cd/cr			

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 1W001348.0013 Task: 0000 i Well ID: GM 17I
Date: 12/30/03 Sampled By: GW CT
Sampling Time: 1548 Recorded By: CT
Weather: cloudy, 40 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: dedicated bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 51.27 Pump Intake Depth
Water Column: Pump on: 15:58 Off: 15:49
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1500	450			323	5.87	108.1	12.4	51.27	8.66	
1505				318	5.77	107.3	14.6		6.13	
1510				314	5.77	107.5	14.8		5.75	
1515				310	5.77	107.6	14.8	51.25	6.02	
1520				311	5.77	107.6	14.5		6.48	
1525				311	5.77	107.7	14.7		6.14	
1530				311	5.77	107.8	14.6	51.26	6.06	
1535				311	5.77	107.9	14.5		6.14	
1540				314	5.79	108.1	14.4		6.11	
1545	↓		1.03	319	5.78	107.8	14.3	51.26	6.49	

Well Secure: YES Purge Water Disposal:
Color: clear, colorless, odorless Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001398.0013 Task: 00002 Well ID: GM 17D
Date: 1/14/04 Sampled By: BH
Sampling Time: 1030 Recorded By: BH
Weather: Sunny 10°F Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Dedicated Low Flow
Casing Diameter: 4" Purge Rate: 400ml/min
Total Depth: ~~53.10~~ Total Volume Purged:
Depth to Water: 53.10 Pump Intake Depth
Water Column: Pump on: 0930 Off: 10:35
Gallons/Foot: Parameters Sampled: VOCs
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
0930	450			295	7.21	79.4	13.0	53.10	7.36	
0935	↓			299	7.24	78.4	15.4		6.63	
0940				300	7.24	78.9	15.4		6.30	
0945				306	7.25	79.5	14.5		6.85	
0950				316	7.25	83.1	14.5	53.05	6.87	
0955				326	7.25	82.8	14.6		6.99	
1000				323	7.26	83.2	14.4		6.95	
1005				329	7.26	87.2	14.7		6.98	
1010				329	7.26	87.0	14.8	53.00	6.98	
1015				330	7.26	87.1	14.8		6.97	
1020				331	7.26	86.9	14.8		6.94	
1025				334	7.27	87.2	14.8		6.94	
1030	↓		<50	332	7.26	87.2	14.8	53.00	6.97	

Well Secure: Yes Purge Water Disposal:
Color: Colorless Turbidity(qualitative): clear

S:\G:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmplfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. 10y001348.0013.00000 | Page 1 of ____

Site Location: bethpage, ny | Date: 1/30/04

Site/Well No.: GM18S | Replicate No.: ____ | Code No.: ____

Weather: cold, 15 | Sampling Time: Begin 5:17 End 5:28

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	67'	pH (s.u.)	5.52	5.75	5.73	6.93
Depth to Water (ft bmp)	~50	Conductivity (mS/cm)			1.150	
Water-Level Elevation (ft)		(µmhos/cm)	169.2	741	725	347
Water Column in Well (ft)	27	Turbidity (NTU)	7700	7700		
Casing Diameter/Type	2"(1k)	Temperature (°C)	12.6	12.9	14.7	16.0
Gallons in Well		Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling		Salinity (%)	5.16	5.21	5.23	5.22
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 5:17 end 5:21	Remarks	meter was inconsistent, battery probably died			
Pumping Rate (gpm)	Q= 1¼ T= 8 1V = 3					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
VOC			
total cdcr			
dissolved cdcr			

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. NY001348.0013.00002 | Page 1 of ____

Site Location: bethpage, ny | Date 1/21/04

Site/Well No. GM 13I | Replicate No. ____ | Code No. ____

Weather: cold, 25 | Sampling Time: Begin 11:49 | End 1:56

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point	____	Color				colorless
MP Elevation (ft)	____	Odor				odorless
Land Surface Elevation (ft)	____	Appearance				clear
Sounded Well Depth (ft bmp)	105'	pH (s.u.)	5.94	6.08	6.10	6.01
Depth to Water (ft bmp)	94'	Conductivity (mS/cm) (mS/cm x 1000 = µmhos/cm)		3.01	2.76	2.60
Water-Level Elevation (ft)	____	(µmhos/cm)	272			
Water Column in Well (ft)	11'	Turbidity (NTU)				2.21
Casing Diameter/Type	4"(6S)	Temperature (°C)	12.8	15.8	16.6	16.4
Gallons in Well	7.15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	21.45	~~Salinity (%)~~ Time	11:50	12:30	1:1[illegible]	1:49
Sample Pump Intake Setting (ft bmp)	PSI 90	Sampling Method	____			
Purge Time	begin 11:48 end 1:56	Remarks	DTW 46.15			
Pumping Rate (gpm)	____		5 gallon pails			
Evacuation Method	dedicated bladder		1/1 + 2 gallons			

Constituents Sampled	Container Description	Number	Preservative
VOC	40 ml VOA vial	2	—
VCM			

Sampling Personnel: VCT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001398.0013 Task: 0002 Well ID: GM 1PD
Date: 01.14.04 Sampled By: BM
Sampling Time: 1250 Recorded By: BM
Weather: Sunny 10°F Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Dedicated Low Flow
Casing Diameter: 4" Purge Rate: 450ml/min
Total Depth: Total Volume Purged:
Depth to Water: 48.24 Pump Intake Depth
Water Column: Pump on: 11:50 Off: 1155
Gallons/Foot: Parameters Sampled: VOCs
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1150	450			350	7.33	108.3	8.1	48.24	8.22	
1150				347	7.33	108.7	10.3		5.55	
1200				346	7.33	109.0	11.8		5.65	
1205				343	6.53	108.9	13.1		6.50	
1210				342	6.53	108.9	13.5		7.55	
1215				344	6.57	109.0	13.8		7.63	
1220				341	6.65	109.8	14.0		7.57	
1225				343	6.63	109.0	13.9	48.25	7.48	
1230				345	6.60	109.1	13.9		7.66	
1235				342	6.60	85.1	13.9		7.59	
1240				343	6.58	85.3	14.0		7.44	
1245				348	6.57	85.0	14.1		7.39	
1250	↓		<50	344	6.56	84.8	14.2	48.25	7.39	

Well Secure: Yes Purge Water Disposal:
Color: colorless Turbidity(qualitative): clear

S:\PROJECTS\Lockheed Martin\Great Neck\NY001227.0002\Data\GW\sampfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. NY001341.0013 00002 | Page 1 of ____

Site Location: hellpoge, NY | Date: 1/5/04

Site/Well No.: OM 20 I | Replicate No.: MS/MSD | Code No.: ____

Weather: rain, 35 | Sampling Time: Begin 2:10 End 3:20

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				clear
MP Elevation (ft)		Odor				odor
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	105'	pH (s.u.)	9.77	9.88	9.83	9.99
Depth to Water (ft bmp)	94'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	212	209	182.3	177.1
Water Column in Well (ft)	11'	Turbidity (NTU)				3.32
Casing Diameter/Type	4" (.65)	Temperature (°C)	11.8	13.7	15.2	15.1
Gallons in Well	7.15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	21.45	Salinity (%)				
Sample Pump Intake Setting (ft bmp)	75 PSI	Sampling Method				
Purge Time	begin 2:10 end 3:20	Remarks	DTW 39.70			
Pumping Rate (gpm)			5 gallon bucket			
Evacuation Method			III (12 gallons)			

Constituents Sampled	Container Description	Number	Preservative
VOC			

Sampling Personnel: ICT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Gunmar | Project No. NY001348.0003.00002 | Page 1 of ____

Site Location: Ithaca, NY | Date: 1/5/04

Site/Well No.: GM-20D | Replicate No.: Dup 1.5.04 | Code No.: ____

Weather: rain, 3° | Sampling Time: Begin 11:43 End 1:10

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	226'
Depth to ~~Water~~ surface (ft bmp)	215'
Water-Level Elevation (ft)	
Water Column in Well (ft)	11'
Casing Diameter/Type	4" (.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	21.45
Sample Pump Intake Setting (ft bmp)	105 PSI
Purge Time	begin 11:43 end 1:00
Pumping Rate (gpm)	
Evacuation Method	~~Peristaltic~~ bladder

Field Parameters

Field Parameters	I	1V	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	9.72	8.03	8.09	7.75
Conductivity (mS/cm)				
(µmhos/cm)	120.3	106.6	103.3	101.8
Turbidity (NTU)				0.46
Temperature (°C)	11.2	11.4	13.0	13.0
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: ____

Remarks: 41.27 5 gallon buckets 1111 + 2.5 gallons

Constituents Sampled	Container Description	Number	Preservative
VOC	* couldn't get tubing attachment on tight well took longer b/c water area leaking out of coupling		

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman — Project No. NY001348.0013.00002 — Page 1 of ____

Site Location: Bethpage — Date: 12/30/02

Site/Well No.: GM 215 — Replicate No.: ____ — Code No.: ____

Weather: cloudy, 45 — Sampling Time: Begin 10:45 — End ~~11:07~~ (ET) 11:05

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point		Color				colorless
MP Elevation (ft)		Odor				odor(less)
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	67'	pH (s.u.)	4.91	5.26	5.50	5.56
Depth to Water (ft bmp)	36.22	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	101.5	105.6	105.3	105.8
Water Column in Well (ft)	30.78	Turbidity (NTU)				
Casing Diameter/Type	2" (.16)	Temperature (°C)	13.5	11.7	11.6	11.5
Gallons in Well	4.9	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	14.77	~~Salinity (%)~~ DM's	10:15	10:50	10:53	~~11:07~~
Sample Pump Intake Setting (ft bmp)		Sampling Method	redi flo			
Purge Time	begin 10:46 end ~~11:07~~ (ET) 11:05	Remarks				
Pumping Rate (gpm)	Q = 1 T = 15 1V = 5		silty @ start of pumping			
Evacuation Method	redi flo					

Constituents Sampled	Container Description	Number	Preservative
VOC			

Sampling Personnel: KT | GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. NY001348.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 1/5/04

Site/Well No.: GM 21I | Replicate No.: ____ | Code No.: ____

Weather: rain, 35 | Sampling Time: Begin 10:30 | End ____

Evacuation Data

Measuring Point	____
MP Elevation (ft)	____
Land Surface Elevation (ft)	____
Sounded Well Depth (ft bmp)	119
Depth to Water (ft bmp)	118'
Water-Level Elevation (ft)	____
Water Column in Well (ft)	1'
Casing Diameter/Type	4" (.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	21.45
Sample Pump Intake Setting (ft bmp)	PSI TO
Purge Time	begin 10:30 end ____
Pumping Rate (gpm)	____
Evacuation Method	____

Field Parameters

	I	IV	2V	3V
Color				colorless
Odor				odor II
Appearance				clear
pH (s.u.)	6.12	7.64	9.50	9.77
Conductivity (mS/cm)				
(µmhos/cm)	121.2	125.3	126.8	127.6
Turbidity (NTU)				9.80
Temperature (°C)	10.8	11.6	12.2	12.3
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: ____

Remarks: DTW = 37.64

5 gallon bucket

1/11 1 2 gallons

Constituents Sampled	Container Description	Number	Preservative
VOC			

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0013 Task: 00002 Well ID: GM 21D
Date: 12/30/09 Sampled By: KT
Sampling Time: 10:32 Recorded By: KT
Weather: rain, 45 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: dedicated bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 45.55 Pump Intake Depth
Water Column: Pump on: 9:28 Off: 10:34
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
9:30	450			282	4.85	97.5	10.9	45.55	8.33	
9:35	↓			287	4.80	97.2	11.3		4.63	
9:40				306	4.65	96.5	11.6		4.40	
9:45				308	4.64	90.3	11.6	45.60	5.42	
9:50				311	4.63	88.8	11.7		5.84	
9:55				321	4.58	88.5	12.0		5.92	
10:00				320	4.59	89.2	12.1	45.56	5.66	
10:05				323	4.50	89.2	12.1		5.40	
10:10				325	4.48	89.3	12.2		5.88	
10:15				327	4.44	89.7	12.4	45.56	5.56	
10:20				331	4.42	90.7	12.5		6.01	
10:25				374	4.39	91.7	12.4		5.67	
10:30	↓		3.4	331	4.35	92.0	12.4	45.57	5.76	

Well Secure: Y(E)
Color: clear, colorless, odorless

Purge Water Disposal:
Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. 1398.13.2 | Page 1 of 1

Site Location: Bethpage, NY | Date 1/12/04

Site/Well No. GM 32S | Replicate No. | Code No.

Weather cold, 25 | Sampling Time: Begin 3:03 | End 3:19

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	51'
Depth to Water (ft bmp)	44.93
Water-Level Elevation (ft)	
Water Column in Well (ft)	6.07
Casing Diameter/Type	4" (.65)
Gallons in Well	3.95
Gallons Pumped/Bailed Prior to Sampling	11.83
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 3:03 end 3:19
Pumping Rate (gpm)	Q=1 T=12 10=4
Evacuation Method	

Field Parameters	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	6.55	6.31	6.18	6.11
Conductivity (mS/cm)				
(µmhos/cm)	918	860	893	823
Turbidity (NTU)	>200	93.5	72.6	13.9
Temperature (°C)	13.4	14.9	15.7	15.8
Dissolved Oxygen (mg/L)				
Salinity (%)	3:04	3:08	3:12	3:16
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative
VOC			
total cd/cr	Air influent	pid 4.7 ppm	
dissolved cd/cr	Air effluent	pid 1.0 ppm	

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001346.0013 Task: 00002 Well ID: GM33D2
Date: 1/30/04 Sampled By: KTGV
Sampling Time: 4:52 Recorded By: KT
Weather: cold, 20 Coded Replicate No.: MS/MSD

WELL IMFORMATION

Casing Material: PVC Purge Method: dedicated bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 57.20 Pump Intake Depth
Water Column: Pump on: 3:45 Off: 4:53
Gallons/Foot: Parameters Sampled: VOC 95-1 1956
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
3:50	450			161	6.95	140.7	6.1	57.20	10.68	
3:55				157	6.97	139.9	7.1		10.65	
4:00				162	6.94	138.5	7.4		10.61	
4:05				157	6.73	140.6	8.6		10.57	
4:10										
4:15				169	6.81	143.5	6.3		10.46	
4:20				166	6.96	148.0	4.3		10.58	
4:25				162	6.95	150.9	5.4	52.35	10.63	
4:30				162	6.88	148.5	7.2		10.46	
4:35				220	6.16	124.0	10.6		10.35	
4:40				224	5.87	123.3	10.7	52.40	10.32	
4:45				232	5.55	124.9	9.9		10.27	
4:50			1.86	236	5.34	124.2	10.0		10.23	

Well Secure: Yes Purge Water Disposal:
Color: Clear 00644 Turbidity(qualitative):

S:\WPROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsampfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0013 Task: 0002 Well ID: GM 34D
Date: 12/29/03 Sampled By: GW KT
Sampling Time: 1:12 Recorded By: KT
Weather: clear, 45 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PSkel Purge Method: nonrediscted bladder
Casing Diameter: 2" Purge Rate: 450ml/min
Total Depth: Total Volume Purged:
Depth to Water: 16.91 Pump Intake Depth
Water Column: Pump on: 12:12 Off: 1:14
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:10	450			110	5.82	155.6	11.6	16.91	4.76	
12:15	↓			-10	6.62	186.1	14.0		0.42	
12:20				-31	7.15	181.7	14.3		0.33	
12:25				-35	7.21	181.6	14.3	16.92	0.33	
12:30				-78	8.11	178.0	14.7		0.21	
12:35				-75	7.96	194.1	14.8		0.19	
12:40				-62	7.80	196.9	14.8	16.95	0.22	
12:45				-40	7.57	194.8	14.9		0.26	
12:50				-14	7.33	193.6	14.7		0.25	
12:55				5	7.08	194.4	14.3	16.95	0.28	
1:00				21	6.82	194.7	14.6		0.27	
1:05				25	6.71	194.6	14.5		0.26	
1:10	↓		13	32	6.62	194.0	14.9	16.94	0.25	

Well Secure: Y/N Purge Water Disposal:
Color: clear, colorless, odorless Turbidity(qualitative):

S:\PROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmpfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 10YD003148.0003 Task: 00002 Well ID: GW 3492
Date: 12/29/05 Sampled By: GW KT
Sampling Time: clear, 40 Recorded By: KT
Weather: 11.52 Coded Replicate No.:

WELL IMFORMATION

Casing Material: steel Purge Method: non-pressurized bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 18.30 Pump Intake Depth
Water Column: Pump on: 10:33 Off: 11:55
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
10:40	450			187	4.37	97.6	10.1	18.30	4.01	
10:45				176	4.88	90.5	12.3		1.22	
10:50				162	5.32	88.2	12.8		0.60	
10:55				164	5.34	88.0	12.8	18.34	0.61	
11:00				135	5.45	88.1	12.8		0.55	
11:05				65	5.52	87.9	13.1		0.48	
11:10				-7	5.53	93.6	13.5	18.31	0.21	
11:15				-26	5.39	117.1	13.6		0.17	
11:20				-11	5.43	166.9	13.6		0.22	
11:25				29	5.44	170.9	13.9	18.32	0.62	
11:30				60	5.40	154.3	13.9		1.32	
11:35				86	5.37	131.2	13.8		1.84	
11:40			~~110~~ 110	103	5.31	118.9	13.6	18.33	2.50	
11:45				127	5.34	107.5	13.7		3.18	
11:50			36	138	5.34	100.4	13.5		3.54	

Well Secure: YES Purge Water Disposal:
Color: clear, colorless, odorless Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. NY000134.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date 1/20/04

Site/Well No. GM3502 | Replicate No. ____ | Code No. ____

Weather cold, 25 | Sampling Time: Begin 10:04 End 11:42

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point		Color				colorless
MP Elevation (ft)		Odor				odorless
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	530'	pH (s.u.)	7.13	6.72	4.91	6.24
Depth to Water (ft bmp)	507'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	1508	1371.6	1303	1345
Water Column in Well (ft)	23'	Turbidity (NTU)				
Casing Diameter/Type	4" (6S)	Temperature (°C)	10.6	14.1	15.1	15.3
Gallons in Well	14.95'	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45	~~Salinity~~ Time (%)	10:04	10:35	11:02	11:38
Sample Pump Intake Setting (ft bmp)	PSJ 225	Sampling Method				
Purge Time	begin 10:04 end 11:42	Remarks	PID 42.3			
Pumping Rate (gpm)			5 gallon pails			
Evacuation Method			HH HH			

Constituents Sampled	Container Description	Number	Preservative
VOC	40 ml VOA VIAL	2	—
H2M	"	2	HCl
*couldn't do turbidity b/c VIAL	all broke		

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No. NY001345.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 1/19/04

Site/Well No.: GM 30D | Replicate No. ____ | Code No. ____

Weather: cold, frozen ice, 25 | Sampling Time: Begin 11:18 | End 1:33

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point	____	Color				clear
MP Elevation (ft)	____	Odor				odor
Land Surface Elevation (ft)	____	Appearance				clear
Sounded Well Depth (ft bmp)	214'	pH (s.u.)	5.81	4.21	4.13	4.30
Depth to Water (ft bmp)	202'	Conductivity (mS/cm)				
Water-Level Elevation (ft)	____	(µmhos/cm)	124.6	119.4	117.1	113
Water Column in Well (ft)	12'	Turbidity (NTU)				no turbidity meter
Casing Diameter/Type	4"(.65)	Temperature (°C)	8.3	9.9	11.6	13.2
Gallons in Well	8	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	24	Salinity (%)				
Sample Pump Intake Setting (ft bmp)	110 PSI	Sampling Method (Time)	11:26	11:50	12:22	1:29
Purge Time	begin 11:18 end 1:33	Remarks	control box froze, had to wait it to thaw out			
Pumping Rate (gpm)	____		DTW 37.37			
Evacuation Method	dedicated bladder		5 gallon bucket			
			HH			

Constituents Sampled	Container Description	Number	Preservative
VOC	40 ml VOA	2	—
H2N	"	2	HCl

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Gwinnett | Project No.: NY001345.0013.00002 | Page: 1 of ____

Site Location: Bethpage, NY | Date: 1/26/01

Site/Well No.: GM36D2 | Replicate No.: ____ | Code No.: ____

Weather: cold, 15 | Sampling Time: Begin 12:07 End 1:40

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	540'	pH (s.u.)	8.02	10.25	9.33	8.29
Depth to Water (ft bmp)	515'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	184	377	157.7	1494
Water Column in Well (ft)	27'	Turbidity (NTU)				204
Casing Diameter/Type	4" (.65)	Temperature (°C)	7.4	13.0	14.0	13.4
Gallons in Well	15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45	Salinity (%)	12:12	12:44	1:08	1:33
Sample Pump Intake Setting (ft bmp)	DSE 235	Sampling Method				
Purge Time	begin 12:07 end 1:40	Remarks	DTW = 39.41			
Pumping Rate (gpm)			5 gallon pail			
Evacuation Method			HH | |			

Constituents Sampled	Container Description	Number	Preservative
VOC	40 ml VOA VIAL	2	—
1,2,4 TCB VOC		2	HCl

Sampling Personnel: MG

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

80 203-929-8140 Joanna

Project: grumman | Project No. NY003348.0013.00002 | Page 1 of ____

Site Location: bethpage, ny | Date: 1/14/04

Site/Well No.: GM 37D | Replicate No.: Rep 1.14.04 | Code No.: ____

Weather: cold, 15 | Sampling Time: Begin 12:24 End 2:52

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	262'
Depth to Water (ft bmp)	240'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	4" (PVC)
Gallons in Well	14.3
Gallons Pumped/Bailed Prior to Sampling	42.9
Sample Pump Intake Setting (ft bmp)	110 PST
Purge Time	begin 1124 end 252
Pumping Rate (gpm)	
Evacuation Method	dedicated bladder

Field Parameters

	T	1V	2V	3V
Color				color less
Odor				odorless
Appearance				clear
pH (s.u.)	4.31	4.15	4.15	4.15
Conductivity (mS/cm)				
(µmhos/cm)	237	234	233	232
Turbidity (NTU)				2.59
Temperature (°C)	7.0	12.1	12.8	12.5
Dissolved Oxygen (mg/L)				
Salinity (%)	0.26	1.17	2.02	2.47
Sampling Method				

Remarks: D/O 4.2

5 gallon pails

IIII IIII

Constituents Sampled	Container Description	Number	Preservative
VOC	40ml VOA vial	2	—
H2m	"	2	HCl

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Hillmore | Project No. NY003412.0013.00002 | Page 1 of ____

Site Location: Hellgate, NY | Date 1/14/04

Site/Well No. MW-27DL | Replicate No. MS/MSD only Sediment 5 | Code No. ____

Weather: cold, 15 | Sampling Time: Begin ____ End 12:20

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	370'
Depth to Water (ft bmp)	347'
Water-Level Elevation (ft)	
Water Column in Well (ft)	23'
Casing Diameter/Type	~~FLAT~~ 4"(ST)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45
Sample Pump Intake Setting (ft bmp)	150 PSI
Purge Time	begin 9:49 end 12:20
Pumping Rate (gpm)	Solon A 0.6 on 0% (control Box
Evacuation Method	drop tube tofill qp+chem 1300ml/min

Field Parameters

	I	IV	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	6.56	6.79	4.04	4.35
Conductivity (mS/cm)				
(µmhos/cm)	184.9	177.6	178.2	201
Turbidity (NTU)				2.3
Temperature (°C)	6.6	16.9	12.5	10.4
Dissolved Oxygen (mg/L)				
Salinity (%)	8.10	10:24	11:13	12:15

Sampling Method: pump tubing from right here

Remarks: PID 417

5 Gallon buckets

HHH IIII

Constituents Sampled	Container Description	Number	Preservative
VOC	40 ml VOA	2	—
H2M	"	2	HCl

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.			
1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

mp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
	feet	msl	mean sea-level	s.u.	Standard units
	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Johnson | Project No. NY001345.0013.00001 | Page 1 of ____

Site Location: Waterpoint, NY | Date: 1/13/04

Site/Well No.: GM 39D | Replicate No. ____ | Code No. ____

Weather: cloudy, 35 | Sampling Time: Begin 10:13 | End 12:30

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point	____	Color				colorless
MP Elevation (ft)	____	Odor				odorless
Land Surface Elevation (ft)	____	Appearance				clear
Sounded Well Depth (ft bmp)	340'	pH (s.u.)	7.07	6.55	4.19	4.45
Depth to Water (ft bmp) packer	317'	Conductivity (mS/cm)				
Water-Level Elevation (ft)	____	(µmhos/cm)	102.2	122.9	119.9	119.7
Water Column in Well (ft)	23'	Turbidity (NTU)				— clear
Casing Diameter/Type	4" (.65)	Temperature (°C)	10.3	11.5	12.8	12.6
Gallons in Well	15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45	Salinity (%) tip	10.15	11.02	11.44	12.27
Sample Pump Intake Setting (ft bmp)	145 psi	Sampling Method	~	11.02	11.44	12.27
Purge Time	begin 10:13 end 12:30	Remarks	DTW 39.59			
Pumping Rate (gpm)	____		39.68	39.78		
Evacuation Method	____		5 gallon pail			
			HHT IIII			
			10:31 10:42			

Constituents Sampled	Container Description	Number	Preservative
VOC	* pumping @ 1700 ml/min		
H/LM	control box discharge = A		
	refill = B		
* couldn't get cap on all the way - key	each pulse = 200 ml		
wouldn't go in lock			

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.				
1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65	
1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47	

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: gunnison | Project No. NY001348.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 1/13/04

Site/Well No.: GM 38D2 | Replicate No.: ____ | Code No.: ____

Weather: cloudy, 35 | Sampling Time: Begin 12:37 End 3:10

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	495'
Depth to ~~Water~~ (ft bmp)	472' (meter)
Water-Level Elevation (ft)	
Water Column in Well (ft)	23'
Casing Diameter/Type	4" (6S)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45
Sample Pump Intake Setting (ft bmp)	220 PSI
Purge Time	begin 12:37 end ____
Pumping Rate (gpm)	
Evacuation Method	dedicated bladder

Field Parameters	I	1V	2V	3V
Color				colorless
Odor				odor
Appearance				clear
pH (s.u.)	4.55	4.47	4.32	4.47
Conductivity (mS/cm)				
(µmhos/cm)	96.2	1180	110	1039
Turbidity (NTU)				2.70
Temperature (°C)	11.7	12.4	13.0	12.4
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method (Time)	12:37	1:10	2:07	3:07

Remarks: DTW 40.90 DTW 40.7 5 gallons purged

Constituents Sampled	Container Description	Number	Preservative
VOC	40 ml		
Metals	40 ml		
	1 liter		could go faster than this
	cooler	1	ice
		6	HCl

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.			
1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0013 Task: 0002 Well ID: GM390
Date: 1/20/04 Sampled By: KT
Sampling Time: 3:37 Recorded By: KT
Weather: cold, 25 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Nondedicated bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 42.05 Pump Intake Depth
Water Column: Pump on: 2:31 Off: 3:40
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:35	450			324	6.52	59.7	7.4	42.05	8.71	
2:40				323	6.54	72.5	9.3		6.82	
2:45				319	6.58	74.2	9.2		6.60	
2:50				320	6.55	73.9	9.3	42.05	7.71	
2:55				320	6.44	74.8	9.5		7.74	
3:00				317	6.37	74.6	9.7		7.78	
3:05				317	6.33	74.5	10.2	42.05	7.00	
3:10				320	6.27	74.4	9.2		7.48	
3:15				318	6.25	74.4	9.7		7.91	
3:20				318	6.26	74.5	9.5	42.05	7.54	
3:25				323	6.29	74.5	10.0		7.11	
3:30				321	6.29	74.5	10.2		7.31	
3:35				318	6.23	74.4	10.0	42.05	7.52	
3:40										

Well Secure: YES Purge Water Disposal:
Color: clear, colorless, odorless Turbidity(qualitative):

* couldn't do turbidity b/c vials all broken

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0013 Task: 00002 Well ID: GM39D2
Date: 1/20/04 Sampled By: YT
Sampling Time: 2:12 Recorded By: YT
Weather: cold, 25 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: modified low flow bladder
Casing Diameter: 4" Purge Rate: 450ml/m
Total Depth: Total Volume Purged:
Depth to Water: 44.3 Pump Intake Depth
Water Column: Pump on: 1:08 Off: 2:12
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1:10	450			291	7.93	122.9	7.2	44.3	5.61	
1:15				305	7.17	141.1	11.3		7.39	
1:20				306	7.23	139.9	11.3	44.39	7.44	
1:25				313	6.96	131.8	11.4		7.63	
1:30				320	6.78	135.6	11.6		8.11	
1:35				325	6.61	121.7	11.7	44.75	7.98	
1:40				323	6.60	134.2	10.6		7.11	
1:45				317	6.56	136.0	9.5		7.41	
1:50				321	6.47	135.9	9.3	44.75	8.21	
1:55				327	6.45	136.0	9.3		7.95	
2:00				327	6.40	136.2	9.3		7.78	
2:05				328	6.36	136.6	8.9	44.75	8.29	
2:10				331	6.30	142.7	8.6		8.12	

Well Secure: Yes Purge Water Disposal:
Color: Med. colorless, odorless Turbidity(qualitative):
* couldn't do turbidity b/c vials all broken

50:\PROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GW\sampling.xls Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No. 10701341.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 1/16/04

Site/Well No.: MW 70D2 | Replicate No. ____ | Code No. ____

Weather: cold, ice | Sampling Time: Begin 11:05 | End 1:25

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	330'
Depth to Water (ft bmp)	308'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	4" (6S)
Gallons in Well	14.3
Gallons Pumped/Bailed Prior to Sampling	42 ?
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 12:05 end 1:25
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	N	2V	3V
Color				tea colored
Odor				odor
Appearance				clear
pH (s.u.)	5.03	4.96	4.53	4.12
Conductivity (mS/cm)				
(µmhos/cm)	1134	1125	1027	1089
Turbidity (NTU)				
Temperature (°C)	11.9	12.3	13.9	12.3
Dissolved Oxygen (mg/L)				
Salinity (%)	1.09	1.04	1.01	1.03
Sampling Method				

Remarks: 5 gallon pails ++++ ||

Constituents Sampled	Container Description	Number	Preservative
VOC	X cooler box (freeze brick) only	1 5 gallon pail	none
TIM	top-mounted stainless steel		
	X man from control board school came out to ask what I was doing. I gave him my card, he was okay w/ everything		

Sampling Personnel: KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No.: NY001348.0003.00002 | Page: 1 of ____

Site Location: Bethpage, NY | Date: 1/15/04

Site/Well No.: MW102 | Replicate No.: ____ | Code No.: ____

Weather: cold, 25 | Sampling Time: Begin 2:48 | End 3:49

Evacuation Data		Field Parameters	1	1V	2V	3V
Measuring Point		Color				colorless
MP Elevation (ft)		Odor				odorless
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	464'	pH (s.u.)	8.77	7.98	5.91	7.95
Depth to Water (ft bmp)	442'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	218	238	244	254
Water Column in Well (ft)	22'	Turbidity (NTU)				
Casing Diameter/Type	4"(PVC)	Temperature (°C)	12.0	12.6	12.5	11.6
Gallons in Well	15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45	Salinity (%)	2.41	3.01	3.25	3.45
Sample Pump Intake Setting (ft bmp)	220 PSI	Sampling Method				
Purge Time	begin 2:48 end 3:49	Remarks	DTW 43.58			
Pumping Rate (gpm)						
Evacuation Method	dedicated bladder		### III			

Constituents Sampled	Container Description	Number	Preservative
VOC			
filter			
	* no turbidity meter		

Sampling Personnel: CT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001398.0013 Task: 0002 Well ID: GM 73D
Date: 01.15.04 Sampled By: BM GW
Sampling Time: 2:52 Recorded By: BM GW
Weather: Sunny 10°F Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow
Casing Diameter: 4" Purge Rate:
Total Depth: Total Volume Purged:
Depth to Water: 46.74 Pump Intake Depth
Water Column: Pump on: 1:48 Off: 2:53
Gallons/Foot: Parameters Sampled: VOCs
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1:50				282	7.30	106.4	9.4	46.74	7.93	
1:55				304	6.70	102.0	11.5		6.85	
2:00				306	6.60	102.3	11.8		6.91	
2:05				304	6.60	101.8	11.9		6.90	
2:10				302	6.56	99.9	11.6		6.94	
2:15				301	6.52	99.6	11.6		6.87	
2:20				302	6.50	99.4	11.4		7.06	
2:25				304	6.46	99.1	11.8	46.75	7.11	
2:30				307	6.38	97.9	12.1		7.18	
2:35				309	6.39	97.6	12.0	46.60	6.63	
2:40				308	6.44	97.7	10.6		6.68	
2:45				308	6.44	98.6	9.4		6.90	
2:50				307	6.45	98.9	9.4		6.80	

Well Secure: Yes Purge Water Disposal:
Color: Colorless Turbidity(qualitative): Clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0013 **Task:** 00001 **Well ID:** GM-73D2
Date: 01/13/04 **Sampled By:** KS
Sampling Time: 1240 **Recorded By:** KS
Weather: Cloudy, 25° **Coded Replicate No.:**

WELL IMFORMATION

Casing Material: PVC **Purge Method:** Dedicated Low Flow
Casing Diameter: 4" **Purge Rate:** N450ml/min
Total Depth: **Total Volume Purged:** 8 Gallons
Depth to Water: 48.86' **Pump Intake Depth**
Water Column: **Pump on:** 1240 **Off:** 1390
Gallons/Foot: **Parameters Sampled:** VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1240	N450	-	-	-	-	-	-	48.86'	-	
1245				341	6.17	153.1	13.5	-	5.00	
1250				350	6.03	152.5	13.0	-	3.44	
1255				356	5.95	152.8	13.3	48.86'	3.86	
1300				352	5.90	150.5	13.5	-	4.04	
1305				354	5.89	149.8	13.5	-	4.51	
1310				356	5.86	149.6	13.5	48.86'	4.56	
1315				357	5.85	149.2	13.4	-	4.61	
1320				358	5.85	149.0	13.4	-	4.69	
1325				360	5.85	149.0	13.3	48.86'	4.76	
1330				360	5.83	149.8	13.6	-	4.99	
1335				364	5.83	150.0	13.6	-	4.97	
1340	↓			361	5.82	150.1	13.5	-	4.86	
1345	↓		0.91	361	5.83	150.5	13.5	48.86	4.73	

Well Secure: YES (NEED A LOCK - NONE ON WELL) (WELLS NOW LOCKED AND BROKEN) **Purge Water Disposal:** NC Sewer
Color: Colorless **Turbidity(qualitative):** Clear

G:\PROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GW\wmpdrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4021348.0013.~~0002~~ Task: 00002 Well ID: GM-74I
Date: 01/13/04 Sampled By: KS
Sampling Time: 0910 Recorded By: KS
Weather: cloudy, 30° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: dedicated low flow
Casing Diameter: 4" Purge Rate: 480 ml/min
Total Depth: 114' Total Volume Purged: 96 gallons
Depth to Water: 41.86' Pump Intake Depth
Water Column: Pump on: 0908 Off: 1000
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
0915	~480			330	7.02	161.4	13.5	41.86'	8.56	
0920	↓			327	6.85	103.3	13.2	-	8.53	
0925				326	6.57	90.8	13.2	-	8.32	
0930				331	6.43	86.9	13.3	41.86'	8.41	
0935				328	6.42	86.6	13.1	-	7.96	
0940				329	6.39	87.0	12.1	-	8.53	
0945				353	6.38	89.1	12.0	41.86'	7.79	
0950				331	6.40	104.8	12.0	-	7.61	
0955				339	6.38	103.9	11.9	-	7.77	
1000	↓		(41.7)	336	6.38	104.1	11.9	41.86'	7.66	

Well Secure: Yes Purge Water Disposal: NC Sewer
Color: Colorless Turbidity(qualitative): Clear

.\GI_WPROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GW\sampling_log - Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 04001348.0013. Task: 00002 Well ID: GM-74D
Date: 01/13/04 Sampled By: KS
Sampling Time: 1005 Recorded By: KS
Weather: Cloudy, 25° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Peristaltic Low Flow
Casing Diameter: 4" Purge Rate: 0483 ml/min
Total Depth: 305' Total Volume Purged: 8 Gallons
Depth to Water: 47.64' Pump Intake Depth
Water Column: Pump on: 1005 Off: 1115
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water.	Diss. Oxygen	Comments
1010	N450			356	6.14	100.6	10.8	47.64'	6.30	
1015				359	5.90	99.9	11.2	-	4.33	
1020				366	5.85	97.7	11.4	-	5.48	
1025				363	5.83	97.5	11.3	47.66'	6.20	
1030				373	5.79	96.4	12.0	-	5.83	
1035				370	5.77	96.2	11.4	-	6.18	
1040				371	5.75	96.1	11.5	47.65'	6.60	
1045				373	5.72	96.3	11.6	-	6.68	
1050				384	5.69	96.3	11.6	-	6.17	
1055				377	5.75	96.0	11.6	47.65'	6.56	
1100				381	5.77	96.1	11.6	-	5.87	
1105				378	5.78	96.3	11.6	-	5.92	
1110	↓		3.0	379	5.77	96.8	11.6	47.65'	5.94	

Well Secure: Yes $. Purge Water Disposal: NC Sewer
Color: colorless Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M0001398.0013 Task: 00002 Well ID: GM-74D2
Date: 01/13/04 Sampled By: KS
Sampling Time: 1120 Recorded By: KS
Weather: cloudy 25° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Dedicated Low Flow
Casing Diameter: 4" Purge Rate: ~450 ml/min
Total Depth: 562' Total Volume Purged: 8 GALLONS
Depth to Water: 54.20' Pump Intake Depth
Water Column: Pump on: 1120 Off: 1230
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1125	~450	3		372	5.99	80.5	11.0	54.20	2.99	
1130				366	5.96	80.3	11.7	-	1.14	
1135				359	5.95	87.3	11.5	-	2.24	
1140				364	5.93	82.6	11.3	54.23	2.35	
1145				360	5.92	78.5	11.5	-	2.38	
1150				365	5.89	75.1	11.4	-	2.52	
1155				364	5.88	74.4	11.6	54.23	2.43	
1200				369	5.88	74.5	11.4	-	2.62	
1205				362	5.86	75.0	11.5	-	2.62	
1210				365	5.87	76.1	11.5	54.22	2.61	
1215				366	5.89	96.5	11.6	-	2.61	
1220				362	5.87	77.0	11.7	-	2.63	
1225	↓		0.66	365	5.86	77.2	11.7	54.22	2.55	

Well Secure: Yes (NEW LOCK) Purge Water Disposal: NC Sewer
Color: Colorless Turbidity(qualitative): Clear

S:\PROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsampfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0013 Task: 0002 Well ID: GM75D2
Date: 1/30/04 Sampled By: KT GW
Sampling Time: 1:46 Recorded By: KT
Weather: cold, 20 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: dedicated bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 38.17 Pump Intake Depth
Water Column: Pump on: 12:32 Off: 1:47
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:45	450			238	6.89	178.7	7.1	38.17	10.01	
12:50				268	6.52	191.8	8.4		9.91	
12:55				285	5.39	197.0	9.8		9.77	
13:00				291	4.90	197.7	9.6	38.17	9.76	
13:05				304	3.80	195.9	9.0		9.83	
13:10				304	3.87	195.8	9.0		9.84	not valid
13:15				306	3.95	195.0	9.3	38.17	9.85	
13:20				310	3.85	195.1	9.3		9.58	
13:25				309	3.80	194.9	9.3		9.62	
13:30				312	3.74	195.1	9.2	38.17	9.71	
13:35				319	3.70	194.5	9.6		9.83	
13:40				318	3.90	194.5	9.6		9.80	
13:45	↓		0.0	317	3.73	194.7	9.6	38.17	9.95	

Well Secure: yes Purge Water Disposal:
Color: dark to light brown Turbidity(qualitative):

S:\PROJECT\Lockheed Martin\Great Neck\WY001227.0002\Data\GC\Wellpurge.xls- Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: NYD001348.0013.00002 | Project No.: grumman | Page: 1 of ____

Site Location: bethpage, ny | Date: 1/6/04

Site/Well No.: GM78S | Replicate No.: ____ | Code No.: ____

Weather: cold, wo | Sampling Time: Begin 1:07 End 1:34

Evacuation Data		Field Parameters	F	IV	2V	3V
Measuring Point		Color				color @ 11
MP Elevation (ft)		Odor				odor @ 11
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	70'	pH (s.u.)	6.19	5.64	5.50	5.46
Depth to Water (ft bmp)	44.40	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	457	453	456	454
Water Column in Well (ft)	25.6	Turbidity (NTU)	56.2	17.2	5.65	1.98
Casing Diameter/Type	4" (.65)	Temperature (°C)	13.5	16.0	16.1	16.1
Gallons in Well	16.64	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	49.92	~~Salinity (%)~~ TDS	1.00	1:16	1:24	1:33
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 1:07 end 1:34	Remarks				
Pumping Rate (gpm)	Q = 2 T = 25 IV-8					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
VOC			
cd | Li			

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001318.0013 Task: 00002 Well ID: GM787
Date: 1/8/04 Sampled By: GW KT
Sampling Time: 12:42 Recorded By: KT
Weather: cold, 20 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: peristaltic
Casing Diameter: 4" Purge Rate: 350 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 44.66 Pump Intake Depth
Water Column: Pump on: 11:53 Off:
Gallons/Foot: Parameters Sampled: VOC & MeOH
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
11:55	350			187	7.78	192.9	13.6	44.66	5.54	
12:00	↓			244	6.06	225	13.0		4.49	
12:05				253	6.64	275	13.0		4.29	
12:10				254	6.39	315	13.3	44.67	3.90	
12:15				253	6.31	322	13.5		4.11	
12:20				253	6.25	332	13.7		4.22	
12:25				253	6.19	340	13.7	44.66	4.27	
12:30			3.46	253	6.15	346	13.6		4.22	
12:35			1.92	253	6.10	344	13.8		4.22	
12:40	↓		0.92	254	6.06	350	13.7	44.66	4.03	

Well Secure: YES Purge Water Disposal:
Color: clear, colorless, odorless Turbidity(qualitative):

S:\PROJECTS\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsampling.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0013 Task: 00002 Well ID: GM79I
Date: 12/30/03 Sampled By: KT
Sampling Time: 13:32 Recorded By: KT
Weather: cloudy, 45 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: disposable bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 42.68 Pump Intake Depth
Water Column: Pump on: 12:41 Off: 13:34
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:45	450			304	5.84	117.5	12.2	42.68	2.43	
12:50				310	5.05	113.3	13.8		7.30	
12:55				315	4.93	112.3	13.5		6.93	
13:00				324	4.85	110.2	13.7	42.78	6.55	
13:05				324	4.84	110.0	13.7		6.44	
13:10				328	4.78	109.3	13.8		7.07	
13:15				334	4.76	108.6	14.0	42.80	6.21	
13:20				331	4.74	108.1	13.9		6.24	
13:25				336	4.74	107.2	14.0		7.02	
13:30			3.0	336	4.73	107.2	13.4	42.80	6.69	

Well Secure: yes Purge Water Disposal:
Color: clear, colorless, odorless Turbidity(qualitative):

* had to cut lock to get in recharge basin. Gary got okay to do so.

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001247.0013 Task: 00002 Well ID: GM 79D
Date: 12/30/03 Sampled By: GW CT
Sampling Time: 1443 Recorded By: KT
Weather: cloudy, 40F Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: dedicated bladder
Casing Diameter: 4" Purge Rate: 450ml/min
Total Depth: Total Volume Purged:
Depth to Water: 43.90 Pump Intake Depth
Water Column: Pump on: 1335 Off: 1444
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1340	450			334	5.12	105.2	12.5	43.90	7.45	
1345				340	4.94	104.9	13.0		4.37	
1350				344	4.78	104.2	13.5		2.96	
1355				344	4.67	103.9	13.7	43.90	3.18	
1400				345	4.64	101.7	13.7		3.00	
1405				345	4.64	102.0	17.7		2.93	
1410				347	4.62	102.2	13.7	43.90	2.87	
1415				345	4.62	103.7	13.5		2.86	
1420				349	4.62	103.7	12.5		2.77	
1425				344	4.62	105.2	13.5	43.90	2.62	
1430				350	4.63	105.2	13.6		2.44	
1435				347	4.63	105.9	13.5		2.45	
1440			1.5	347	4.62	106.1	13.6	43.90	2.47	

Well Secure: yes Purge Water Disposal:
Color: clear, colorless, odorless Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348 0013 Task: 0000 Well ID: HN-24I
Date: 1/7/04 Sampled By: GW YT
Sampling Time: 4:12 Recorded By: YT
Weather: cold, 15 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: rediflo
Casing Diameter: 4" Purge Rate: 500 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 59.42 Pump Intake Depth
Water Column: Pump on: 3:08 Off: 4:13
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
3:10	500			151	8.76	474	6.3	59.42	9.72	
3:15	↓			183	7.85	492	6.3		7.51	
3:20				240	8.47	464	10.3		6.94	
3:25				265	7.53	449	10.8	59.50	7.05	
3:30				268	7.71	449	10.5		6.81	
3:35				274	7.16	441	10.9		6.72	
3:40				276	6.75	442	9.5	59.50	6.46	
3:45				276	6.67	445	8.7		6.63	
3:50				276	6.46	442	9.1	59.45	6.73	
3:55				276	6.39	440	9.7		6.23	
4:00				276	6.31	446	7.8		6.10	
4:05				275	6.77	448	7.5	59.45	6.60	
4:10	↓		13.5	275	6.21	447	7.7		5.80	

Well Secure: YES Purge Water Disposal:
Color: Clear (colorless), odorless Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NYC0348.0013 Task: 0002 Well ID: HN29I
Date: 1/7/09 Sampled By: GW KT
Sampling Time: 2:57 Recorded By: KT
Weather: cold. 15 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Peristaltic
Casing Diameter: 4" Purge Rate: 400 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 50 Pump Intake Depth
Water Column: Pump on: 1:53 Off:
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1:55	400			129	10.07	181.6	10.1	50	5.85	
2:00				79	10.79	368	11.6		5.27	
2:05				95	10.80	352	11.2		5.44	
2:10				60	10.80	387	12.4	51.75	4.82	
2:15				58	10.82	405	12.4		4.75	
2:20				55	10.82	411	12.4		4.70	
2:25				49	10.82	406	12.2	51.75	5.42	
2:30				48	10.76	405	12.9		5.31	
2:35				46	10.72	418	14.3		5.43	
2:40				46	10.72	418	14.4	51.77	4.87	
2:45				41	10.72	413	14.4		4.97	
2:50				40	10.72	405	14.2		5.28	
2:55			5.71	39	10.73	403	14.1	51.77	5.18	

Well Secure: Y
Color: Clear, colorless, odorless
Purge Water Disposal:
Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: [illegible] Task: _____ Well ID: HW 29D
Date: 11/7/09 Sampled By: GW KT
Sampling Time: 1:17 Recorded By: KT
Weather: cold, lt Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Peristaltic bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 50.65 Pump Intake Depth _____
Water Column: _____ Pump on: 12:12 Off: 1:12
Gallons/Foot: _____ Parameters Sampled: VOC
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:18	450			230	7.48	84.4	3.0	50.65	—	
12:30				189	7.58	94.0	8.6		—	
12:35				177	8.15	100.4	9.8		9.72	
12:30				172	8.31	125.9	9.6	50.62	6.75	
12:35				151	8.40	166.0	9.4		6.36	
12:40				162	8.38	157.7	7.8		6.34	
12:45				150	8.52	152.5	11.0	50.60	6.33	
12:50				206	8.34	148.7	11.5		6.89	
12:55				231	8.10	146.8	11.5		6.53	
1:00				242	7.89	143.4	11.4	50.00	6.72	
1:05				255	7.72	142.3	11.4		6.65	
1:10				253	7.61	141.2	11.6	50.60	6.93	
1:15	↓		6.84	253	7.58	141.6	12.1		6.17	

Well Secure: Y(1) Purge Water Disposal: _____
Color: clear colorless, odorless Turbidity(qualitative): _____

* DO meter frozen for first 2 readings

.50:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmpfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: nyco1340.0013.00002 | Project No.: grumman | Page 1 of ____

Site Location: Bethpage, NY | Date: 12/22/03

Site/Well No.: HN 405 | Replicate No.: ____ | Code No.: ____

Weather: clear, 35 | Sampling Time: Begin 1:59 End 2:16

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				colorless
MP Elevation (ft)		Odor				odorless
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	59'	pH (s.u.)	7.41	8.01	7.56	7.16
Depth to Water (ft bmp)	52.42'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	133.6	126.0	142.6	1576
Water Column in Well (ft)	6.58'	Turbidity (NTU)				5.8
Casing Diameter/Type	4" (1.65)	Temperature (°C)	13.4	14.7	15.0	15.9
Gallons in Well	1.28	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	12.8	Salinity (%)	2:00	2:04	2:08	2:13
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 1:59 end 2:16	Remarks				
Pumping Rate (gpm)	Q=1 T=13 IV=4					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
VOC	40ml VOA Vial	2	—

Sampling Personnel: KT GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: WY001348.0013 Task: 00002 Well ID: HW 407
Date: 12/22/03 Sampled By: GW KT
Sampling Time: 3:11 Recorded By: KT
Weather: clear, 35 Coded Replicate No.:

WELL IMFORMATION

Casing Material: pvc Purge Method: radflo
Casing Diameter: 4" Purge Rate: 500ml/min
Total Depth: 118 Total Volume Purged:
Depth to Water: 52.21 Pump Intake Depth
Water Column: Pump on: 2:23 Off: 3:14
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:25	500			187	5.95	246	14.7	52.24	8.66	
2:30	↓			277	5.31	247	15.2		7.80	
2:35				287	5.04	245	15.7		7.51	
2:40				294	4.94	242	16.1	52.24	7.72	
2:45				301	4.77	242	16.2		7.80	
2:50				304	4.75	242	16.3		7.41	
2:55				304	4.75	243	16.3	52.25	7.53	
3:00				313	4.75	242	16.4		7.43	
3:05				313	4.75	242	16.4		7.60	
3:10	↓		9.6	315	4.75	242	16.3	52.25	7.65	

Well Secure: Yes Purge Water Disposal:
Color: clear, cloudy, orange Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project NY001366.0035.00002 | Project No. Grummer | Page 1 of 1

Site Location Bethpage, NY | Date 12/22/03

Site/Well No. GHN 425 | Replicate No. | Code No.

Weather Clear, 35 | Sampling Time: Begin 11:46 End 12:00

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	60'
Depth to Water (ft bmp)	54.95'
Water-Level Elevation (ft)	
Water Column in Well (ft)	5.05'
Casing Diameter/Type	4" (.65)
Gallons in Well	3.28
Gallons Pumped/Bailed Prior to Sampling	9.84
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 11:45 end 12:00
Pumping Rate (gpm)	
Evacuation Method	Q= 1 T= 10 IV=3.5

Field Parameters

Field Parameters	I	1V	2V	3V
Color				(clear)
Odor				(clear)
Appearance				clear
pH (s.u.)	6.77	6.02	5.83	5.77
Conductivity (mS/cm)				
(µmhos/cm)	280	306	305	304
Turbidity (NTU)				2.4
Temperature (°C)	15.4	14.8	15.6	15.7
Dissolved Oxygen (mg/L)				
Salinity (%)	11:47	11:50	11:54	11:57

Sampling Method

Remarks

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel CT/CW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 4WO01348.0013 Task: 00007 Well ID: HN 42I
Date: 12/22/03 Sampled By: GW KT
Sampling Time: 12:58 Recorded By: KT
Weather: clear 35 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: peristaltic
Casing Diameter: 4" Purge Rate: 450ml/min
Total Depth: 110' Total Volume Purged:
Depth to Water: 54.25 Pump Intake Depth
Water Column: Pump on: 12:08 Off: 1:02
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:10	450			28	10.94	402	12.3	54.25	7.41	
12:15				37	11.06	382	13.4		6.81	
12:20				48	10.88	367	14.8		6.56	
12:25				55	10.75	334	15.3	54.40	6.28	
12:30				69	10.55	280	15.5		6.20	
12:35				75	10.40	255	15.4		6.59	
12:40				87	10.22	244	15.6	54.41	6.29	
12:41				96	10.10	239	15.7		6.26	
12:50				101	10.03	230	15.7		6.50	
12:55	↓		15.0	108	9.96	228	15.7	54.41	6.50	

Well Secure: Y
Color: clear, colorless odorless
Purge Water Disposal:
Turbidity(qualitative):

S:\G:\APROJECT\Lockheed Martin\Great Neck\WY001227.0002\Data\GWsmpfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000341.0012 Task: 00002 Well ID: N-10627
Date: 1/30/04 Sampled By: KT
Sampling Time: 2:56 Recorded By: KT
Weather: cold, 20° Coded Replicate No.:

WELL IMFORMATION

Casing Material: SS Purge Method: non-dedicated bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: Total Volume Purged:
Depth to Water: 36.38 Pump Intake Depth
Water Column: Pump on: 1:50 Off: 2:58
Gallons/Foot: Parameters Sampled: VOC 95-1 ASP
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1:55	450			322	3.95	179.2	6.7	35.5	10.16	
2:00				314	3.99	178.1	6.9		10.22	
2:05				234	5.17	108.2	7.8		10.31	
2:10				198	5.48	98.0	9.0	36.94	10.32	
2:15				153	6.56	121.9	9.7		10.30	
2:20				150	6.62	129	9.9		10.24	flat
2:25				144	6.71	132.0	9.9	37.23	10.21	
2:30				111	6.89	132.1	9.2		10.26	valve
2:35				45	6.92	131.8	9.8		10.32	
2:40				29	6.93	131.5	9.5	37.40	10.28	
2:45				6	6.99	130.7	10.1		10.10	
2:50				-8	7.02	130.5	10.2		10.11	
2:55			34.4	-15	7.07	130.6	10.2	37.45	10.03	

Well Secure: Yes Purge Water Disposal:
Color: dirty, colorless, odorless Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No. 10Y001348.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 12/30/03

Site/Well No.: N-10634 | Replicate No.: ____ | Code No.: ____

Weather: cloudy, 45 | Sampling Time: Begin 11:16 End 11:31

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				clear
MP Elevation (ft)		Odor				colorless
Land Surface Elevation (ft)		Appearance				odorless
Sounded Well Depth (ft bmp)	67'	pH (s.u.)	5.61	5.64	5.76	5.12
Depth to Water (ft bmp)	42.41	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	151.0	153.8	152.9	152.9
Water Column in Well (ft)	24.59	Turbidity (NTU)				11
Casing Diameter/Type	2" (.16)	Temperature (°C)	16.1	14.3	14.4	14.4
Gallons in Well	3.93	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	11.8	Salinity (%)	11:17	11:21	11:25	11:29
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 11:16 end 11:31	Remarks	silty @ start of pumping			
Pumping Rate (gpm)	Q=1 T=11 IV=4					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
VOC			

Sampling Personnel: GW/KT

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop grumman | Project No. NY001348.0013.00002 | Page 1 of ____

Site Location: bethpage, ny | Date 1/20/04

Site/Well No. OWCT 1 | Replicate No. ____ | Code No. ____

Weather cold, 25 | Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point ____

MP Elevation (ft) ____

Land Surface Elevation (ft) ____

Sounded Well Depth (ft bmp) ____

Depth to Water (ft bmp) ____

Water-Level Elevation (ft) ____

Water Column in Well (ft) ____

Casing Diameter/Type ____

Gallons in Well ____

Gallons Pumped/Bailed Prior to Sampling ____

Sample Pump Intake Setting (ft bmp) ____

Purge Time begin ____ end ____

Pumping Rate (gpm) ____

Evacuation Method ____

Field Parameters

Color ____

Odor ____

Appearance ____

pH (s.u.) 4.79

Conductivity (mS/cm) ____

(µmhos/cm) 499

Turbidity (NTU) ____

Temperature (°C) 13.9

Dissolved Oxygen (mg/L) ____

Salinity (%) ____

Sampling Method ____

Remarks ____

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Grumman | Project No. NY001348.0013.00001 | Page 1 of ____

Site Location: Bethpage, NY | Date: 1-20-05

Site/Well No.: OW CT 2 | Replicate No. ____ | Code No. ____

Weather: cold, 25 | Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Color	
Odor	
Appearance	
pH (s.u.)	4.55
Conductivity (mS/cm)	
(µmhos/cm)	1448
Turbidity (NTU)	
Temperature (°C)	11.5
Dissolved Oxygen (mg/L)	
Salinity (%)	
Sampling Method	
Remarks	

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: grumman | Project No.: 10Y0013485.0013.00002 | Page: 1 of ____

Site Location: Bethpage, NY | Date: 1/20/04

Site/Well No.: OW-CT 3 | Replicate No.: ____ | Code No.: ____

Weather: cold, 25 | Sampling Time: Begin ____ End ____

Evacuation Data

- Measuring Point: ____
- MP Elevation (ft): ____
- Land Surface Elevation (ft): ____
- Sounded Well Depth (ft bmp): ____
- Depth to Water (ft bmp): ____
- Water-Level Elevation (ft): ____
- Water Column in Well (ft): ____
- Casing Diameter/Type: ____
- Gallons in Well: ____
- Gallons Pumped/Bailed Prior to Sampling: ____
- Sample Pump Intake Setting (ft bmp): ____
- Purge Time: begin ____ end ____
- Pumping Rate (gpm): ____
- Evacuation Method: ____

Field Parameters

- Color: ____
- Odor: ____
- Appearance: ____
- pH (s.u.): 4.57
- Conductivity (mS/cm): ____
- (µmhos/cm): 52.1
- Turbidity (NTU): ____
- Temperature (°C): 12.7
- Dissolved Oxygen (mg/L): ____
- Salinity (%): ____
- Sampling Method: ____
- Remarks: ____

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Gumm... | Project No. NY001348.0013.00002 | Page 1 of ____

Site Location: Nethercise | Date: 11/20/09

Site/Well No.: GP-1 | Replicate No. ____ | Code No. ____

Weather: cold, cl | Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Color	
Odor	
Appearance	
pH (s.u.)	4.24
Conductivity (mS/cm)	
(µmhos/cm)	109.3
Turbidity (NTU)	
Temperature (°C)	13.3
Dissolved Oxygen (mg/L)	
Salinity (%)	
Sampling Method	
Remarks	

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW

Well Casing Volumes

Gal./Ft.			
1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No. NY001348.0013.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 1/20/04

Site/Well No.: [redacted] GP-3 | Replicate No. ____ | Code No. ____

Weather: ____ | Sampling Time: Begin ____ End ____

Evacuation Data

- Measuring Point: ____
- MP Elevation (ft): ____
- Land Surface Elevation (ft): ____
- Sounded Well Depth (ft bmp): ____
- Depth to Water (ft bmp): ____
- Water-Level Elevation (ft): ____
- Water Column in Well (ft): ____
- Casing Diameter/Type: ____
- Gallons in Well: ____
- Gallons Pumped/Bailed Prior to Sampling: ____
- Sample Pump Intake Setting (ft bmp): ____
- Purge Time: begin ____ end ____
- Pumping Rate (gpm): ____
- Evacuation Method: ____

Field Parameters

- Color: ____
- Odor: ____
- Appearance: ____
- pH (s.u.): 4.80
- Conductivity (mS/cm): ____
- (µmhos/cm): 152.5
- Turbidity (NTU): ____
- Temperature (°C): 12
- Dissolved Oxygen (mg/L): ____
- Salinity (%): ____
- Sampling Method: ____
- Remarks: ____

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW

Well Casing Volumes

L/Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
egrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
et	msl	mean sea-level	s.u.	Standard units
llons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
ligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N-GRUMMAN | Project No. NY001348.0013.0002 | Page 1 of ____

Site Location: BETHPAGE NY | Date: 1-2004

Site/Well No.: GP-1/3 INFLUENT | Replicate No. ____ | Code No. ____

Weather: cold, 25 | Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Color	
Odor	
Appearance	
pH (s.u.)	4.80
Conductivity (mS/cm)	
(µmhos/cm)	126.4
Turbidity (NTU)	
Temperature (°C)	14.4
Dissolved Oxygen (mg/L)	
Salinity (%)	
Sampling Method	
Remarks	

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: DW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: W-Plume Project No. WY001348.0013.00202 Page 1 of ____

Site Location: Bethpage, NY Date: 1-20-04

Site/Well No.: GP-1/3 TRIP BLK Replicate No. ____ Code No. ____

Weather: Cold, 25 Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point: ____

MP Elevation (ft): ____

Land Surface Elevation (ft): ____

Sounded Well Depth (ft bmp): ____

Depth to Water (ft bmp): ____

Water-Level Elevation (ft): ____

Water Column in Well (ft): ____

Casing Diameter/Type: ____

Gallons in Well: ____

Gallons Pumped/Bailed Prior to Sampling: ____

Sample Pump Intake Setting (ft bmp): ____

Purge Time: begin ____ end ____

Pumping Rate (gpm): ____

Evacuation Method: ____

Field Parameters

Color: ____

Odor: ____

Appearance: ____

pH (s.u.): 4.88

Conductivity (mS/cm): ____

(µmhos/cm): 134

Turbidity (NTU): ____

Temperature (°C): 13.3

Dissolved Oxygen (mg/L): ____

Salinity (%): ____

Sampling Method: ____

Remarks: ____

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N-Columbia | Project No. MY001348.0013.00002 | Page 1 of ____

Site Location: BETHPAGE NY | Date: 1-20-04

Site/Well No.: OW CT [redacted] DNF | Replicate No. ____ | Code No. ____

Weather: cold, 25 | Sampling Time: Begin ____ End ____

Evacuation Data

- Measuring Point: ____
- MP Elevation (ft): ____
- Land Surface Elevation (ft): ____
- Sounded Well Depth (ft bmp): ____
- Depth to Water (ft bmp): ____
- Water-Level Elevation (ft): ____
- Water Column in Well (ft): ____
- Casing Diameter/Type: ____
- Gallons in Well: ____
- Gallons Pumped/Bailed Prior to Sampling: ____
- Sample Pump Intake Setting (ft bmp): ____
- Purge Time: begin ____ end ____
- Pumping Rate (gpm): ____
- Evacuation Method: ____

Field Parameters

- Color: ____
- Odor: ____
- Appearance: ____
- pH (s.u.): 5.35
- Conductivity (mS/cm): ____
- (µmhos/cm): 1058
- Turbidity (NTU): ____
- Temperature (°C): 13.4
- Dissolved Oxygen (mg/L): ____
- Salinity (%): ____
- Sampling Method: ____
- Remarks: ____

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: NORTHROP. GRUMMAN Project No. N900347.0130.0002 Page 1 of ____

Site Location: BETHPAGE NY Date 1-20-04

Site/Well No.: ON CT EFF Replicate No. ____ Code No. ____

Weather: cold, 25 Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point: ____

MP Elevation (ft): ____

Land Surface Elevation (ft): ____

Sounded Well Depth (ft bmp): ____

Depth to Water (ft bmp): ____

Water-Level Elevation (ft): ____

Water Column in Well (ft): ____

Casing Diameter/Type: ____

Gallons in Well: ____

Gallons Pumped/Bailed Prior to Sampling: ____

Sample Pump Intake Setting (ft bmp): ____

Purge Time: begin ____ end ____

Pumping Rate (gpm): ____

Evacuation Method: ____

Field Parameters

Color: ____

Odor: ____

Appearance: ____

pH (s.u.): 5.67

Conductivity (mS/cm): ____

(µmhos/cm): 111.8

Turbidity (NTU): ____

Temperature (°C): 11.0

Dissolved Oxygen (mg/L): ____

Salinity (%): ____

Sampling Method: ____

Remarks: ____

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

APPENDIX C

Appendix C

Chain Of Custody Records

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

Project Number/Name NY 001348.0013.00002

Project Location BETHPAGE NY

Laboratory SEVERN - TRENT SHELTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W. K.T.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA 8260 (WP)						Remarks	Total
HW-42S	L	12-22-03		2							2
HW-42I				2							2
HW-40S				2							2
HW-40I				2							2
TB 12-22-03				2							2
FB 12-22-03				2							2

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

Total No. of Bottles/ Containers 12

					Seal Intact?
Relinquished by: D. HOW	Organization: ARCADIS	Date 12/22/03	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: REPORT TO DAVE STERN.

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

AG 05-12/01

NYSDEC 053585

ARCADIS

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

Project Number/Name NY003018.0003.00002

Project Location Bethpage, NY

Laboratory Severn-Trent Laboratories

Project Manager David Stern

Sampler(s)/Affiliation GW KT

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC (VOA)						Remarks	Total
TB 12.29.03	L	12/29/03		2							2
FB 12.29.03				2							2
GM 31D				2							2
GM 31D2				2							2
GM 15D				2							2

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

Total No. of Bottles/Containers 10

Relinquished by: KT	Organization: Arcadis	Date 12/29/03	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: Please report to D. Stern

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

AG 05-12/01

NYSDEC 053586

ARCADIS

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

Project Number/Name NY003518.0015.00002

Project Location Kelhorse, NY

Laboratory Severn-Trent Shelton

Project Manager Ronald Stern

Sampler(s)/Affiliation C-W FT

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1,1,2-TCA VOC (8260)						Remarks	Total
TB 12.30.08	L	12-30-08		2							2
FB 12.30.08				2							2
GM 21 S				2							2
GM 21 D				2							2
MW-10631				2							2
GM-79I				2							2
GM-79D				2							2
GM-17I				2							2

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

Total No. of Bottles/ Containers 16

Relinquished by: FFT	Organization: Arcadis	Date 1/5/09	Time	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 report to R. Stern

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

AG 05-12/01

NYSDEC 053587

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name Hydrisk 2015, 00002

Project Location Bethpage, NY

Laboratory Severn Trent Laboratories

Project Manager David Stern

Sampler(s)/Affiliation LT

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 8260 VOA (5-1 ASP comp) VOC						Remarks	Total
TB 1.5.01	L	1.5.04		2							2
MW 201	↓	↓		*6							6
GM 200				2							2
GM 211				2							2
FB 1.5.04	↓	↓		2							2

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

Total No. of Bottles/ Containers: 11

Relinquished by: LT	Organization: ARCADIS	Date 1/5/04	Time 4:15	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: please report to D Stern

* please perform MS/MSD on 201

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

AG 05-12/01

NYSDEC 053588

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NYSDEC SMS 00007

Project Location Binghamton, NY

Laboratory Severn-Trent Shelton

Project Manager Ronald Stern

Sampler(s)/Affiliation CW KT

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
				8260 VOC (1-1 HCl VOA vials)	8260 Only (Soil Matrix)						
TB 1.6.04	W	1/6/04									
FB 1.6.04	W	1/6/04			1						
CM 15D2	W	1/6/04									
CM 15I	W	1/6/04									
CM 15S	W	1/6/04			1						
PH MW-4	W	1/6/04			1						1
PH MW-5	W	1/6/04			1						1
PH MW-6	W	1/6/04			1						1

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

Total No. of Bottles/Containers: 15

Relinquished by: KT	Organization: Arcadis	Date 1/6/04	Time 2:30	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: Please report to R. Stern

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

AG 05-12/01

NYSDEC 053589

ARCADIS

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

Project Number/Name: NY001348.0013.00002

Project Location: BETHPAGE NY

Laboratory: SEVERN-TRENT SHELTON

Project Manager: DAVE STERN

Sampler(s)/Affiliation: G.W. K.L.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VOC 95-IASP (VWP)						Remarks	Total
FW-03	L	1-7-03		2							2
HW-29I				2							2
HW-29D				2							2
HW-24I				2							2
FB 1-7-03				2							2
TB 1-7-03				2							2

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

Total No. of Bottles/Containers: 12

Relinquished by: G.W.K.	Organization: ARCADIS	Date 1/7/03	Time 4:15	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: REPORT TO DAVE STERN

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

AG 05-12/01

NYSDEC 053590

ARCADIS

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

Project Number/Name NY001348.0013.00002

Project Location BETHPAGE NY.

Laboratory SEVERN-TRENT SHELTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W. KT.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VOCs-1A50 (WP)	500ml PLAST TOTAL CaICl (HNO3)	500ml PLAST DISS CaICl (HNO3)				Remarks	Total
6M-78S	L	1-8-04		2	1						3
6M-78I				2	1						3
6M-17SR				2	1	1					4
FB 1-8-04				2	1						3
TB 1-8-04				2							2

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

Total No. of Bottles/ Containers: 15

Relinquished by: [signature]	Organization: ARCADIS	Date 1/8/04	Time _____	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 DAVE STERN

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

AG 05-12/01

NYSDEC 053591

ARCADIS

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

Project Number/Name NY001348.0013.00002

Project Location BETHPAGE N.Y.

Laboratory SEVERN-TRENT STRETTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W., K.T.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40ml VOA	95-IASP (UNP)	500ml PLASTIC TOTAL CA/Cr (HNO3)	500ml PLASTIC DISSOLVED CA/Cr (HNO3)				Remarks	Total
GM-16SR	L	1-9-04		2	1	1						4
GM-16I				2								2
MW-3R				2	1	1						4
FB-1-9-04				2	1							3
TB-1-9-04				2								2

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

Total No. of Bottles/Containers: 15

Relinquished by: GW	Organization: ARCADIS	Date 1/9/04	Time 5:00	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 DAVE STERN

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

AG 05-12/01

NYSDEC 053592

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001248.0013.00002 / Grumman

Project Location Bethpage, NY

Laboratory STL-CT

Project Manager Dave Stein

Sampler(s)/Affiliation KS/KT / AGM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC 95-1 ASP (Trip Blanks)	SVOC - 625 (Lucas Analytes)	VOC - 624 (Lucas Analytes)	Total Calcium (Lucas Analytes)	Dissolved Calcium (Lucas Analytes)		Remarks	Total
TB011204	L	01/12/04		2							2
FB011204	L	01/12/04		2	2		1				5
MW-26F	L	01/12/04					1	1			2
GM-32S	L	01/12/04		2			1	1			4
GM-14	L	01/12/04			2	2					4

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

Total No. of Bottles/Containers 14

Relinquished by:	Organization: ARCADIS GM	Date 01/12/04	Time 1700	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: Johanna Aucoukis - Report to Dave Stein (631) 249-7601

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

AG 05-12/01

NYSDEC 053593

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001343.0003.00002 / GRUMMAN

Project Location BETHPAGE, NY

Laboratory STL-CT

Project Manager Dave Stern

Sampler(s)/Affiliation KS/KT/AGM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: (4 MTBE) VOCs 95-1 ASP (Unpreserved)						Remarks	Total
TR011304	L	01/13/04		2							2
GM-14I				2							2
GM-74D				2							2
GM-74D2				2							2
GM-73D2				2							2
GM-32D				2							2
GM-32D2				2							2

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

Total No. of Bottles/Containers 14

Relinquished by: KT	Organization: ARCADIS, GRM	Date 01/13/04	Time 4:15	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: _____

ATTN: Johanna Dakoulas: Report To Dave Stern (631) 249-1600.

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

AG 05-12/01

NYSDEC 053594

ARCADIS

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

Project Number/Name [illegible] / Bethpage Hwy

Project Location Bethpage, NY

Laboratory H2M

Project Manager _____

Sampler(s)/Affiliation LT Arnold

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1) 8260 VOA vials VOC (HCl)						Remarks	Total
SM SXD	L	1/13/04		2							2
SM SXD2	↓	↓		2							2

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

Total No. of Bottles/ Containers: 4

Relinquished by: LT	Organization: Arcadis	Date 1/13/04	Time 4:20	Seal Intact? Yes No N/A
Received by: [signature]	Organization: H2M	Date 1/13/04	Time 16:20	
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 _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

NYSDEC 053595

ARCADIS

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

Project Number/Name NY001348.0015.00002

Project Location bethpage, ny

Laboratory Severn-Trent Shelton

Project Manager David Stern

Sampler(s)/Affiliation KT BH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC 8260 NYS (Lmp)						Remarks	Total
TB 1.14.04	L	1/14/04		2							2
Rep 1.14.04				2							2
GM 13D				2							2
GM 17D				2							2
GM 18D				2							2
GM 37D				2							2
GM 37D2				*5							5

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

Total No. of Bottles/Containers: 17

Relinquished by: KT	Organization: Arcadis	Date 1/14/04	Time 4:30	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: * please do MS/MSD on 37D

please report to D. Stern

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

NYSDEC 053596

ARCADIS

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

Project Number/Name D. Crummer Bethpage H.S

Project Location Bethpage, NY

Laboratory H2M

Project Manager _____

Sampler(s)/Affiliation LT Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC 40mL VOA vial (HCl)						Remarks	Total
GM 37D	L	1/14/09		2							2
GM 37 D2				2							2
				LFT	1/14/09						
									LFT	1/14/09	

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

Total No. of Bottles/ Containers: 4

Relinquished by: LFT	Organization: Arcadis	Date 1/14/09	Time 4:15	Seal Intact? Yes No N/A
Received by: [signature]	Organization: H2M	Date 1/14/09	Time 16:15	
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 _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AC 05 12/01

NYSDEC 053597

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001348.0013.00002

Project Location BETHPAGE N.Y.

Laboratory SEVERN-TRENT SHELTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W. BH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA 95-1ABP VOC (UNP)						Remarks	Total
GM-73D	L	1-15-04		2							2
TB-1-15-04				2							2
FB-1-15-04				2							2

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

Total No. of Bottles/Containers: 6

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 1/15/04	Time 5:15		
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 DAVE STERN

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

AG 05-12/01

NYSDEC 053598

ARCADIS

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

Project Number/Name [illegible]

Project Location Bellmore, NY

Laboratory Severn Trent Laboratories

Project Manager Paul Stein

Sampler(s)/Affiliation KT

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
TB 1.16.01	L	1/16/01		2							2
GW 70 BL	W			2							2

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

Total No. of Bottles/ Containers

Relinquished by: KT	Organization: Arcadis	Date 1/16/01	Time 5:00	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: _____

please report to P. Stein

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex ☐ Lab Courier ☐ Other _____

SPECIFY SPECIFY

AG 05-12/01

NYSDEC 053599

ARCADIS

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

Project Number/Name N. Crossman Bellpoint 11/20

Project Location Bellpoint, NY

Laboratory H.m

Project Manager —

Sampler(s)/Affiliation LT Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA vial (HCl) VOC						Remarks	Total
Rm 70 D2	L	1/16/04		2							2

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

Total No. of Bottles/ Containers: 2

Relinquished by: LFT	Organization: Arcadis	Date 1/16/04	Time 1645	Seal Intact?		
Received by: [signature]	Organization: H2M labs	Date 1/16/04	Time 1645	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

NYSDEC 053600

ARCADIS

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

Project Number/Name NY001348.0013.00007

Project Location Bethpage, NY

Laboratory Severn - Trent Shelton

Project Manager David Stein

Sampler(s)/Affiliation KT

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA vial VOC 8260 (HCl)						Remarks	Total
GM 300	L	1/19/04		2							2
GM 7102				2							2
TP 1.19.04				2							2

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

Total No. of Bottles/ Containers: 6

Relinquished by: KT	Organization: Arcadis	Date 1/19/04	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: _____

* please report to Dave Stein

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

AG 05-12/01

NYSDEC 053601

ARCADIS

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

Project Number/Name A Common / Bethpage H2O

Project Location Bethpage, NY

Laboratory H2M

Project Manager _____

Sampler(s)/Affiliation KT Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml VOA vial (HCl)						Remarks	Total
GM 360	L	11/19/04		2							2
GM 71 D2	✓			2							2

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

Total No. of Bottles/ Containers: 4

Relinquished by: KF1	Organization: Arcadis	Date 11/21/04	Time 1700	Seal Intact?		
Received by: [signature]	Organization: H2M	Date 11/21/04	Time 1700	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)

NYSDEC 053602

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

Project Number/Name NY002154.0002.00002

Project Location Bethpage, NY

Laboratory Severn-Trent Laboratories

Project Manager David Stern

Sampler(s)/Affiliation KT EW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA vial 95-1 Amb (HCl)						Remarks	Total
TB 1.20.04	L	1/20/04		2							2
FB 1.20.04				2							2
GM 35D2				2							2
GM 39D				2							2
GM 39D2				2							2
CP-1/ MW1				2							
CP-1/ MW1				2							
MT MW1 (RP 1.20.04)				6							6
MW1 MW1				2							2
MW-1				2							2
MW-2				2							2
MW-3				2							2
CP-1				2							2
CP-3				1							
MW 1.20.04				1							2
										Total No. of Bottles/ Containers	31

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

Relinquished by: _____	Organization: Arcadis	Date 1/20/04	Time _____	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 report to Dave Stern

* please perform MS/MSD QA/QC on sample

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

AG 05-12/01

NYSDEC 053603

ARCADIS

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

Project Number/Name N. Crommin / Bethpage 160

Project Location Bethpage, ny

Laboratory 112m

Project Manager _____

Sampler(s)/Affiliation LT Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA vial VOC (8011)						Remarks	Total
GM 3502	L	1/20/04		2							2

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

Total No. of Bottles/ Containers 2

Relinquished by: KFF	Organization: Arcadis	Date 1/20/04	Time 0940	Seal Intact? Yes No N/A
Received by: [signature]	Organization: H2M	Date 1/20/04	Time 1640	
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 _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

NYSDEC 053604

ARCADIS

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

Project Number/Name [illegible]

Project Location Bethpage, NY

Laboratory Severn-Trent Shelton

Project Manager David Stern

Sampler(s)/Affiliation IT

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	[illegible]	VOA 624.1 NJB (unp)						Remarks	Total
TG 121.01	L	1/21/04										
GM 18I	↓											

ANALYSIS / METHOD / SIZE

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

Total No. of Bottles/ Containers

Relinquished by: YST	Organization: Arcadis	Date 1/21/04	Time 4:30	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: please report to Dave Stern

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

NYSDEC 053605

ARCADIS

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

Project Number/Name 30021516.0015.00002

Project Location bathgate, ny

Laboratory Severn - Trent Shelton

Project Manager David Stern

Sampler(s)/Affiliation KT CW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml VOA vial VOC 8260 HCl (Lab)	500ml plastic total cdtr (HNO3)	500 ml Plastic dissolved cdtr (HNO3)				Remarks	Total
TB 1.26.04	L	1/26/01		2							2
EM 36D2	"	"		2							2
MW 16F	"	"			1	1					2
FB 1.26.04	"	"			1						1

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

Total No. of Bottles/ Containers 7

Relinquished by: KFT	Organization: Arcadis	Date 1/26/01	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: please report to D. Stern

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

AG 05-12/01

NYSDEC 053606

ARCADIS

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

Project Number/Name Nicrumman /Bethpage 11,0

Project Location Bethpage, NY

Laboratory 112M

Project Manager _____

Sampler(s)/Affiliation KT (Arcadis)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1) 40 ml VOA vial (HCl)						Remarks	Total
GM 3002	L	1/20/05		2							2

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

Total No. of Bottles/ Containers: 2

						Seal Intact?
Relinquished by: KFT	Organization: Arcadis	Date 1/20/05	Time 1605			
Received by: [signature]	Organization: H2M	Date 1/20/05	Time 1605			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

NYSDEC 053607

ARCADIS

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

Project Number/Name NYJ013HP.0013.00002

Project Location Bethpage, NY

Laboratory Severn-Trent Shelton

Project Manager David Stern

Sampler(s)/Affiliation LT (W

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
				8260 VOA (Pace-Mitsc. list)	537 MC (Total) dkr (water)	537 MC (dissolved) dkr (water)					
TB 1-30-04				2							2
FB 1-30-04				2	1						3
GM 7502				2							2
N-10627				2							2
GM3302				*6							6
REP. 1-30-04				2	1						3
GM-18S				2	1	1					4

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

Total No. of Bottles/ Containers 22

Relinquished by: LFT	Organization: Arcadis	Date 1/30/04	Time _____	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 perform MS/MSD QA/QC on sample

Please report to David Stern

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

SPECIFY SPECIFY

NYSDEC 053608

APPENDIX D

NYSDEC 053609

ARCADIS

Appendix D

Recommended Modifications to the
OU2 Groundwater Monitoring Plan

Table D-1. Rationale for Recommended Modifications to the Operable Unit 2 Groundwater Monitoring Plan, Northrop Grumman Corporation and Naval Weapons Industrial Reserve Plant Sites, Bethpage, New York [1]

Well Location/Identification	Current Sampling Frequency [3]	Proposed Sampling Frequency	Rationale for Proposed Sampling Frequency
Upgradient Wells[2]			**General**
FW-03	Quarterly	Semiannual	- Trends have been established.
GM-13D	Quarterly	Semiannual	- Active remediation of groundwater is not occurring in these areas.
GM-14[4]	Quarterly	Semiannual	- Changes in groundwater quality over time are are expected to occur slowly.
GM-16SR	Quarterly	Semiannual	- Concentrations over short term indicative of plume heterogeneity.
GM-16I	Quarterly	Semiannual	
			Specific Wells
GM-23S	Semiannual	Discontinue	- Oxy is proposing monitoring of wells based on their recently completed OU3 groundwater investigation; Therefore, current well network (GM-23 and MW-52 clusters) is redundant and not needed.
GM-23I	Semiannual	Discontinue	
GM-32S	Quarterly	Semiannual	
HN-24I	Quarterly	Semiannual	
HN-29I	Quarterly	Semiannual	
HN-29D	Quarterly	Semiannual	
HN-40S	Quarterly	Semiannual	
HN-40I	Quarterly	Semiannual	
HN-42S	Quarterly	Semiannual	
HN-42I	Quarterly	Semiannual	
MW-1GF	Quarterly	Semiannual	
MW-2GF	Quarterly	Semiannual	
MW-52S	Semiannual	Discontinue	
MW-52I	Semiannual	Discontinue	
MW-52D	Semiannual	Discontinue	

See notes on last page.

NYSDEC 053611

Table D-1. Rationale for Recommended Modifications to the Operable Unit 2 Groundwater Sampling Plan, Northrop Grumman Corporation and Naval Weapons Industrial Reserve Plant, Bethpage, New York. [1]

Well Location/Identification	Current Sampling Frequency	Proposed Sampling Frequency	Rationale for Proposed Sampling Frequency
Site Southern Boundary Monitoring Wells [2]			**General**
GM-15S	Quarterly		- Wells are key for monitoring the performance and effectiveness of the on-site portion of the OU2 groundwater remedy.
GM-15I	Quarterly		
GM-15D	Quarterly		
GM-15D2	Quarterly		
GM-17SR	Quarterly		- Continued monitoring of Cd/Cr at site southern boundary is needed and will continue on a quarterly basis to document compliance with NYSDEC SCG.
GM-17I	Quarterly		
GM-17D	Quarterly		
GM-18S	Quarterly		
GM-18I	Quarterly		
GM-18D	Quarterly		
GM-20I	Quarterly		
GM-20D	Quarterly		
GM-21S	Quarterly	**No Changes Recommended**	
GM-21I	Quarterly		
GM-21D	Quarterly		
GM-33D2	Quarterly		
GM-39DA	Quarterly		
GM-39DB	Quarterly		
GM-73D	Quarterly		
GM-73D2	Quarterly		
GM-74I	Quarterly		
GM-74D	Quarterly		
GM-74D2	Quarterly		

See notes on last page.

NYSDEC 053612

Table D-1. Rationale for Recommended Modifications to the Operable Unit 2 Groundwater Sampling Plan, Northrop Grumman Corporation and Naval Weapons Industrial Reserve Plant, Bethpage, New York. [1]

Well Location/Identification	Current Sampling Frequency	Proposed Sampling Frequency	Rationale for Proposed Sampling Frequency
Site Southern Boundary [2] Monitoring Wells (continued)		**No Changes Recommended**	**General** Same as above
GM-78S	Quarterly		
GM-78I	Quarterly		
GM-79I	Quarterly		
GM-79D	Quarterly		
PLT1MW-04	Quarterly		
PLT1MW-05	Quarterly		
PLT1MW-06	Quarterly		
MW-3R	Quarterly		
N-10631	Quarterly		
Remedial Wells			
GP-1	Quarterly		
ONCT-1	Quarterly		
ONCT-2	Quarterly		
ONCT-3	Quarterly		
Industrial Well			
GP-3	Quarterly		
Downgradient Wells [2]			**General** - Trends have been established. - Active remediation of groundwater is not currently occuring in these areas. - Changes in groundwater quality over time are expected to occur slowly. - Concentrations over short term more indicative of plume heterogeneity. **Specific Wells** - Monitoring of GM-34D/D2, GM-35D2 and GM-75D2 will continue on a quarterly basis to develop additional data from the GM-75D2 area.
N-10624	Quarterly	Semiannual	
N-10627	Quarterly	Semiannual	
GM-75D2	Quarterly	Quarterly	
N-10634	Quarterly	Semiannual	
N-10821	Quarterly	Semiannual	
GM-34D	Quarterly	Quarterly	
GM-34D2	Quarterly	Quarterly	
GM-35D2	Quarterly	Quarterly	
GM-70D2	Quarterly	Semiannual	
GM-71D2	Quarterly	Semiannual	
GM-36D	Quarterly	Semiannual	
GM-36D2	Quarterly	Semiannual	
GM-37D	Quarterly	Semiannual	
GM-37D2	Quarterly	Semiannual	
GM-38D	Quarterly	Semiannual	
GM-38D2	Quarterly	Semiannual	

See notes on last page.

NYSDEC 053613

Table D-1. Rationale for Recommended Modifications to the Operable Unit 2 Groundwater Sampling Plan, Northrop Grumman Corporation and Naval Weapons Industrial Reserve Plant, Bethpage, New York [1]

Well Location/Identification	Current Sampling Frequency [3]	Proposed Sampling Frequency	Rationale for Proposed Sampling Frequency
Outpost Wells [2] [5]			**Outpost Wells**
BPOW 1-1	Quarterly	Quarterly	
BPOW 1-2	Quarterly	Quarterly	- Sampling will be conducted in accordance with
BPOW 1-3	Quarterly	Quarterly	the Public Water Supply Contingency Plan.
BPOW 2-1	Quarterly	Quarterly	
BPOW 2-2	Quarterly	Quarterly	
BPOW 3-1	Quarterly	Quarterly	
BPOW 3-2	Quarterly	Quarterly	
BPOW 4-1	Quarterly	Quarterly	
BPOW 4-2	Quarterly	Quarterly	

Notes

[1] Current groundwater monitoring plan was approved by the NYSDEC in May 2001. These proposed modificatons will be incorporated into the OU2 operation, maintenance, and monitoring plan. The current hydraulic network as stated in the plan will not be changed at this time. This network includes the above wells, plus the following wells: GM-19S/I, N-10633, GM-79S, N-10821, N-10597, and N-10600. Associated changes to the Sampling and Analysis Plan (SAP) and Quality Assurenace Project Plan (QAPP) will be made, as needed. NYSDEC DER-10 Category A Deliverables will be requested for all subsequent monitoring rounds.

[2] See Figure E-1 for location of wells. The term site includes NGC and NWIRP.

[3] Sampling frequency given on a per calender year basis. Semi-annual basis wells will be sampled during the spring and fall of each calender year.

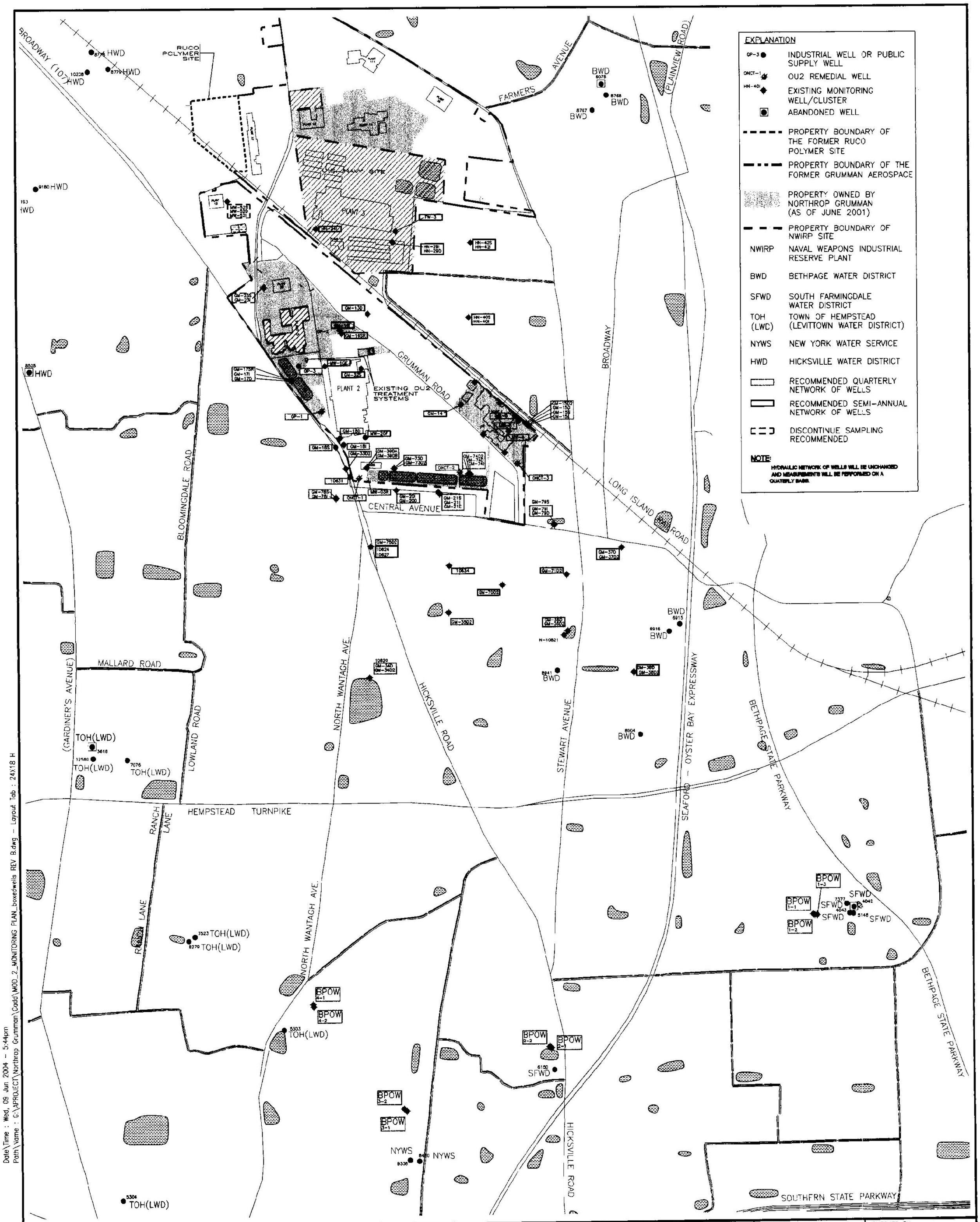
[4] Well GM-14 is located downgradient of Plant 1 fuel depot and will be sampled only if light, non-aqueous phase liquid is not present.

[5] Outpost wells are downgradient of the NGC/NWIRP sites and will be sampled on a quarterly basis with additional samples collected as required in accordance with the provisions of the PWSCP.

Definitions

OU2	Operable Unit 2 for Northrop Grumman Corporation/Naval Weapons Industrial Reserve Plant Sites.
VCM	Vinyl Chloride Monomer
OU3	Operable Unit 3 for Occidental Chemical/Ruco Corporation
NYSDEC	New York State Department of Environmental Conservation
SCG	Standards, Criteria, and Guidance, as specified in the OU2 Groundwater Feasibility Study (ARCADIS, Geraghty & Miller, Inc. 2000).
PWSCP	Public Water Supply Contingency Plan
NGC	Northrop Grumman Corporation
NWIRP	Naval Weapons Industrial Reserve Plant
Cd	Cadmium
Cr	Chromium

NYSDEC 053614



Date\Time : Wed, 09 Jun 2004 - 5:44pm
Path\Name : G:\APROJECT\Northrop Grumman\Cadd\MOD_2_MONITORING PLAN_boxedwells REV B.dwg - Layout Tab : 24x18 H
Acad version : R16.0
User Name : pinnacle

copyright © 2003

REV.	ISSUED DATE	DESCRIPTION

SEAL

ARCADIS

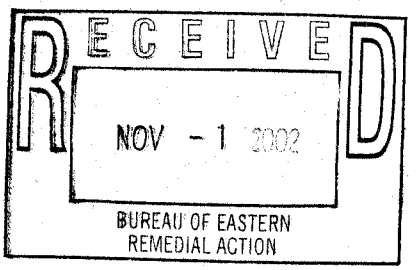
88 Duryea Road
Melville, NY 11747
Tel: 631-249-7600 Fax: 631-249-7610
www.arcadis-us.com

NORTHROP GRUMMAN CORP.
BETHPAGE, NEW YORK

RECOMMENDED MODIFICATIONS TO OPERABLE UNIT 2 GROUNDWATER MONITORING PLAN

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SANGIOVANNI	M. WOLFERT	A.G.	D. STERN
		TASK/PHASE NUMBER 0404.00004	DRAWN BY GS
		PROJECT NUMBER NY001348.0404	DRAWING NUMBER D-1

NYSDEC 053615



First Quarter 2002 Groundwater Monitoring Report

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

PREPARED FOR

Northrop Grumman Corporation

ARCADIS

Infrastructure, buildings, environment, communications

NYSDEC 053616

ARCADIS

David E. Stern
Senior Scientist/Hydrogeologist

Carlo San Giovanni
Principal Scientist/Project Manager

Michael F. Wolfert
Project Director/Hydrogeologist

First Quarter 2002 Groundwater Monitoring Report

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

Prepared for:
Northrop Grumman Corporation

Prepared by:
ARCADIS G&M, Inc.
88 Duryea Road
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610

Our Ref.:
NY001348.0006.00004

Date:
29 October 2002

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. Any dissemination, distribution, or copying of this document is strictly prohibited.

1. Introduction 1

2. Monitoring Program 2

2.1 Hydraulic Monitoring 2

2.2 Groundwater Quality Monitoring 2

2.3 Modifications to Field Program 3

3. OU2 Operational Performance Monitoring 4

3.1 Pumpage 5

3.2 Remedial System Performance Data 6

3.2.1 Air Stripper Efficiency 6

3.2.2 Contaminant Mass Removal 6

4. Groundwater Flow 6

4.1 Shallow Zone 7

4.2 Intermediate Zone 9

4.3 Deep Zone 9

4.4 D2 Zone 10

4.5 Summary of Groundwater Flow Conditions 11

5. Groundwater Quality 11

5.1 Volatile Organic Compounds 11

5.1.1 Shallow and Intermediate Zones 12

5.1.2 Deep Zone 14

5.1.3 Deep2 Zone 14

5.2 Vinyl Chloride Monomer 16

5.3 Tentatively Identified Compounds 17

5.4 Quality Control Samples - VOCs 17

5.5 Semi-Volatile Organic Compounds (Plant 1 Fuel Depot) 18

5.6 Cadmium and Chromium 18

5.7 Quality Control Samples - Cadmium/Chromium 18

5.8 Data Validation 18

6. Findings and Conclusions 19

6.1 OU2 Groundwater Remedy 19

6.2 Groundwater Flow 19

6.3 Groundwater Quality 20

7. Recommendation 21

8. References 22

Tables

1 Select VOC Concentrations in Water Samples Collected from OU2 Remedial Wells and Industrial Well GP-3, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

2 Select VOC Concentrations in Water Samples Collected from the OU2 Treatment Systems Influent and Effluent, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

3 Operational Summary of the OU2 Remedial Wells and Industrial Well GP-3, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

4 OU2 Remedial Well Performance Data, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

5 Water-Level Measurement Data, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

6 Comparison of First Quarter 2002 Vertical Hydraulic Gradients to Model-Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

7 Concentrations of Volatile Organic Compounds Detected In Shallow Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

8 Concentrations of Volatile Organic Compounds Detected In Intermediate Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

NYSDEC 053619

9 Concentrations of Volatile Organic Compounds Detected In Deep Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

10 Concentrations of Volatile Organic Compounds Detected In D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

11 Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

12 Concentrations of Volatile Organic Compounds Detected in Blank Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

13 Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater Samples, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Figures

1 Site Plan, OU2 Groundwater Remedy, and Well Locations, Northrop Grumman Corporation, Bethpage, New York.

2 Water-Table Configuration and Horizontal Groundwater Flow Directions in the Shallow Zone, April 15, 2002, Northrop Grumman Corporation, Bethpage, New York.

3 Potentiomeric Surface Configuration and Horizontal Groundwater Flow Directions in the Intermediate Zone, April 15, 2002, Northrop Grumman Corporation, Bethpage, New York.

4 Potentiometric Surface Configuration and Horizontal Groundwater Flow Directions in the D2 Zone, April 15, 2002, Northrop Grumman Corporation, Bethpage, New York.

Appendices

A Water-Level Measurement Logs

B Groundwater Sampling Logs

C Chain Of Custody Records

D Data Validation Memoranda

1. Introduction

This groundwater monitoring report was prepared as part of the operation, maintenance, and monitoring (OM&M) activities for the Operable Unit 2 (OU2) groundwater remedy at the Northrop Grumman Corporation (NGC) Bethpage, New York facility. The OU2 groundwater remedy consists of two, separate groundwater extraction and treatment systems, which are commonly referred to as the ONCT system and the GP-1 system. For the purpose of this report, the two groundwater extraction and treatment systems will be collectively referred to as the "OU2 groundwater remedy". The monitoring activities described in this report include both the hydraulic (i.e., groundwater elevation and remedial system pumpage measurements) and groundwater and air quality monitoring; these activities are currently being conducted by NGC on a voluntary basis in accordance with the New York State Department of Environmental Conservation (NYSDEC)-approved OU2 Groundwater Monitoring Plan (ARCADIS Geraghty & Miller, Inc., 2001a). The purpose of the monitoring is to evaluate the effectiveness of the OU2 groundwater remedy at achieving the remedial goal of preventing the off-site migration of volatile organic compound (VOC)-impacted groundwater, determine changes and trends in on- and off-site groundwater quality, and to document the operational performance of the OU2 groundwater remedy. On March 29, 2001, a groundwater Record of Decision (ROD) for the NGC and Naval Weapons Industrial Reserve Plant (NWIRP) sites was signed and issued by the NYSDEC. In addition to other items, the ROD incorporated the former groundwater Interim Remedial Measure (IRM) (i.e., the ONCT and GP-1 remedial systems) into the final OU2 groundwater remedy for the sites. Upon execution of a Remedial Design/Remedial Action (RD/RA) Consent Order, an OM&M plan, following NYSDEC guidance (NYSDEC 1990), will be prepared and submitted to the NYSDEC for review. Following NYSDEC approval of the OM&M plan, the specified groundwater monitoring and reporting will be implemented as a required component of the OU2 groundwater remedy.

This report describes groundwater flow conditions and groundwater quality observed during the First Quarter of 2002 and compares the current data to data from the previous round. In addition, this report describes the operations and performance of the OU2 groundwater remedy through March 2002. As provided in previous groundwater monitoring reports, this report also includes findings, conclusions, and recommendations for modifications to the current groundwater monitoring program. The conclusions and recommendations made in this report will continue to be re-evaluated in future reports as additional hydraulic and groundwater quality data

become available. Recommendations will be incorporated, as appropriate, into the final OM&M Plan.

2. Monitoring Program

Except as described in Section 2.3 (Modifications to Field Program) of this report, the First Quarter 2002 groundwater monitoring network (hydraulic and groundwater quality) is consistent with the network listed in the NYSDEC-approved OU2 groundwater monitoring plan. The locations of the NGC site, the OU2 groundwater remedy, the neighboring properties (i.e., the NWIRP and Occidental Chemical Corporation/RUCO Polymer Corporation sites), and the existing wells are shown on Figure 1.

The hydrogeologic zones monitored as part of this program include the shallow zone, the intermediate zone, the deep zone, and the deep2 (D2) zone. These zones were defined and discussed, in detail, in the groundwater flow modeling report, which is provided as Appendix B of the Groundwater Feasibility Study (ARCADIS Geraghty & Miller, Inc. 2000).

This monitoring report includes the following appendices: Appendix A, water-level measurement logs; Appendix B, groundwater sampling logs; Appendix C, chain-of-custody records; and Appendix D, data validation memoranda for the First Quarter 2002 monitoring round.

2.1 Hydraulic Monitoring

On April 15, 2002, the First Quarter 2002 hydraulic monitoring round was conducted by ARCADIS G&M, Inc. (ARCADIS). As part of this round, water levels were measured in wells forming the hydraulic monitoring network (except as described in Section 2.3 of this report) to determine the hydraulic effects, both horizontally and vertically, of pumping the OU2 remedial wells and Well GP-3. The results of the First Quarter 2002 hydraulic monitoring round are described in Section 4 (Groundwater Flow) of this report.

2.2 Groundwater Quality Monitoring

Between March 25 and May 3, 2002, the First Quarter 2002 groundwater quality monitoring round was conducted by ARCADIS. As part of this round, groundwater samples were collected in general to evaluate the effectiveness of the OU2

groundwater remedy. The goals of the groundwater monitoring program are described in detail in the OU2 groundwater monitoring plan. Section 5 (Groundwater Quality) of this report summarizes the analytical results of groundwater samples collected during the First Quarter of 2002.

2.3 Modifications to Field Program

Modifications to the First Quarter 2002 groundwater monitoring program are described below.

The number of wells where water levels were measured and groundwater samples were collected was modified this round, as follows:

- At the request of the NYSDEC, wells included in the Gannett Fleming (2000) monitoring plan for the Former NGC Plant 2 facility were included in the First Quarter 2002 round. Specifically, Wells GM-17SR, GM-18S, GM-32S, MW-1GF, and MW-2GF were added to the list of wells sampled for cadmium/chromium (Cd/Cr) (total and dissolved-phase). Dissolved-phase Cd/Cr analysis was added to the list of parameters for Wells N-10631, GM-16SR, and MW-3R. Sampling methods used for these wells were consistent with those specified in the OU2 Groundwater Monitoring Plan.

- Wells FW-03, HN-40S, and HN-42S were added to the shallow zone hydraulic monitoring network to provide additional coverage in the northern portion of the site to better define shallow zone groundwater flow conditions upgradient of the OU2 groundwater remedy.

- A water-level measurement could not be made in Well ONCT-1 this round. Pumping action and agitation of the water column in the well were the likely factors that prevented collection of an accurate reading this round.

- Due to silt in the well screen, water-level measurements and groundwater samples cannot currently be obtained from Well N-10624.

- A water-level measurement cannot currently be made in Well GP-3 because the depth of the airline (used to determine the depth to water) below land surface was not recorded at the time of installation.

- Light, non-aqueous-phase liquid (LNAPL) was detected by others in Well GM-14, located downgradient of the Plant 1 Fuel Depot (Figure 1). Therefore, the groundwater samples (for VOCs and semivolatile organic compounds [SVOCs] analyses) proposed Well GM-14 were not collected from this well this round.

3. OU2 Operational Performance Monitoring

OU2 operational performance monitoring activities are conducted by both NGC and ARCADIS personnel, and include hydraulic measurements (depth to groundwater and treatment system pumpage), groundwater sampling/analysis and remedial system influent/effluent water and effluent air sampling/analysis. Collectively, these data are utilized, as described in the 2001 Annual Groundwater Monitoring Report (ARCADIS G&M, 2002), to evaluate the effectiveness of the OU2 groundwater remedy. Additional details on the rationale and sampling/measurement procedures for performance monitoring and quarterly monitoring are provided in the 2000 Annual Groundwater Monitoring Report (ARCADIS) Geraghty & Miller, Inc. 2001c).

During the First Quarter 2002, NGC monitored total pumpage for the OU2 remedial wells (i.e., GP-1, ONCT-1, ONCT-2, and ONCT-3) and Industrial Well GP-3 on a weekly basis, and NGC collected water samples from the OU2 remedial wells, Industrial Well GP-3, and from the influent and effluent streams from the OU2 remedial systems (i.e., the GP-1 and ONCT systems) on a weekly basis. Water samples collected by NGC personnel were analyzed by NGC's internal laboratory for trichloroethene (TCE) or TCE and vinyl chloride monomer (VCM). Analytical results of samples collected by NGC for the OU2 remedial wells/industrial well and the OU2 remedial systems are provided in Tables 1 and 2, respectively, and are discussed in Section 5 and Section 3.2, respectively of this report.

Well pumpage (i.e., for the OU2 remedial wells and Industrial Well GP-3) data are discussed in Section 3.1 of this report.

In addition to the samples collected by NGC, ARCADIS collected water samples as part of the First Quarter 2002 performance monitoring activities from Industrial Well GP-3, Remedial Wells GP-1, ONCT-1, ONCT-2, and ONCT-3, and the influent/effluent streams of the GP-1 and ONCT systems. These samples were analyzed for the full Target Compound List (TCL) for VOCs, and are discussed in Section 5 (Groundwater Quality) of this report. In addition, ARCADIS collected hydraulic measurements and instantaneous pumping rates from the OU2 remedial

wells; these data are discussed in Section 3.1 and 3.2 of this report. Table 3 summarizes the pumpage from the OU2 remedial wells and Well GP-3, as well as the total VOC mass removed this quarter.

3.1 Pumpage

For the First Quarter 2002, the total pumpage and average pumping rates for the OU2 remedial wells were calculated using methods described in previous quarterly reports. The design pumping rates (i.e., remedial well pumping rates, determined by groundwater modeling, that would prevent the off-site migration of VOC-impacted groundwater) of OU2 Remedial Wells GP-1, ONCT-1, ONCT-2, and ONCT-3 are 1,075 gallons per minute (gpm); 1,000 gpm; 600 gpm; and 700 gpm, respectively (Geraghty & Miller, Inc. 1996), for a combined rate of 3,375 gpm. If the OU2 remedial wells were pumped continuously at the design rates over the full 85-day period (i.e., January 2 to March 27 2002) that constituted the First Quarter 2002 monitoring period, the result would be a total of 413.1 million gallons (MG) pumped.

The number of days each OU2 remedial well was operational out of the possible 85 days and their average pumping rates, when operational, are provided in Table 3. These periods of operation and average pumping rates equate to approximately 495.1 MG pumped by the OU2 remedial wells for the period of record this quarter, or approximately 120 percent of the total design pumpage given above. As described in previous reports, pumpage from Industrial Well GP-3 supplements the total gallons pumped. Well GP-3 was operational for all of the period of record this quarter and pumped at an average rate of 679 gpm. This equates to 83.1 MG pumped in addition to the quantity pumped by the OU2 remedial wells. As shown on Table 3, the actual First Quarter 2002 pumpage rates for the ONCT remedial wells exceeded the design pumping rates, and Remedial Well GP-1 pumped a total volume that was 93 percent of the total, which would have been pumped had Well GP-1 operated at the design rate. Furthermore, on March 8, 2002, the pumping rate for Remedial Well ONCT-3 was reduced to better approximate the design rate.

Table 4 summarizes the performance data collected from the OU2 remedial wells for the Fourth Quarter of 2001 and First Quarter of 2002. The instantaneous flow rates of the OU2 remedial wells during the First Quarter 2002 water-level measurement round were as follows: 1,080 gpm (GP-1); 1,100 gpm (ONCT-1); 590 gpm (ONCT-2); and 692 gpm (ONCT-3). As stated previously, an instantaneous flow rate could not be measured in Well GP-3; the average pumping rate for Industrial Well GP-3 during the First Quarter 2002 was 679 gpm. Based on instantaneous pumping rate and drawdown

measurements made during the First Quarter 2002, the specific capacities for the OU2 remedial wells are as follows: GP-1 (27.5 gallons per minute per foot of drawdown [gpm/ft]); ONCT-2 (29.4 gpm/ft); and ONCT-3 (33.6 gpm/ft). These results are similar to results from the last quarter (Fourth Quarter 2001). A depth to groundwater could not be obtained for Wells ONCT-1 and GP-3; therefore specific capacities could not be calculated for these wells this round. For Wells GP-1, ONCT-2 and ONCT-3, the specific capacities calculated for the First Quarter of 2002 were more than sufficient to allow the wells to yield enough water to contain the VOC-impacted plume on site.

3.2 Remedial System Performance Data

The following subsections of this report discuss the OU2 groundwater remedy treatment system performance data (which includes the ONCT and GP-1 system air stripper performance data) and summarize the VOC mass removed by the OU2 remedial system.

3.2.1 Air Stripper Efficiency

Based on the average influent and effluent TCE concentration data collected by NGC for the ONCT and GP-1 systems (Table 2), OU2 groundwater remedy treatment systems TCE removal efficiencies are both approximately 99.9 percent (Table 2). Based on the influent and effluent TVOC sample results (Table 10) obtained by ARCADIS, TVOC removal efficiencies for the ONCT and GP-1 remedial systems are approximately 99.9 percent and greater than 99.9 percent, respectively. Based on both data sets, OU2 groundwater remedy treatment system removal efficiencies are essentially identical and remain high.

3.2.2 Contaminant Mass Removal

Based on the VOC concentrations and pumping totals for the OU2 remedial wells and Industrial Well GP-3, approximately 2,480 pounds (lbs) of VOCs were removed from groundwater and treated by the OU2 groundwater remedy treatment systems in the First Quarter 2002 (Table 3).

4. Groundwater Flow

This section presents the results of the depth to groundwater measurements made during the First Quarter 2002, and evaluates the effectiveness of the OU2 groundwater

remedy at achieving the goal of preventing the off-site migration of VOC-impacted groundwater. The evaluation of the hydraulic data is performed using methods described in previous quarterly reports.

The First Quarter 2002 depth to groundwater measurement round was conducted on April 15, 2002 while the OU2 groundwater remedy was operating at essentially its design total pumping rate (3,462 gpm actual vs. 3,375 gpm design); Table 5 summarizes the wells measured and groundwater-level data obtained. Figures 2 through 4 depict the shallow zone water-table configuration/groundwater flow directions and the potentiometric surface configuration/groundwater flow directions in the intermediate and D2 zones, respectively. These figures collectively illustrate the effect (i.e., hydraulic containment) that operation of the OU2 groundwater remedy has on horizontal groundwater flow patterns. To evaluate the effect the OU2 groundwater remedy has on vertical groundwater flow, vertical hydraulic gradients were calculated using the water-level data from shallow/intermediate, intermediate/deep, and deep/D2 monitoring well clusters; these data are summarized in Table 6. The following subsections of this report describe groundwater flow conditions in each aquifer horizon described above.

4.1 Shallow Zone

Figure 2 show the water-table configuration and horizontal groundwater flow directions in the shallow zone during the First Quarter 2002. The effects of the OU2 groundwater remedy treatment system discharges and stormwater runoff (as recharge to the South Recharge Basins and the Plant 5 Recharge Basins) on shallow groundwater flow during this quarter are described below. The following sections also describe vertical hydraulic gradients measured this quarter and compare these gradients to the simulated steady-state vertical gradients predicted by the groundwater flow model under the scenario where the OU2 remedial wells are preventing the off-site movement of VOC-impacted groundwater (ARCADIS Geraghty & Miller, Inc. 2000).

Figure 2 depicts the configuration of the water table on April 15, 2002 and shows groundwater mounding beneath the NGC site around the South Recharge Basins. Upgradient of the South Recharge Basins, which includes areas on the NGC and NWIRP sites, the horizontal direction of shallow groundwater flow is generally to the southeast. The treated water discharge to the Plant 5 Recharge Basins results in water-table elevation beneath and around the Plant 5 Basins of greater than 61 feet relative to mean sea level (ft msl). Monitoring Wells GM-16SR/GM-16I exhibited a downward

vertical gradient, with Wells GM-17SR/GM-17I and GM-18S/GM-18I exhibiting an upward vertical gradient this round.

The maximum elevation of the mound beneath and around the South Recharge Basins is greater than 67 ft msl, and the mound extends across the width of the southern boundary of the site. The regional southeast shallow groundwater flow direction is locally modified by the mounding with the result that the horizontal direction of shallow groundwater flow in the vicinity of the South Recharge Basins is radially to the north, south, west, and east away from the basins, thereby creating a hydraulic barrier that prevents on-site, VOC-impacted groundwater in this area from moving off-site in the shallow zone. The mounding around the South Recharge Basins also increases the vertical hydraulic gradient in the vicinity of the basins, resulting in a downward vertical groundwater flow component from the shallow zone to the intermediate zone. Water-level data for this round from the shallow-intermediate monitoring well clusters in the area of the South Recharge Basins (GM-15S/GM-15I; GM-19S/GM-19I; GM-21S/GM-21I; GM-78S/GM-78I, and GM-79S/GM-79I [Figure 2 and Table 6]) show that the vertical hydraulic gradients are oriented downward with the steepest gradient at the well cluster nearest the basins (i.e., GM-21S/GM-21I).

Vertical gradients, calculated from groundwater elevation data from clustered monitoring wells, that are close to groundwater flow model predictions are a key indication that the OU2 groundwater remedy, through pumpage of remedial wells from the D2 zone and recharge to the shallow zone, has created an effective hydraulic barrier to off-site groundwater flow. As shown on Table 6, vertical gradients this quarter at the monitoring well clusters located in the vicinity of the basins (i.e., GM-16SR/GM-16I; GM-19S/GM-19I; GM-21S/GM-21I; and GM-79S/GM-79I) are oriented downward and are greater than gradients predicted by the groundwater flow model while the vertical gradients at Well Clusters GM-15S/GM-15I and GM-78S/GM-78I are also oriented downward and are close to model predictions. These data indicate that in the vicinity of the South Recharge Basins, there is a strong downward vertical component of groundwater flow from the shallow zone toward the intermediate zone.

In conclusion, the radial horizontal flow components near the South Recharge Basins coupled with the downward vertical gradients collectively create a hydraulic barrier that prevents on-site, VOC-impacted groundwater from migrating off-site in the shallow zone.

4.2 Intermediate Zone

The interpretation of horizontal and vertical groundwater flow in the intermediate zone during the First Quarter of 2002 was conducted using the same methods as described in Section 4.2 (Shallow Zone). The intermediate zone potentiometric surface configuration and horizontal groundwater flow directions this quarter are shown on Figure 3. Table 6 summarizes the vertical gradients for intermediate/deep wells this quarter.

As shown on Figure 3, the configuration of the potentiometric surface in the intermediate zone is similar to the water-level configuration observed in the shallow zone, with mounding centered beneath the South Recharge Basins (maximum water-level elevation at the South Recharge Basins is greater than 64 ft msl). This indicates that the OU2 groundwater remedy treatment system discharge and stormwater runoff are substantially affecting groundwater flow in the intermediate zone, with the horizontal component of flow near the South Recharge Basins oriented radially away from the basins. The resultant vertical gradients in monitoring well clusters near the basins (i.e., GM-15I/GM-15D, GM-18I/GM-18D, GM-20I/GM-20D, GM-21I/GM-21D; GM-74I/GM-74D, and GM-79I/GM-79D) are oriented downward and are greater than or close to model predictions.

Collectively, these data indicate that the hydraulic barrier to groundwater flow extends vertically downward to the intermediate zone and is similar in extent to that observed in the shallow zone, thereby preventing the off-site migration of VOC-impacted groundwater in the intermediate zone.

4.3 Deep Zone

As stated in previous reports, since groundwater in the deep zone is expected to be flowing in a predominantly vertical (downward) direction in the general vicinity of the OU2 remedial wells/Plant 5 and South Recharge Basins, the analysis of the effectiveness of the OU2 groundwater remedy at achieving the goals in this zone is conducted using vertical gradient calculations for deep/D2 monitoring well clusters. Table 6 summarizes the vertical hydraulic gradients calculated from data collected from well clusters in the deep/D2 zones during the First Quarter 2002 round and compares them to model-predicted gradients.

The vertical gradients in on-site/near site Well Clusters GM-15D/GM-15D2 (northeast of the South Basins), GM-74D/GM-74D2 (at the South Basins), and GM-18D/GM-

33D2 (west of the South Basins) are oriented downward as expected, and are close to or greater than model predictions (Table 6). For deep/D2 well clusters located generally south (off-site) of the NGC site property boundary, vertical gradients were also calculated based on this round of data and are oriented downward and are greater than the model-predicted gradients.

In conclusion, vertical hydraulic gradients calculated for the First Quarter 2002 from deep/D2 monitoring well clusters are oriented downward and are close to or greater than steady-state gradients predicted by the groundwater flow model. Furthermore, vertical gradients in well clusters near the NGC site boundary indicate that the mounding of the water table coupled with pumpage from the OU2 remedial wells in the D2 zone is forcing on-site groundwater downward through the deep zone, toward the pumpage in the D2 zone, and prevents groundwater from flowing off-site in the deep zone.

4.4 D2 Zone

On April 15, 2002, water levels were measured in on- and off-site D2 monitoring wells and OU2 Remedial Wells GP-1, ONCT-1, ONCT-2, and ONCT-3, which are screened in the D2 zone. Figure 4 depicts the potentiometric surface configuration and horizontal groundwater flow directions in the D2 zone under pumping conditions.

The result of pumping the OU2 remedial wells and Well GP-3 is the formation of cones of depression (areas of depressed water levels) in the D2 zone centered on each well that coalesce into one large zone of capture that extends along the entire southern property boundary and also extends northwest along the western boundary of the NGC site (see Figure 4). Although a water level cannot currently be measured in Well GP-3, it is reasonable to assume that the cone of depression around this pumping well causes the cumulative capture zone to extend farther to the northwest than is currently shown on Figure 4. At its farthest downgradient extent the capture zone is approximately 700 ft south of the NGC site boundary. Within the capture zone (upgradient and as far as 700 ft downgradient of the OU2 remedial wells), groundwater flow directions are oriented toward the centers of pumping, indicating that groundwater in this area is fully contained and captured by the OU2 groundwater remedy. Beyond the downgradient extent of the capture zone, groundwater continues to flow downgradient until it is influenced by the pumping of nearby public supply wells or continues to flow south-southeast in the direction of regional groundwater flow.

Collectively, the data from the D2 zone indicate that the pumpage of the OU2 remedial wells has created a hydraulic barrier in this zone, thereby preventing the off-site migration of VOC-impacted groundwater.

4.5 Summary of Groundwater Flow Conditions

Treated water discharge and discharge of stormwater (collectively as recharge to the water table) has maintained the hydraulic barrier in the shallow and intermediate zones and the resultant downward component of groundwater flow near the South Recharge Basins. Deep/deep2 monitoring well pairs near the areas of pumping and recharging produced by the OU2 groundwater remedy continue to exhibit vertical hydraulic gradients generally greater than model predictions. The area of capture in the D2 zone produced by the pumpage of the OU2 remedial wells has not substantially changed since last quarter and extends across the entire southern boundary and downgradient of the NGC site. Overall, the hydraulic data indicate that operation of the OU2 groundwater remedy has maintained an effective hydraulic barrier throughout the shallow, intermediate, deep, and D2 zones, which prevents the off-site migration of on-site, VOC-impacted groundwater.

5. Groundwater Quality

The First Quarter 2002 groundwater sampling round was conducted from March 25 to May 3, 2002. In the following subsections of this report the conceptual effect of the OU2 groundwater remedy on the VOC plume is discussed, the distribution of VOCs in the shallow, intermediate, deep, and D2 zones is described, and comparisons are made between the VOC concentrations and the New York State (NYS) Standards, Criteria, and Guidance Values (SCGs) (NYSDEC 1998). The water quality results (i.e., VOCs, VCM, SVOCs, and Cd/Cr) for this round are also compared to the results of the previous groundwater monitoring round. Also provided below are the results of the library search for Tentatively Identified Compounds (TICs) and results of the QA/QC samples collected this round.

5.1 Volatile Organic Compounds

The goal of the on-site OU2 groundwater remedy is to capture, remove, and treat groundwater from the on-site portion of the VOC plume and, thereby prevent VOC-impacted groundwater from moving off-site. The operation of the OU2 groundwater remedy will cause the plume to bifurcate into an on-site portion and an off-site portion. As treated groundwater and precipitation continue to recharge the aquifer, a clean zone

will develop between the on- and off-site portions of the bifurcated plume, within which VOC impacts will not occur or will be minimal. This clean zone will increase in size as VOC-impacted groundwater downgradient (south) and beyond the capture zone of the OU2 remedial wells continues to migrate through the aquifer in the regional direction of groundwater flow to the south-southeast. The continued growth of this clean zone depends on maintaining the hydraulic barrier created by the on-site OU2 groundwater remedy. The rate of growth will largely depend on the regional groundwater velocity in the Magothy aquifer, which is generally less than one foot per day.

Based on the above considerations, groundwater samples collected from wells immediately south (off-site) of the OU2 remedial wells will be the first to show water quality improvement (i.e., a decreasing trend in contaminant concentrations over time) although the improvement, due to the natural slow groundwater velocity, will be slow to occur. Monitoring wells located further downgradient will take a longer time to show an improvement in groundwater quality, as compared to wells immediately south of the OU2 remedial wells, due to the relatively slow groundwater velocity and greater distance from the remedial wells.

VOC-impacted groundwater that migrated off-site prior to the implementation of the OU2 groundwater remedy would have to migrate past off-site monitoring wells before the wells would show groundwater quality improvement related to operation of the OU2 groundwater remedy. Depending on the contaminant concentrations and heterogeneity of the off-site groundwater, monitored water quality in off-site wells may show several trend changes before long-term trends, associated with the operation of the OU2 groundwater remedy, are revealed.

Depending on the exact location of the well, water quality in on-site wells may increase, decrease, or stay the same over the short to mid-term, but over the long term a general decrease in VOC concentrations will be observed.

The following subsections of this report focus on the on- and off-site detections of VOCs in groundwater samples collected.

5.1.1 Shallow and Intermediate Zones

Groundwater quality data from the shallow and intermediate monitoring wells are summarized in Tables 7 and 8, respectively. The water quality data from the shallow and intermediate wells sampled this quarter support the interpretation of the hydraulic

data and confirm that the operation of the OU2 groundwater remedy has formed an effective hydraulic barrier that prevents the off-site movement of VOC-impacted groundwater in the shallow and intermediate zones. A detailed discussion of the water quality data for the shallow and intermediate zones follows.

Of the 13 shallow wells sampled this quarter, nine wells exhibited no exceedences of SCGs with either no VOC detections or TVOC concentrations less than 0.6 micrograms per liter (µg/L), and four wells (GM-15S, GM-32S, GM-78S, and FW-03) exhibited VOC concentrations exceeding SCGs (Table 7). TCE was the main constituent detected in wells with detectable VOC concentrations and exceeded the SCG in Wells GM-15S, GM-32S, GM-78S, and FW-03; tetrachloroethene (PCE) exceeded the SCG in Well FW-03. Well FW-03, which is located over 4,000 ft north and upgradient of the OU2 remedial wells (Figure 1) exhibited the highest TVOC result with concentrations less than the last round. VOC concentrations for other shallow wells have remained essentially the same as last round except at Wells GM-15S and GM-32S where concentrations have increased compared to the last round. Wells N-10631, N-10634, GM-17SR, GM-18S, GM-21S, and MW-3R, which exhibited no detection of VOCs, are located at or downgradient of the Plant 5 Recharge Basins/South Recharge Basins/southern NGC property boundary and attest to the effectiveness of the hydraulic barrier in preventing VOC-impacted groundwater from migrating off-site in the shallow zone.

Of the 15 intermediate wells sampled this quarter, four wells (Wells GM-15I, GM-16I, MW-52S, and HN-24I) had SCG exceedences with TCE exceeding the SCG in all four wells. Other VOCs detected exceeding SCGs included PCE (Wells MW-52S, HN-24I, and GM-16I), VCM (see Section 5.2); and cis-1,2-DCE (Wells MW-52S and HN-24I). Well HN-24I also exhibited exceedences of 1,1-DCA, 1,1-DCE, 1,1,1-TCA, and Freon 113. Of these four wells, Wells MW-52S and HN-24I had the highest TVOC concentrations (158 µg/L and 300 µg/L, respectively). Wells MW-52S and HN-24I are located approximately 5,400 feet and 4,400 feet, respectively, upgradient (north) of the ONCT wells. For the eleven wells with no SCG exceedences, TVOC concentrations ranged from non-detect to 7 µg/L with wells in the South Recharge Basins/southern NGC property boundary area (i.e., GM-17I, GM-18I, GM-20I, GM-21I, GM-74I, GM-78I, and GM-79I) exhibiting TVOC concentrations of 1 µg/L or less (except for Well GM-78I which had a TVOC concentration of 5 µg/L), which attests to the effectiveness of the hydraulic barrier in preventing VOC-impacted groundwater from migrating off-site in the intermediate zone.

Eleven of the 13 intermediate wells sampled this quarter exhibited unchanged or decreased TVOC concentrations compared to the last round.

5.1.2 Deep Zone

Groundwater quality data from deep monitoring wells are summarized in Table 9. Similar to the conclusion developed for the shallow and intermediate zones, in general, the data from the deep wells sampled this quarter indicates that the operation of the OU2 remedial system forms an effective hydraulic barrier and prevents the off-site movement of VOC-impacted groundwater in the deep zone.

Of the 16 deep monitoring wells sampled this round, six wells exhibited TVOC concentrations less than 5 µg/L with no exceedences of SCGs, with the other ten wells each exhibiting at least one constituent that exceeded SCGs. Eight of the ten wells with SCG exceedences are located substantial distances upgradient of the OU2 remedial wells or are located south of the site with some wells located substantial distances south of the site.

Wells MW-52I and GM-13D exhibited the highest TVOC concentrations (3,540 µg/L and 1,679 µg/L, respectively) and the most SCG exceedences and are located approximately 5,400 ft and 2,850 feet, respectively, upgradient of the ONCT wells. Wells GM-15D and GM-74D, exhibited TVOC concentrations of 38.1 µg/L and 19.5 µg/L, respectively. These wells are located slightly upgradient and near Wells ONCT-3 and ONCT-2, respectively. Wells GM-17D, GM-18D, GM-20D, and GM-21D, located along the southwestern and southern boundary of the NGC site, exhibited TVOC concentrations ranging from non-detect to 0.9 µg/L with no SCG exceedences and attest to the effectiveness of the OU2 groundwater remedy in preventing the off-site migration of TVOC-impacted groundwater in the deep zone.

All wells exhibited TVOC concentrations that essentially were the same or less than last round (except for upgradient Wells MW-52I and MW-52D, which showed increases in TVOC concentrations). TCE was generally the predominant compound detected and except for Wells GM-13D and MW-52I, where PCE and VCM (see Section 5.2), respectively, were the predominant compounds detected.

5.1.3 Deep2 Zone

Groundwater monitoring data from the D2 zone are summarized in Table 10. NGC (weekly basis) and ARCADIS (quarterly basis) collected quarterly groundwater

samples from the OU2 remedial wells and Well GP-3, and influent/effluent water samples from the GP-1 and ONCT remedial systems. In addition, ARCADIS collected groundwater samples from the network of D2 monitoring wells listed in the NYSDEC-approved groundwater monitoring plan. NGC analyzed samples for TCE or TCE/VCM while samples collected by ARCADIS were analyzed for the TCL VOCs.

5.1.3.1 OU2 Remedial Wells and Well GP-3

The weekly TCE concentrations for the OU2 remedial wells and Well GP-3 and the average of those results are provided in Table 1. Compared with the previous round, the average TCE concentrations in the OU2 Remedial Wells GP-1 and ONCT-1 have decreased, while concentrations in Remedial Wells ONCT-2 and ONCT-3 and Well GP-3 have remained essentially the same. Review of the data in Table 10 shows that TCE continues to be the predominant compound detected in all OU2 remedial wells and in Well GP-3.

Section 3.2 (Remedial System Performance Data) includes an evaluation of the efficiencies of the OU2 groundwater remedy treatment systems.

5.1.3.2 Deep2 Monitoring Wells

TVOC concentrations on the eastern portion of the site (at and east of Well ONCT-2) were substantially less than on the western portion of the NGC site with values ranging from 2.6 µg/L (Well GM-74D2) to 196 µg/L (Well ONCT-2). On the western portion of the NGC site, TVOC concentrations ranged from 217.2 µg/L (Well GM-33D2) to 2,197 µg/L (Well GP-3). Except for Well GM-74D2, all wells had one or more exceedences of SCGs.

Although the hydraulic information discussed above for the D2 zone indicates that operation of the OU2 groundwater remedy is preventing the off-site migration of VOC-impacted groundwater in the D2 zone, there are no D2 monitoring wells immediately south of the NGC site to provide data with which to confirm the conclusions reached based on hydraulic information. However, Well GM-33D2, which is located a short distance west of the NGC site and Well ONCT-1, continues to show a dramatic decline in TVOC concentration over time from approximately 10,000 µg/L in early 1999 to 217.2 µg/L in the First Quarter 2002 round. This represents nearly a 98 percent decrease in TVOC concentration in this well, which is attributable primarily to the pumping of the OU2 groundwater remedy (which has been in operation since September 1998), and specifically Well ONCT-1. This data is strong evidence that

remedial well pumping is causing groundwater to flow from the area around Well GM-33D2 toward the remedial wells and prevents VOC-impacted groundwater from moving off-site in the D2 zone in this area.

TVOC concentrations in the eight off-site wells ranged from non-detect (Well GM-36D2) to 1,207 µg/L (Well GM-38D2), with six of the eight wells having one or more exceedences of SCGs. TVOC concentrations in wells exhibiting SCG exceedences are generally lower this round in comparison to the previous round with Wells GM-38D2 and GM-75D2 showing the largest decreases this quarter compared to last round.

As stated above, continued monitoring of water quality in off-site wells may show several trend changes before a long-term trend associated with OU2 groundwater remedy operation is revealed.

5.2 Vinyl Chloride Monomer

In accordance with the NYSDEC-approved groundwater monitoring plan, groundwater monitoring of the VCM subplume emanating from the RUCO Polymer site (near the NWIRP area – see Figure 1) is performed by sampling Monitoring Wells GM-23S, GM-23I, MW-52S, MW-52I, and MW-52D on a semi-annual basis (twice yearly during the First and Third Quarter rounds). Other monitoring wells used, in part, as outpost wells to monitor the position of the VCM subplume are monitored on a quarterly basis; these include Wells GM-17SR, GM-17I, GM-17D, GM-18S, GM-18I, and GM-18D (these six wells are also sampled to monitor the effectiveness of the OU2 groundwater remedy). However, VCM is a parameter that is analyzed for in all wells sampled for VOCs; Section 5.1 (Volatile Organic Compounds) of this report provides a complete discussion of other VOCs detected in the VCM monitoring well network. This section discusses the results of the First Quarter 2002 monitoring round and compares these results to those of the previous round. Tables 7 through 10 include VCM concentrations in groundwater for this quarter and the previous round.

VCM was not detected in the shallow zone or intermediate zone this round (Tables 7 and 8, respectively), with the exception of intermediate zone Well MW-52S (85 µg/L), located approximately 5,400 ft upgradient of the ONCT remedial wells. Well MW-52S has historically exhibited VCM concentrations exceeding the SCG; the VCM concentration in this well this round has significantly decreased in comparison to the previous round. VCM was detected in the deep zone in Well MW-52I, located approximately 5,400 feet upgradient of the ONCT remedial wells. This well historically had exhibited the highest VCM concentrations. The VCM concentration in

Well MW-52I this round (3,100 µg/L) has substantially increased in comparison to the previous round. In the D2 zone, VCM was detected in Well GP-3 above the SCG at an average concentration of 17.7 µg/L (concentrations ranged from 12 µg/L to 25.7 µg/L) based on the weekly sampling performed by Northrop Grumman, but was not detected in the quarterly sample collected by ARCADIS. The non-detect may be the result of the dilution of the sample done by the laboratory during analysis to appropriately calibrate the laboratory instrument to accurately quantify the comparatively high concentration of TCE (2,100 µg/L this round). In future rounds, undiluted sample results for other comparatively low concentration target VOCs will be reported, as appropriate, for wells that also exhibit one or more high target VOC concentrations (i.e., GM-33D2, GM-75D2, GP-1, GP-3, and ONCT-1). Since Well GP-3 is located substantially further downgradient than monitoring wells that historically have exhibited detections of VCM above SCGs, and is deeper than any monitoring well in the network, it is reasonable to conclude that the extent of the VCM subplume is greater than previously defined by RUCO. VCM was not detected in any other D2 zone well (Table 10). Based on the current and previous rounds of data from the outpost monitoring wells (i.e., GM-17, GM-18, and GM-23 well clusters) no substantial changes in the position of the VCM subplume were evident.

5.3 Tentatively Identified Compounds

For all groundwater samples collected during this round, in addition to the TCL VOCs, the laboratory was asked to perform an analysis and library search to identify and evaluate whether volatile TICs exist in the groundwater samples. TICs detected in groundwater samples collected during the First Quarter 2002 round are summarized in Table 11. Since the laboratory instruments cannot be calibrated to determine exact TIC concentrations (i.e., they are not included in the TCL VOC list), the concentrations in Table 11 should be used for qualitative purposes only.

5.4 Quality Control Samples - VOCs

Based on the analytical results (Table 12) for the First Quarter 2002 round, low levels of VOCs (e.g., acetone and methylene chloride) were detected. These results were used to validate groundwater sample results for this round. The data validation memorandum for VOCs is provided in Appendix D.

5.5 Semi-Volatile Organic Compounds (Plant 1 Fuel Depot)

As stated in Section 2.3 (Modifications to the Field Program), LNAPL was detected in Well GM-14. Therefore, groundwater sampling of Well GM-14 for SVOC analysis was not conducted this round or the prior round. In previous rounds, SVOCs were not detected in groundwater samples from Well GM-14 when LNAPL was not detected.

5.6 Cadmium and Chromium

Groundwater monitoring data from shallow and intermediate monitoring wells for the First Quarter 2002 and the previous round for cadmium (Cd) and chromium (Cr) are provided in Table 13. This round reflects the addition of Wells MW-1GF, MW-2GF, GM-17SR, GM-18S, and GM-32S to the network analyzed for Cd/Cr. In addition, filtered (dissolved-phase) analysis was added to the parameter list for Wells N-10631, GM-16SR, and MW-3R. Based on the current round of data, Well MW-3R exhibited Cd (total and dissolved)/Cr (total only) concentrations exceeding SCGs and Well GM-32S exhibited Cr (total and dissolved) concentrations exceeding the SCG. The remaining wells had no exceedences of SCGs. Results for last round and this round were similar except for Wells MW-1GF and MW-2GF, which had SCG exceedances last round (when sampled by others) but none this round.

The results this round generally show little difference overall between the filtered and unfiltered samples results, indicating that the metals analyzed for exist predominantly in the dissolved phase.

5.7 Quality Control Samples - Cadmium/Chromium

Cadmium/chromium were not detected in the equipment blank samples collected this quarter (Table 13).

5.8 Data Validation

ARCADIS performed validation of the groundwater quality data (including TICs) collected from wells 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 7 through 13. The data validation memorandum for Cd/Cr is provided in Appendix D.

6. Findings and Conclusions

6.1 OU2 Groundwater Remedy

1. During the 85 days of the First Quarter 2002, the OU2 groundwater remedy pumped and treated 495.1 MG of water, which is approximately 120 percent of the total design pumpage. Well GP-3 supplemented the total pumpage by an additional 83.1 MG. Pumpage from Remedial Wells ONCT-1, ONCT-2, and ONCT-3 exceeded the design criteria, while Well GP-1 pumpage was close to the design the pumpage.

2. OU2 remedial wells specific capacities were more than sufficient to allow the wells to yield enough water to contain the VOC-impacted plume on site.

3. During the First Quarter 2002, approximately 2,480 lbs of VOCs were removed from the aquifer and treated by the OU2 groundwater remedy and Well GP-3. Based on the performance sampling data collected by NGC and ARCADIS from the OU2 groundwater remedy treatment systems influent/effluent streams, treatment system efficiencies were very high.

6.2 Groundwater Flow

1. Water-level data for the shallow and intermediate zones for the First Quarter of 2002 indicate that operation of the OU2 groundwater remedy has maintained the groundwater mounding in the South Recharge Basins area. Consequently, the hydraulic barrier in the shallow zone has been maintained, and extends to the intermediate zone and prevents off-site migration of VOC-impacted groundwater in these zones.

2. For the First Quarter of 2002, downward vertical hydraulic gradients near the NGC southern boundary area remain close to or greater in magnitude than those predicted by the groundwater flow model. This indicates that the mounding of the water table coupled with pumpage from the D2 zone is continuing to force on-site groundwater to move downward toward the OU2 remedial wells in the D2 zone, which prevents VOC-impacted groundwater from flowing off-site in the deep zone.

4. The configuration of the potentiometric surface in the D2 zone in the First Quarter of 2002 indicates that the capture zone, due to pumpage of the OU2 remedial

wells, extends across the entire NGC southern property boundary and to the northwest toward Well GP-3 and continues to fully control and contain groundwater on-site and more than 700 ft south of the site in the D2 zone.

6.3 Groundwater Quality

1. Shallow and intermediate wells in areas within the VOC plume on the NGC and NWIRP sites upgradient of the OU2 groundwater remedy exhibited the highest VOC concentrations. At the NGC southern boundary and immediately south of it, shallow and intermediate wells exhibited low or non-detectable VOC concentrations. These results confirm the effectiveness of the OU2 groundwater remedy in preventing the off-site migration of VOC-impacted groundwater in the shallow and intermediate zones.

2. Deep wells along the NGC southern boundary exhibit low to non-detectable VOC concentrations. Recharge of water to the South Recharge Basins, combined with the pumpage of the OU2 remedial wells, forces groundwater downward through the deep zone, which prevents the off-site migration of VOC-impacted groundwater in the deep zone and thereby results in these low to non-detectable VOC concentrations.

3. In the D2 zone, Well GM-33D2, which is the closest monitoring well to Remedial Well ONCT-1, exhibited a continued decrease in TVOC concentration, providing strong evidence that the OU2 groundwater remedy continues to be effective in preventing on-site VOC-impacted groundwater from moving off-site in the D2 zone in this area and in reducing VOC concentrations in the D2 zone in this area. Off-site and in areas upgradient of the OU2 groundwater remedy, VOC concentrations have exhibited varying trends. Continued monitoring of water quality in off-site wells may show several trend, changes before a long-term trend associated with the OU2 groundwater remedy operation, is revealed.

4. For the First Quarter 2002, VCM was detected only in Wells MW-52S, (intermediate zone) MW-52I (deep zone) (VCM monitoring well cluster located nearest to the RUCO property), and Well GP-3. The MW-52 wells historically have exhibited persistent concentrations of VCM exceeding the SCG and are located more than 4,000 ft north of Remedial Well GP-1. Well GP-3 (north of Well GP-1) exhibited VCM concentrations exceeding the SCG in the D2 zone in the First Quarter 2002; these data indicate that the extent of the VCM subplume (horizontal and vertical) is greater than previously defined by RUCO.

5. Well MW-3R continues to exhibit Cd/Cr concentrations above SCGs. Well GM-32S also exhibited Cr concentrations exceeding the SCG. The remaining wells exhibited no exceedences of SCGs. Total and dissolved analytical results showed little difference indicating that the metals analyzed for exist predominantly in the dissolved phase.

7. Recommendation

Based on the results of the First Quarter 2002 groundwater monitoring round, ARCADIS recommends the following:

1. For the next round, hydraulic measurements should be collected at Wells FW-3, GM-10S, GM-23S, GM-23I, HN-24S, HN-24I, HN-40S, HN-40I, HN-42S, and HN-42I (as available) to refine the evaluation of groundwater flow conditions in the shallow and intermediate zones upgradient of the OU2 groundwater remedy.

8. References

ARCADIS G&M, Inc. 2002. 2001 Annual Groundwater Monitoring Report, Northrop Grumman Corporation, Bethpage, New York. June 25, 2002.

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

ARCADIS G&M, Inc. 2001b. First Quarter 2001 and Groundwater Quality Monitoring Report, Northrop Grumman Corporation, Bethpage, New York. December 10, 2001.

ARCADIS G&M, Inc. 2001c. 2000 Annual Groundwater Monitoring Report, Northrop Grumman Corporation, Bethpage, New York. October 19, 2001.

ARCADIS Geraghty & Miller, Inc. 2000. Groundwater Feasibility Study, Grumman Aerospace - Bethpage, New York Site (#130003A) and Naval Weapons Industrial Reserve Plant, Bethpage, New York Site (#130003B). October 16, 2000.

Gannett Fleming Engineers and Architects. 2000. Draft Groundwater Monitoring Plan for the Steel Los property, Bethpage New York. August 2000.

Geraghty & Miller, Inc. 1996. Groundwater Interim Remedial Measure Ninety Percent Design Report, Grumman Aerospace Corporation, Bethpage, New York. January 1996.

New York State Department of Environmental Conservation (NYSDEC). 1998. Division of Water Technical and Operation Guidance Series (TOGS 1.1.1). Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. Promulgated October 22, 1993. Re-issued June 1998.

New York State Department of Environmental Conservation (NYSDEC). 1990. Operation, Maintenance, and Monitoring Manual for a Hazardous Waste Site. April 20, 1990.

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

TABLES

NYSDEC 053643

ARCADIS

Table 1. Select VOC Concentrations in Water Samples Collected from OU2 Remedial Wells and Industrial Well GP-3, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York. [1]

		OU2 REMEDIAL WELLS				INDUSTRIAL WELL	
	Well ID:	GP-1		ONCT-1	ONCT-2	ONCT-3	GP-3	
Sample	Units:	(ug/L)		(ug/L)	(ug/L)	(ug/L)	(ug/L)	
Collection Date:	Constituent:	VCM	TCE	TCE	TCE	TCE	VCM	TCE
1/2/2002		NA	522	839	68	15	NA	1,708
1/9/2002		<0.5	248	970	117	16	14.8	1,612
1/17/2002		<0.5	420	924	168	18	17.6	1,688
1/22/2002		<0.5	216	775	122	14	25.7	745
1/30/2002		<0.5	240	890	120	14	20.7	876
2/6/2002		<0.5	160	911	140	15	18.8	1,330
2/13/2002		<0.5	297	874	74	15	18.5	1,496
2/19/2002		<0.5	150	978	139	19	19.2	1,440
2/26/2002		<0.5	175	737	126	21	19.0	1,560
3/5/2002		<0.5	118	736	123	11	15.0	1,200
3/11/2002		<0.5	245	751	120	12	12.0	1,374
3/18/2002		<0.5	192	728	252	15	13.6	1,570
3/25/2002		<0.5	197	1079	147	17	17.8	1,756
Average Concentration:		**<0.5**	**245**	**861**	**132**	**16**	**17.7**	**1,412**

Note:

(1) Water samples were collected and analyzed for by Northrop Grumman; results were not validated.

VOC Volatile Organic Compound
OU2 Operable Unit 2
ug/L Micrograms per liter
TCE Trichloroethene
VCM Vinyl Chloride Monomer
NA Not Analyzed

ARCADIS

Table 2. Select VOC Concentrations in Water Samples Collected from the OU2 Treatment Systems Influent and Effluent, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York. [1]

Sample Collection Date	Sample ID:	ONCT System (WWRP-5E) Influent	ONCT System (WWRP-5E) Effluent	GP-1 System (WWRP-5) Influent		GP-1 System (WWRP-5) Effluent	
	Units:	(ug/L)	(ug/L)	(ug/L)		(ug/L)	
	Constituent:	TCE	TCE	VCM	TCE	VCM	TCE
1/2/2002		545	1.3	NA	1063	NA	2.3
1/9/2002		548	<0.5	2.9	753	NA	1.4
1/17/2002		594	1.9	1.8	842	NA	1.0
1/22/2002		719	1.3	3.5	703	NA	0.8
1/30/2002		423	<0.5	2.5	690	NA	0.6
2/6/2002		672	2.7	2.2	702	NA	0.7
2/13/2002		712	<0.5	4.2	800	NA	<0.5
2/19/2002		790	<0.5	0.8	792	NA	0.9
2/26/2002		524	1.2	1.4	732	NA	0.8
3/5/2002		604	<0.5	4.4	605	NA	0.8
3/11/2002		408	<0.5	0.5	862	NA	0.6
3/18/2002		368	<0.5	7.7	600	NA	<0.5
3/25/2002		656	<0.5	9.2	808	NA	<0.5
Average Concentration: [2]		**582**	**0.6**	**3.4**	**766**	**NA**	**0.8**

GP-1 system average TCE removal efficiency:	**99.90%**
ONCT system average TCE removal efficiency:	**99.90%**

Notes:

(1) Water samples were collected and analyzed by Northrop Grumman; analytical results were not validated.

(2) For calculations which include non-detected results, a value of zero was used in computing the average VOC concentration for the period of record.

VOC	Volatile Organic Compound
OU2	Operable Unit 2
TCE	Trichloroethene
VCM	Vinyl Chloride Monomer
ug/L	Micrograms per liter
WWRP	Wastewater Recovery Plant
WWRP-5E	WWRP 5E system influent and effluent consists of water from OU2 Remedial Wells ONCT-1 (Well 17), ONCT-2 (Well 18), and ONCT-3 (Well 19).
WWRP5	WWRP 5 system influent and effluent consists of water from OU2 Remedial Well GP-1 and Industrial Well GP-3.
NA	Not Analyzed

ARCADIS

Table 3. Operational Summary of the OU2 Remedial Wells and Industrial Well GP-3, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Design Pumping Rate (gpm)	Average Actual Pumping Rate [a] (gpm)	Actual Total Pumpage [a] (MG)	Design Total Pumpage (MG)	Percent of Design Pumpage	Average TCE Concentration (ug/L)	Average TVOC Concentration [b] (ug/L)	TVOC Mass Removed [c] (lbs)
OU2 Wells								
GP-1	1,075	1,001	122.5	131.6	93%	245	295	301
ONCT-1	1,000	1,143	139.9	122.4	114%	861	870	1,014
ONCT-2	600	780	95.5	73.4	130%	132	143	114
ONCT-3	700	1,121	137.2	85.7	160%	16	29	33
Industrial Well								
GP-3	--	679	83.1	--	--	1,412	1,471	1,018
OU2 Wells TOTALS:	**3,375**	**4,045**	**495.1**	**413.1**	**120%**	--	--	**2,480** [d]

Notes:

[a] - Average pumping rates were calculated based on Northrop Grumman records of total pumpage and hours of operation from January 2, 2002 to March 27, 2002.
- OU2 wells and Well GP-3 were 100 percent operational from January 2, 2002 to March 27, 2002 (85 days).
- Pumping rates are accurate to +/-15% due to limitations in flow metering.

[b] - TVOC concentration in each well and TVOC mass removed by each well were estimated based on First Quarter 2002 average influent TCE concentration and First Quarter 2002 groundwater monitoring data which indicated that TCE concentrations were a percentage of the TVOC concentration, as follows: GP-1 (83 percent), ONCT-1 (99 percent), ONCT-2 (92 percent), ONCT-3 (56 percent), and GP-3 (96 percent).

[c] - TVOC mass removed during the First Quarter 2002 was based on the TCE/TVOC ratios given above and the following formula:

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

[d] Total TVOC mass removed includes the OU2 wells and Well GP-3.

OU2	Operable Unit 2
gpm	gallons per minute
MG	Million Gallons
ug/L	micrograms per liter
lbs	pounds
--	Not Available or Not Applicable
TCE	Trichloroethene
TVOC	Total Volatile Organic Compounds
L/gal	Liters per gallon
g/ug	grams per microgram
lb/g	pounds per gram

G:\APROJECT\Northrop Grumman\Superfund\NY001348.0005 OMM\OU2 Sys Operation 1Q02.xls- 4Q01

Table 4. OU2 Remedial Well Performance Data, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Baseline Round Static Depth to Water 5/9/1997 [1] (ft bmp)	Last Two Water-Level Measurement Dates	Pumping Depth to Water (ft bmp)	Pumping Rate (gpm)	Drawdown (ft)	Specific Capacity [2] (gpm/ft)
ONCT-1	44.12	January 23, 2002	83.15	1552	39.03	39.8
		April 15, 2002	NM	1100	--	--
ONCT-2	50.15	January 23, 2002	NM	981	--	--
		April 15, 2002	70.20	590	20.05	29.4
ONCT-3	49.13	January 23, 2002	87.45	1355	38.32	35.4
		April 15, 2002	69.75	692	20.62	33.6
GP-1	55.75	January 23, 2002	97.0	1100	41.25	26.7
		April 15, 2002	95.00	1080	39.25	27.5

(1) Static depth to groundwater in Well GP-1 was measured on February 27, 2001 while the well pump was not in operation.

(2) Specific capacity is calculated by dividing the pumping rate by the drawdown.

OU2	Operable Unit 2
gpm	gallons per minute
ft bmp	feet below measuring point
ft	feet
gpm/ft	gallons per minute per foot of drawdown
NM	A depth to water measurement could not be made this round.
--	Not Available

Table 5. Water-Level Measurement Data, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water April 15, 2002 (ft bmp)	Water-Level Elevation April 15, 2002 (ft msl)
Shallow Wells			
FW-03	124.30	62.50	61.80
N-9921	94.23	38.32	55.91
N-10597	109.85	47.21	62.64
N-10600	102.41	45.52	56.89
N-10631	103.47	44.23	59.24
N-10633	103.80	43.22	60.58
N-10634	101.20	45.30	55.90
N-10821	91.58	40.54	51.04
GM-15S	109.35	50.32	59.03
GM-16SR	115.86	54.39	61.47
GM-17SR	115.79	54.71	61.08
GM-18S	107.60	47.80	59.80
GM-19S	109.86	47.68	62.18
GM-21S	105.81	38.69	67.12
GM-78S	104.94	47.18	57.76
GM-79S (N-10628)	100.88	45.58	55.30
HN-40S	116.35	55.00	61.35
HN-42S	120.32	57.54	62.78
Intermediate Wells			
N-10624*	93.61	NM	NM
GM-15I	109.13	50.14	58.99
GM-16I	115.81	54.48	61.33
GM-17I	115.83	54.74	61.09
GM-18I	109.03	49.00	60.03
GM-19I	109.86	48.25	61.61
GM-20I	103.88	41.30	62.58
GM-21I	105.72	41.71	64.01
GM-74I	107.42	43.15	64.27
GM-78I	105.06	47.50	57.56
GM-79I	100.88	45.81	55.07
HN-24I [1)]	125.80	62.12	63.68
HN-29I [1)]	116.42	52.85	63.57
HN-40I [1)]	115.91	54.80	61.11
HN-42I [1)]	119.61	56.82	62.79

See notes on last page

Table 5. Water-Level Measurement Data, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water April 15, 2002 (ft bmp)	Water-Level Elevation April 15, 2002 (ft msl)
Deep Wells			
N-10627	93.70	38.30	55.40
GM-13D	113.97	52.60	61.37
GM-15D	109.66	52.70	56.96
GM-17D	115.68	56.42	59.26
GM-18D	108.88	51.52	57.36
GM-20D	103.92	43.61	60.31
GM-21D	105.66	48.39	57.27
GM-34D	71.19	20.48	50.71
GM-36D	91.63	40.97	50.66
GM-37D	97.26	45.13	52.13
GM-38D	91.75	44.29	47.46
GM-74D	107.43	50.47	56.96
GM-79D	101.25	47.20	54.05
Deep2 Wells			
GM-15D2	109.59	55.54	54.05
GM-33D2	106.85	55.71	51.14
GM-34D2	71.19	22.31	48.88
GM-35D2	96.28	45.73	50.55
GM-36D2	91.60	43.57	48.03
GM-37D2	97.17	45.83	51.34
GM-38D2	91.56	46.86	44.70
GM-70D2	99.58	46.84	52.74
GM-71D2	98.45	47.61	50.84
GM-73D2	104.62	52.08	52.54
GM-74D2	107.36	57.35	50.01
GM-75D2	93.63	41.29	52.34
GP-1 **	116.78	95.00	21.78
ONCT-1	104.10	NM	NM
ONCT-2	110.00	70.20	39.80
ONCT-3	108.70	69.75	38.95

1) Dates of depth to water measurments are as follows: Wells HN-24I and HN-29I (April 11, 2002); Well HN-40I (March 25, 2002); and HN-42I (March 26, 2002).

* Water-level measurements collected from Well N-10624 are considered anomalous due to silt in the well screen.

** Water-levels were measured by inflating airline set at 120 ft bmp (gauge at wellhead) and subtracting the reading on the gauge from 120 to obtain the depth to water in feet.

ft msl feet relative to mean sea level

ft bmp below measuring point

NM Not Measured

Table 6. Comparison of First Quarter 2002 Vertical Hydraulic Gradients to Model-Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well Pairing Identification	Measuring Point Elevation (ft msl)	Well Screen Midpoint Elevation (ft msl)	4/15/2002 Water-Level Elevation (ft msl)	4/15/2002 Vertical Gradient (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	109.35	34.53	59.03			
GM-15I	109.13	9.29	58.99	1.58	4.20	-2.61
GM-16SR	115.77	66.77	61.47			
GM-16I	115.81	-24.19	61.33	1.54	1.11	0.43
GM-17SR	115.79	50.79	61.08			
GM-17I	115.83	5.83	61.09	-0.22	4.50	-4.73
GM-18S	107.60	42.60	59.80			
GM-18I	109.03	9.03	60.03	-6.85	1.78	-8.63
GM-19S	109.86	64.36	62.18			
GM-19I	109.86	-25.14	61.61	6.37	2.44	3.92
GM-21S	105.81	40.81	67.12			
GM-21I	105.72	-29.28	62.11	71.48	18.44	53.04
GM-78S	104.94	39.94	57.76			
GM-78I	105.06	5.56	57.56	5.82	8.73	-2.91
GM-79S	100.88	35.88	55.30			
GM-79I	101.09	-73.91	55.07	2.09	0.91	1.18
Intermediate-Deep Wells						
GM-15I	109.29	9.29	58.99			
GM-15D	109.66	-227.34	56.96	8.58	6.52	2.06
GM-17I	115.83	5.83	61.09			
GM-17D	115.68	-172.32	59.26	10.27	7.86	2.41
GM-18I	109.03	9.03	60.03			
GM-18D	108.88	-186.12	57.36	13.68	7.74	5.94
GM-20I	103.88	3.88	62.58			
GM-20D	103.92	-117.08	60.31	18.77	18.22	0.54
GM-21I	105.72	-29.28	62.11			
GM-21D	105.66	-177.34	57.27	32.69	43.97	-11.28
GM-74I	107.42	8.42	64.27			
GM-74D	107.43	-192.57	56.96	36.37	20.17	16.20
GM-79I	101.09	-73.91	55.07			
GM-79D	101.25	-183.75	54.05	9.29	15.48	-6.19
Deep-Deep 2 Wells						
GM-18D	108.88	-186.12	57.36			
GM-33D2	106.85	-403.15	51.14	28.66	12.30	16.36
GM-15D	109.66	-227.34	56.96			
GM-15D2	109.59	-436.41	54.05	13.92	14.19	-0.27

see footnotes on last page

Table 6. Comparison of First Quarter 2002 Vertical Hydraulic Gradients to Model-Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well Pairing Identification	Measuring Point Elevation (ft msl)	Well Screen Midpoint Elevation (ft msl)	4/15/2002 Water-Level Elevation (ft msl)	4/15/2002 Vertical Gradient (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-34D	71.19	-242.81	50.71			
GM-34D2	71.19	-443.81	48.88	9.10	2.33	6.77
GM-36D	91.63	-117.37	50.66			
GM-36D2	91.60	-443.40	48.03	8.07	2.75	5.32
GM-37D	97.26	-154.74	52.13			
GM-37D2	97.17	-282.83	51.34	6.17	3.88	2.29
GM-38D	91.75	-238.25	47.46			
GM-38D2	91.56	-393.44	44.70	17.78	6.08	11.70
GM-74D	107.43	-192.57	56.96			
GM-74D2	107.36	-444.64	50.01	27.57	28.26	-0.69
N-10627	93.70	-198.80	55.40			
GM-75D2	93.63	-421.37	52.34	13.75	2.25	11.50

Vertical hydraulic gradients are calculated as follows:

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

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
ft feet

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	10631 N-10631 01/02/02	10631 N-10631 03/27/02	10634 N-10634 12/26/01	10634 N-10634 03/26/02	FW-03 FW03 01/03/02	FW-03 FW-03 04/11/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5 J	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10 J	<10	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	**0.4 J**	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	**0.7 J**	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	**0.8 J**	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	**1 J**	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		**0.8 J**	<5	<5	<5	**33**	**19**
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	**0.2 J**	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10 J	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5 J	<5	<5	<5	**29**	**19**
1,1,2,2-Tetrachloroethane	5		<5 J	<5	<5	<5	<5	<5
Toluene	5		<5 J	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	**0.9 J**
Total VOCs			**0.8**	0	**0.2**	0	**64.9**	**38.9**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
-- Not analyzed.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-15S GM-15S 12/19/01	GM-15S GM-15S 03/28/02	GM-16SR GM-16SR 01/02/02	GM-16SR GM-16SR 03/27/02	GM-17SR GM-17SR 12/27/01	GM-17SR GM-17SR 05/03/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5 J	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5 J	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10 J	<10	<10	<10	<10 J	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		**9 J**	**26**	<5	<5	<5	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10 J	<10	<10 J	<10	<10	<10
2-Hexanone	50		<10 J	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5 J	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5 J	<5	<5	<5
Toluene	5		<5	<5	<5 J	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**9**	**26**	0	0	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
– Not analyzed.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-18S GM-18S 01/02/02	GM-18S GM-18S 03/27/02	GM-21S GM21S 01/03/02	GM-21S GM-21S 03/29/02	GM-32S GM-32S 10/13/01	GM-32S GM-32S 04/12/02	GM-78S 78S 01/08/02
Chloromethane	5		<5	<5	<5	<5	<10	<5	<5
Bromomethane	5		<5	<5	<5	<5	<10	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<0.20	<2	<2
Chloroethane	5		<5	<5	<5	<5	<10	<5	<5
Methylene chloride	5		<5	<5	<5	<5	**1 JB**	<5	<5
Acetone	50		<10	<10	<10	<10	<10	<10	<10 J
Carbon disulfide	50		<5	<5	<5	<5	<10	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<10	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<10	<5	**0.6 J**
cis-1,2-Dichloroethene	5		**0.5 J**	<5	<5	<5	<10	**2 J**	**1 J**
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	–	<5	<5
Chloroform	7		<5	<5	<5	<5	<10	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<10	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10	<10 J
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<10	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<10	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<10	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<10	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<10	<5	<5 J
Trichloroethene	5		**4 J**	<5	<5	<5	**14**	**54**	**6 J**
Dibromochloromethane	5		<5	<5	<5	<5	<10	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<10	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<10	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<10	<5	<5 J
Bromoform	50		<5	<5	<5	<5	<10	<5	<5
4-Methyl-2-pentanone	50		<10 J	<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10	<10 J
Tetrachloroethene	5		<5 J	<5	<5	<5	<10	**0.5 J**	<5
1,1,2,2-Tetrachloroethane	5		<5 J	<5	<5	<5	<10	<5	<5
Toluene	5		<5 J	<5	<5	<5	<10	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<10	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<10	<5	<5
Styrene	5		<5	<5	<5	<5	<10	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<10	<5	<5
Freon-113 *	5		<5	<5	<5	<5	–	<5	<5
Total VOCs			**4.5**	0	0	0	**15**	**56.5**	**7.6**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
– Not analyzed.
Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-78S GM-78S 04/09/02	HN-40S HN40S 01/07/02	HN-40S HN-40S 03/25/02	HN-42S HN42S 01/07/02	HN-42S HN-42S 03/25/02	MW-03R MW-3R 01/02/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10	<10	<10
Carbon disulfide	50		<5	**1 J**	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		**1 J**	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	**0.5 J**	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5 J	<5	<5 J	<5	<5
Trichloroethene	5		7	<5	<5	<5	<5	**0.5 J**
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5 J	<5	<5 J	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10 J
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	**0.6 J**	<5 J
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5 J
Toluene	5		<5	<5	<5	<5	<5	<5 J
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**8**	**1.5**	0	0	**0.6**	**0.5**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
-- Not analyzed.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	MW-03R MW-3R 03/27/02
Chloromethane	5		<5
Bromomethane	5		<5
Vinyl Chloride	2		<2
Chloroethane	5		<5
Methylene chloride	5		<5
Acetone	50		<10
Carbon disulfide	50		<5
1,1-Dichloroethene	5		<5
1,1-Dichloroethane	5		<5
cis-1,2-Dichloroethene	5		<5
trans-1,2-Dichloroethene	5		<5
Chloroform	7		<5
1,2-Dichloroethane	5		<5
2-Butanone	50		<10
1,1,1-Trichloroethane	5		<5
Carbon tetrachloride	5		<5
Bromodichloromethane	50		<5
1,2-Dichloropropane	5		<5
cis-1,3-Dichloropropene	5		<5
Trichloroethene	5		<5
Dibromochloromethane	5		<5
1,1,2-Trichloroethane	5		<5
Benzene	0.7		<0.7
trans-1,3-Dichloropropene	5		<5
Bromoform	50		<5
4-Methyl-2-pentanone	50		<10
2-Hexanone	50		<10
Tetrachloroethene	5		<5
1,1,2,2-Tetrachloroethane	5		<5
Toluene	5		<5
Chlorobenzene	5		<5
Ethylbenzene	5		<5
Styrene	5		<5
Xylene (total)	5		<5
Freon-113 *	5		<5
Total VOCs			0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
-- Not analyzed.
Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-15I GM15I 12/18/01	GM-15I GM-15I 03/28/02	GM-16I GM-16I 12/19/01	GM-16I GM-16I 03/26/02	GM-17I GM-17I 12/27/01	GM-17I GM-17I 04/02/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5 J	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5 J	<5	<5 J	<5	<5	<5 J
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10 J	<10	<10 J	<10	<10 J	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	**1 J**	**2 J**	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		**2 J**	<5	**2 J**	**5 J**	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		**1 J**	<5	<5	**3 J**	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		**19**	**9**	**22**	**43**	<5	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10 J	<10	<10 J	<10	<10	<10
2-Hexanone	50		<10 J	<10	<10 J	<10	<10	<10
Tetrachloroethene	5		<5	<5	**4 J**	**13**	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	**2 J**	**4 J**	<5	<5
Total VOCs			**22**	**9**	**31**	**70**	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
-- Not analyzed.
Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-18I GW18I 12/13/01	GM-18I GM-18I 04/02/02	GM-20I GM20I 12/12/01	GM-20I GM-20I 04/16/02	GM-21I GM21I 12/12/01	GM-21I GM-21I 03/29/02
Chloromethane	5		<5 J	<5	<5 J	<5	<5 J	<5
Bromomethane	5		<5	<5	<5	<5 J	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5 J	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10 J	<10	<10
Carbon disulfide	50		<5 J	<5	<5 J	<5	<5 J	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10 J	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		**1 J**	<5	<5	**0.7 J**	<5	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5 J	<5	<5 J	<5	<5 J	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**1**	0	0	**0.7**	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
– Not analyzed.
Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-23I GM-23I 10/02/01	GM-23I GM-23I 04/12/02	GM-74I GM74I 01/04/02	GM-74I GM-74I 04/04/02	GM-78I 78I 01/09/02	GM-78I GM-78I 04/09/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<0.2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		**11 J**	<10	<10	<10	<10 J	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		**0.7 J**	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5**		–	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10 J	<10	<10	<10	<10 J	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5 J	<5	<5 J	<5
Trichloroethene	5		**6 J**	**3 J**	<5	<5	**7 J**	**5**
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5 J	<5	<5 J	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10 J	<10	<10	<10 J	<10	<10
2-Hexanone	50		<10 J	<10	<10	<10	<10 J	<10
Tetrachloroethene	5		**3 J**	**2 J**	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**20.7**	**5**	0	0	**7**	**5**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
– Not analyzed.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-79I GM-79I 01/09/02	GM-79I GM-79I 04/09/02	HN-24I HN24I 01/03/02	HN-24I HN-24I 04/11/02	HN-29I HN29I 01/03/02	HN-29I HN-29I 04/11/02
Chloromethane	5		<5	<5	<5	<10	<5	<5
Bromomethane	5		<5	<5	<5	<10	<5	<5
Vinyl Chloride	2		<2	<2	<2	<4	<2	<2
Chloroethane	5		<5	<5	<5	<10	<5	<5
Methylene chloride	5		<5	<5	<5	<10	<5	<5
Acetone	50		<10	<10	<10	<20	<10	<10
Carbon disulfide	50		<5	<5	**0.2 J**	<10	<5	<5
1,1-Dichloroethene	5		<5	<5	**14**	**15**	<5	<5
1,1-Dichloroethane	5		<5	<5	**9 J**	**4 J**	**0.8 J**	<5
cis-1,2-Dichloroethene	5		<5	<5	**17**	**8 J**	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	**0.5 J**	<10	<5	<5
Chloroform	7		<5	<5	**0.5 J**	<10	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<10	<5	<5
2-Butanone	50		<10	<10	<10	<20	<10	<10
1,1,1-Trichloroethane	5		<5	<5	13	**11**	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<10	<5	<5
Bromodichloromethane	50		<5	<5	<5	<10	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<10	<5	<5
cis-1,3-Dichloropropene	5		<5 J	<5	<5	<10	<5	<5
Trichloroethene	5		**1 J**	**1 J**	**160**	**210**	**2 J**	**1 J**
Dibromochloromethane	5		<5	<5	<5	<10	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<10	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<1	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5 J	<5	<5	<10	<5	<5
Bromoform	50		<5	<5	<5	<10	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<20	<10	<10
2-Hexanone	50		<10	<10	<10	<20	<10	<10
Tetrachloroethene	5		<5	<5	**10**	**7 J**	**0.9 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<10	<5	<5
Toluene	5		<5	<5	<5	<10	<5	<5
Chlorobenzene	5		<5	<5	<5	<10	<5	<5
Ethylbenzene	5		<5	<5	<5	<10	<5	<5
Styrene	5		<5	<5	<5	<10	<5	<5
Xylene (total)	5		<5	<5	<5	<10	<5	<5
Freon-113 *	5		<5	<5	**52**	**45**	<5	<5
Total VOCs			**1**	**1**	**276.2**	**300**	**3.7**	**1**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
-- Not analyzed.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values(1)	WELL: SAMPLE ID: DATE:	HN-40I HN40I 01/07/02	HN-40I HN-40I 03/25/02	HN-42I HN42I 01/07/02	HN-42I HW-42I 03/26/02	MW-52S MW-52S 10/03/01	MW-52S MW-52S 04/15/02
Chloromethane	5		<5	<5	<5	<5	<40	<5
Bromomethane	5		<5	<5	<5	<5	<40	<5 J
Vinyl Chloride	2		<2	<2	<2	<2	**320**	**85**
Chloroethane	5		<5	<5	<5	<5	<40	<5 J
Methylene chloride	5		<5	<5	<5	<5	<40	<5
Acetone	50		<10	<10	<10	<10	<63 J	<10 J
Carbon disulfide	50		<5	<5	<5	<5	<40	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<40	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<40	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<40	**7**
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	--	<5
Chloroform	7		<5	<5	<5	<5	<40	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<40	<5
2-Butanone	50		<10	<10	<10	<10	<40 J	<10 J
1,1,1-Trichloroethane	5		**1 J**	<5	<5	<5	<40	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<40	<5
Bromodichloromethane	50		<5	<5	<5	<5	<40	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<40	<5
cis-1,3-Dichloropropene	5		<5 J	<5	<5 J	<5	<40	<5
Trichloroethene	5		**5 J**	**5**	**1 J**	<5	<40	**20**
Dibromochloromethane	5		<5	<5	<5	<5	<40 J	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<40 J	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<40	<0.7
trans-1,3-Dichloropropene	5		<5 J	<5	<5 J	<5	<40	<5
Bromoform	50		<5	<5	<5	<5	<40	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<40 J	<10
2-Hexanone	50		<10	<10	<10	<10	<40 J	<10
Tetrachloroethene	5		**2 J**	**2 J**	**2 J**	<5	**8 J**	**44**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<40 J	<5
Toluene	5		<5	<5	<5	<5	<40	<5
Chlorobenzene	5		<5	<5	<5	<5	<40	<5
Ethylbenzene	5		<5	<5	<5	<5	<40	<5
Styrene	5		<5	<5	<5	<5	<40	<5
Xylene (total)	5		<5	<5	<5	<5	<40	<5
Freon-113 *	5		<5	<5	<5	<5	**3 J**	**2 J**
Total VOCs			**8**	**7**	**3**	0	**331**	**158**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
-- Not analyzed.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	10627 N-10627 12/26/01	10627 N-10627 04/10/02	GM-13D GM-13D 01/10/02	GM-13D GM-13D 04/15/02	GM-15D 15D 12/19/01	GM-15D GM-15D 03/28/02
Chloromethane	5		<5	<5	<50	<50	<5	<5
Bromomethane	5		<5 J	<5	<50	<50 J	<5	<5
Vinyl Chloride	2		<2	<2	<20	<20	<2	<2
Chloroethane	5		<5	<5	<50	<50 J	<5 J	<5
Methylene chloride	5		<5	<5	<50	<50	<5	<5
Acetone	50		<10 J	<10	<100 J	<100 J	<10 J	<10
Carbon disulfide	50		<5	<5	<50	<50	<5	<5
1,1-Dichloroethene	5		<5	<5	**100 J**	**100**	**5 J**	**6**
1,1-Dichloroethane	5		<5	<5	**66 J**	**69**	**10 J**	**11**
cis-1,2-Dichloroethene	5		**0.5 J**	<5	**210**	**210**	**0.6 J**	**0.5 J**
trans-1,2-Dichloroethene	5		<5	<5	<50	<50	<5	<5
Chloroform	7		<5	<5	<50	<50	**0.6 J**	<5
1,2-Dichloroethane	5		<5	<5	<50	<50	<5	<5
2-Butanone	50		<10	<10	<100 J	<100 J	<10	<10
1,1,1-Trichloroethane	5		<5	<5	**130**	**120**	**5 J**	**4 J**
Carbon tetrachloride	5		<5	<5	<50	<50	<5	<5
Bromodichloromethane	50		<5	<5	<50	<50	<5	<5
1,2-Dichloropropane	5		<5	<5	<50	<50	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<50 J	<50	<5	<5
Trichloroethene	5		**5 J**	**4 J**	**270**	**290**	**11**	**10**
Dibromochloromethane	5		<5	<5	<50	<50	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<50	<50	<5	<5
Benzene	0.7		<0.7	<0.7	<7	<7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<50 J	<50	<5	<5
Bromoform	50		<5	<5	<50	<50	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<100	<100	<10 J	<10
2-Hexanone	50		<10	<10	<100 J	<100 J	<10 J	<10
Tetrachloroethene	5		<5	**0.3 J**	**820**	**890**	**7 J**	**6**
1,1,2,2-Tetrachloroethane	5		<5	<5	<50	<50	<5	<5
Toluene	5		<5	<5	<50	<50	<5	**0.6 J**
Chlorobenzene	5		<5	<5	<50	<50	<5	<5
Ethylbenzene	5		<5	<5	<50	<50	<5	<5
Styrene	5		<5	<5	<50	<50	<5	<5
Xylene (total)	5		<5	<5	<50	<50	<5	<5
Freon-113 *	5		<5	<5	**19 J**	<50	**0.5 J**	<5
Total VOCs			**5.5**	**4.3**	**1,615**	**1,679**	**39.7**	**38.1**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Analyzed as total 1,2-Dichloroethene.
-- Not analyzed.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-17D GM-17D 12/27/01	GM-17D GM-17D 04/02/02	GM-18D GM-18D 01/10/02	GM-18D GM-18D 04/02/02	GM-20D GW20D 12/13/01	GM-20D GM-20D 04/16/02
Chloromethane	5		<5	<5	<5	<5	<5 J	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5 J	<5	<5 J	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10	<10	<10 J
Carbon disulfide	50		<5	<5	<5	<5	<5 J	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5 J	<5	<5	<5
Trichloroethene	5		<5	<5	**1 J**	**0.9 J**	<5	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5 J	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		**3 J**	<5	<5	<5	<5 J	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5 J
Total VOCs			**3**	0	**1**	**0.9**	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Analyzed as total 1,2-Dichloroethene.
-- Not analyzed.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-21D 21D 01/10/02	GM-21D GM-21D 03/29/02	GM-34D GM-34D 01/08/02	GM-34D GM 34D 04/03/02	GM-36D GM36D 12/18/01	GM-36D GM-36D 04/23/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2 J
Chloroethane	5		<5	<5	<5	<5	<5 J	<5 J
Methylene chloride	5		<5	<5	<5	**0.1 J**	<5	<5
Acetone	50		<10	<10	<10 J	<10	<10 J	<10 J
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	**5 J**	**5**	<5	<5
1,1-Dichloroethane	5		<5	<5	**3 J**	**3 J**	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	**5 J**	**4 J**	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	**0.6 J**	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10 J	<10	<10	<10 J
1,1,1-Trichloroethane	5		<5	<5	<5	**0.6 J**	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5 J	<5	<5 J	<5	<5	<5
Trichloroethene	5		**0.8 J**	<5	**190**	**200**	**30**	**18**
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5 J	<5	<5 J	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10 J	<10
2-Hexanone	50		<10	<10	<10 J	<10	<10 J	<10 J
Tetrachloroethene	5		<5	<5	**8 J**	**7**	**2 J**	**1 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	**1 J**	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	**0.6 J**	<5	<5	<5
Freon-113 *	5		<5	<5	**42**	**59**	**0.5 J**	<5
Total VOCs			**0.8**	0	**254.6**	**279.3**	**32.5**	**19**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Analyzed as total 1,2-Dichloroethene.
-- Not analyzed.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-37D 37D 01/14/02	GM-37D GM-37D 04/25/02	GM-38D GM38D 12/14/01	GM-38D GM-38D 04/18/02	GM-38D REP-4 04/18/02	GM-74D GM74D 01/04/02
Chloromethane	5		<5	<5	<50	<25	<25	<5
Bromomethane	5		<5	<5 J	<50	<25	<25	<5
Vinyl Chloride	2		<2	<2	<20	<10	<10	<2
Chloroethane	5		<5	<5	<50 J	<25	<25	<5
Methylene chloride	5		<5	<5	<50	<25	<25	<5
Acetone	50		<10	<10 J	<100	<50 J	<50 J	<10
Carbon disulfide	50		<5	<5	<50	<25	<25	<5
1,1-Dichloroethene	5		**3 J**	**3 J**	**6 J**	<25	<25	<5
1,1-Dichloroethane	5		**6 J**	**6**	<50	<25	<25	<5
cis-1,2-Dichloroethene	5		<5	<5	<50	<25	<25	**0.5 J**
trans-1,2-Dichloroethene	5		<5	<5	<50	<25	<25	<5
Chloroform	7		<5	**1 J**	<50	<25	<25	<5
1,2-Dichloroethane	5		<5	<5	<50	<25	<25	<5
2-Butanone	50		<10	<10	<100	<50	<50	<10
1,1,1-Trichloroethane	5		**3 J**	**3 J**	<50	<25	<25	<5
Carbon tetrachloride	5		<5	<5	<50	<25	<25	<5
Bromodichloromethane	50		<5	<5	<50	<25	<25	<5
1,2-Dichloropropane	5		<5	<5	<50	<25	<25	<5
cis-1,3-Dichloropropene	5		<5	<5	<50	<25	<25	<5 J
Trichloroethene	5		**0.5 J**	<5	**870**	**670**	**670**	**32**
Dibromochloromethane	5		<5	<5	<50	<25	<25	<5
1,1,2-Trichloroethane	5		<5	<5	<50	<25	<25	<5
Benzene	0.7		<0.7	<0.7	<7	<4	<4	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<50	<25	<25	<5 J
Bromoform	50		<5	<5	<50	<25	<25	<5
4-Methyl-2-pentanone	50		<10	<10	<100	<50	<50	<10
2-Hexanone	50		<10	<10	<100	<50	<50	<10
Tetrachloroethene	5		<5	**1 J**	<50	<25	<25	**2 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<50	<25	<25	<5
Toluene	5		<5	<5	<50	<25	<25	<5
Chlorobenzene	5		<5	<5	<50	<25	<25	<5
Ethylbenzene	5		<5 J	<5	<50	<25	<25	<5
Styrene	5		<5	<5	<50	<25	<25	<5
Xylene (total)	5		<5	<5	<50	<25	<25	<5
Freon-113 *	5		<5	<5	<50	<25 J	<25 J	<5
Total VOCs			**12.5**	**14**	**876**	**670**	**670**	**34.5**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Analyzed as total 1,2-Dichloroethene.
-- Not analyzed.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-74D GM-74D 04/04/02	GM-79D GM-79D 01/09/02	GM-79D GM-79D 04/09/02	HN-29D HN29D 01/03/02	HN-29D HN-29D 04/11/02	MW-52I MW-52I 10/03/01
Chloromethane	5		<5	<5	<5	<5	<5	<200
Bromomethane	5		<5	<5	<5	<5	<5	<200
Vinyl Chloride	2		<2	<2	<2	<2	<2	**1700**
Chloroethane	5		<5	<5	<5	<5	<5	<200
Methylene chloride	5		<5	<5	<5	<5	<5	<260
Acetone	50		<10	<10 J	<10	<10	<10	<1800J
Carbon disulfide	50		<5	<5	<5	<5	<5	<200
1,1-Dichloroethene	5		<5	**2 J**	<5	<5	<5	<200
1,1-Dichloroethane	5		<5	**1 J**	<5	**0.5 J**	<5	<200
cis-1,2-Dichloroethene	5		<5	**1 J**	**1 J**	<5	**2 J**	**30 J****
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	**
Chloroform	7		<5	<5	<5	<5	<5	<200
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<200
2-Butanone	50		<10	<10 J	<10	<10	<10	<200 J
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<200
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<200
Bromodichloromethane	50		<5	<5	<5	<5	<5	<200
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<200
cis-1,3-Dichloropropene	5		<5	<5 J	<5	<5	<5	<200
Trichloroethene	5		**17**	**80**	**64**	**1 J**	**1 J**	**21 J**
Dibromochloromethane	5		<5	<5	<5	<5	<5	<200 J
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<200 J
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<200
trans-1,3-Dichloropropene	5		<5	<5 J	<5	<5	<5	<200
Bromoform	50		<5	<5	<5	<5	<5	<200
4-Methyl-2-pentanone	50		<10 J	<10	<10	<10	<10	<200 J
2-Hexanone	50		<10	<10 J	<10	<10	<10	<200 J
Tetrachloroethene	5		**2 J**	**2 J**	**1 J**	**0.6 J**	<5	**32 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<200 J
Toluene	5		<5	<5	<5	<5	<5	<200
Chlorobenzene	5		<5	<5	<5	<5	<5	<200
Ethylbenzene	5		<5	<5	<5	<5	<5	<200
Styrene	5		<5	<5	<5	<5	<5	<200
Xylene (total)	5		<5	<5	<5	<5	<5	<200
Freon-113 *	5		**0.5 J**	**1 J**	<5	<5	<5	<200
Total VOCs			**19.5**	**87**	**66**	**2.1**	**3**	**1,783**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Analyzed as total 1,2-Dichloroethene.
– Not analyzed.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	MW-52I MW-52I 04/15/02	MW-52D MW-52D 10/03/01	MW-52D MW-52D 04/15/02
Chloromethane	5		<100	<10	<5
Bromomethane	5		<100 J	<10	<5 J
Vinyl Chloride	2		**3100**	<0.2	<2
Chloroethane	5		<100 J	<10	<5 J
Methylene chloride	5		<100	<10	<5
Acetone	50		<200 J	<10 J	<10 J
Carbon disulfide	50		<100	<10	<5
1,1-Dichloroethene	5		<100	**0.6 J**	**0.9 J**
1,1-Dichloroethane	5		<100	<10	**1 J**
cis-1,2-Dichloroethene	5		**50 J**	**5 J****	**7**
trans-1,2-Dichloroethene	5		<100	**	<5
Chloroform	7		<100	<10	<5
1,2-Dichloroethane	5		<100	<10	<5
2-Butanone	50		**320 J**	<10 J	<19 J
1,1,1-Trichloroethane	5		<100	<10	<5
Carbon tetrachloride	5		<100	<10	<5
Bromodichloromethane	50		<100	<10	<5
1,2-Dichloropropane	5		<100	<10	<5
cis-1,3-Dichloropropene	5		<100	<10	<5
Trichloroethene	5		<100	**33**	**38**
Dibromochloromethane	5		<100	<10 J	<5
1,1,2-Trichloroethane	5		<100	<10 J	<5
Benzene	0.7		<14	<10	<0.7
trans-1,3-Dichloropropene	5		<100	<10	<5
Bromoform	50		<100	<10	<5
4-Methyl-2-pentanone	50		<200	<10 J	<10
2-Hexanone	50		<200 J	<10 J	<10
Tetrachloroethene	5		**70 J**	**20**	**29**
1,1,2,2-Tetrachloroethane	5		<100	<10 J	<5
Toluene	5		<100	<10	**1 J**
Chlorobenzene	5		<100	<10	<5
Ethylbenzene	5		<100	<10	<5
Styrene	5		<100	<10	<5
Xylene (total)	5		<100	<10	<5
Freon-113 *	5		<100	<10	<5
Total VOCs			**3,540**	**58.6**	**95.9**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000): most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Analyzed as total 1,2-Dichloroethene.
-- Not analyzed.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-15D2 GM-15D2 12/19/01	GM-15D2 GM-15D2 03/28/02	GM-33D2 GM-33D2 01/15/02	GM-33D2 GM 33D2 04/03/02	GM-33D2 REP-1 04/03/02	GM-34D2 GM-34D2 01/08/02
Chloromethane	5		<5 J	<5	<10	**0.7 J**	**1 J**	<5
Bromomethane	5		<5	<5	<10	<10	<10	<5
Vinyl Chloride	2		<2	<2	<4	<4	<4	<2
Chloroethane	5		<5	<5	<10	<10	<10	<5
Methylene chloride	5		<5	<5	<10	<10	<10	<5
Acetone	50		<10	<10	<20	<20	<20	<10 J
Carbon disulfide	50		<5	<5	<10	<10	<10	<5
1,1-Dichloroethene	5		**0.9 J**	**1 J**	<10	**0.5 J**	<10	**5 J**
1,1-Dichloroethane	5		<5	<5	<10	<10	<10	<5
cis-1,2-Dichloroethene	5		**0.5 J**	<5	**2 J**	**1 J**	**1 J**	**4 J**
trans-1,2-Dichloroethene	5		<5	<5	<10	<10	<10	<5
Chloroform	7		<5	<5	<10	<10	<10	<5
1,2-Dichloroethane	5		<5	<5	<10	<10	<10	<5
2-Butanone	50		<10 J	<10	<20	<20	<20	<10 J
1,1,1-Trichloroethane	5		<5	<5	<10	<10	<10	<5
Carbon tetrachloride	5		<5	<5	<10	<10	<10	<5
Bromodichloromethane	50		<5	<5	<10	<10	<10	<5
1,2-Dichloropropane	5		<5	<5	<10	<10	<10	<5
cis-1,3-Dichloropropene	5		<5	<5	<10 J	<10	<10	<5 J
Trichloroethene	5		**16**	**17**	**240**	**200**	**220**	**110**
Dibromochloromethane	5		<5	<5	<10	<10	<10	<5
1,1,2-Trichloroethane	5		<5	<5	<10	<10	<10	<5
Benzene	0.7		<0.7	<0.7	<1.4	<1	<1	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<10 J	<10	<10	<5 J
Bromoform	50		<5	<5	<10	<10	<10	<5
4-Methyl-2-pentanone	50		<10 J	<10	<20	<20 J	<20 J	<10
2-Hexanone	50		<10 J	<10	<20	<20	<20	<10 J
Tetrachloroethene	5		**14**	**15**	**11 J**	**9 J**	**9 J**	**13**
1,1,2,2-Tetrachloroethane	5		<5	<5	<10	<10	<10	<5
Toluene	5		<5	<5	<10	<10	<10	<5
Chlorobenzene	5		<5	<5	<10	<10	<10	<5
Ethylbenzene	5		<5	<5	<10	<10	<10	<5
Styrene	5		<5	<5	<10	<10	<10	<5
Xylene (total)	5		<5	<5	<10	<10	<10	<5
Freon-113 *	5		**1 J**	**1 J**	<10	**6 J**	**6 J**	**13**
Total VOCs			**32.4**	**34**	**253**	**217.2**	**237**	**145**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-34D2 GM 34D2 04/03/02	GM-35D2 GM-35D2 01/15/02	GM-35D2 GM-35D2 04/26/02	GM-36D2 GM36D2 12/18/01	GM-36D2 GM-36D2 04/23/02	GM-37D2 GM-37D2 01/14/02
Chloromethane	5		**0.9 J**	<10	<20	<5	<5	<5
Bromomethane	5		<5	<10	<20 J	<5	<5	<5
Vinyl Chloride	2		<2	<2	<8	<2	<2 J	<2
Chloroethane	5		<5	<10	<20	<5 J	<5 J	<5
Methylene chloride	5		<5	<10	<20	<5	<5	<5
Acetone	50		<10	<20	<40	<10 J	<10 J	<10
Carbon disulfide	50		<5	<10	<20	<5	<5	<5
1,1-Dichloroethene	5		**5 J**	**2 J**	<20	<5	<5	<5
1,1-Dichloroethane	5		**0.6 J**	<10	<20	<5	<5	**10 J**
cis-1,2-Dichloroethene	5		**2 J**	**5 J**	**4 J**	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<10	<20	<5	<5	<5
Chloroform	7		**0.2 J**	<10	<20	<5	<5	<5
1,2-Dichloroethane	5		<5	<10	<20	<5	<5	<5
2-Butanone	50		<10	<20	<40	<10	<10 J	<10
1,1,1-Trichloroethane	5		**0.9 J**	<10	<20	<5	<5	**3 J**
Carbon tetrachloride	5		<5	<10	<20	<5	<5	<5
Bromodichloromethane	50		<5	<10	<20	<5	<5	<5
1,2-Dichloropropane	5		<5	<10	<20	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<10	<20	<5	<5	<5
Trichloroethene	5		**100**	**320**	**280**	<5	<5	**3 J**
Dibromochloromethane	5		<5	<10	<20	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<10	<20	<5	<5	<5
Benzene	0.7		<0.7	<1.4	<3	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<10	<20	<5	<5	<5
Bromoform	50		<5	<10	<20	<5	<5	<5
4-Methyl-2-pentanone	50		<10 J	<20	<40	<10 J	<10	<10
2-Hexanone	50		<10	<20	<40	<10 J	<10 J	<10
Tetrachloroethene	5		**9**	**4 J**	**4 J**	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<10	<20	<5	<5	<5
Toluene	5		<5	<10	<20	<5	<5	<5
Chlorobenzene	5		<5	<10	<20	<5	<5	<5
Ethylbenzene	5		<5	<10 J	<20	<5	<5	<5 J
Styrene	5		<5	<10	<20	<5	<5	<5
Xylene (total)	5		**0.2 J**	<10	<20	<5	<5	<5
Freon-113 *	5		**10**	<10	**11 J**	<5	<5	<5
Total VOCs			**128.8**	**331**	**299**	0	0	**16**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-37D2 GM-37D2 04/26/02	GM-38D2 GM38D2 12/14/01	GM-38D2 GM-38D2 04/18/02	GM-70D2 GM-70D2 12/17/01	GM-70D2 GM-70D2 04/17/02	GM-71D2 GM-71D2 12/17/01
Chloromethane	5		<5	<50	<50	<5	<5	<5
Bromomethane	5		<5 J	<50	<50 J	<5	<5 J	<5
Vinyl Chloride	2		<2	<20	<20	<2	<2	<2
Chloroethane	5		<5	<50 J	<50	<5 J	<5	<5 J
Methylene chloride	5		<5	<50	<50	<5	<5	<5
Acetone	50		<10	<100	<100 J	<10	<10 J	<10
Carbon disulfide	50		<5	<50	<50	<5	<5	<5
1,1-Dichloroethene	5		**3 J**	<50	<50	**0.5 J**	<5	<5
1,1-Dichloroethane	5		**12**	<50	<50	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	**8 J**	**7 J**	**1 J**	**2 J**	<5
trans-1,2-Dichloroethene	5		<5	<50	<50	<5	<5	<5
Chloroform	7		**1 J**	**1 J**	<50	<5	<5	**1 J**
1,2-Dichloroethane	5		<5	<50	<50	<5	<5	<5
2-Butanone	50		<10	<100	<100 J	<10	<10 J	<10
1,1,1-Trichloroethane	5		**3 J**	<50	<50	<5	<5	**0.5 J**
Carbon tetrachloride	5		<5	<50	<50	<5	<5	2 J
Bromodichloromethane	50		<5	<50	<50	<5	<5	<5
1,2-Dichloropropane	5		<5	<50	<50	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<50	<50	<5	<5	<5
Trichloroethene	5		**3 J**	**1600**	**1200**	**100**	**76**	<5
Dibromochloromethane	5		<5	<50	<50	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<50	<50	<5	<5	<5
Benzene	0.7		<0.7	<7	<7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<50	<50	<5	<5	<5
Bromoform	50		<5	<50	<50	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<100	<100	<10	<10	<10
2-Hexanone	50		<10	<100	<100	<10	<10	<10
Tetrachloroethene	5		<5	<50	<50	**6 J**	**4 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<50	<50	<5	<5	<5
Toluene	5		<5	<50	<50	<5	**0.9 J**	<5
Chlorobenzene	5		<5	<50	<50	<5	<5	<5
Ethylbenzene	5		<5	<50	<50	<5	<5	<5
Styrene	5		<5	<50	<50	<5	<5	<5
Xylene (total)	5		<5	<50	<50	<5	<5	<5
Freon-113 *	5		<5	<50	<50	**2 J**	<5	<5
Total VOCs			**22**	**1,609**	**1,207**	**109.5**	**82.9**	**3.5**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-71D2 GM-71D2 04/25/02	GM-73D2 GM-73D-2 01/04/02	GM-73D2 GM-73D2 04/04/02	GM-74D2 GM-74D-2 01/04/02	GM-74D2 GM-74D2 04/04/02	GM-75D2 GM-75D-2 12/26/01
Chloromethane	5		<5	<50	<25	<5	<5	<50
Bromomethane	5		<5 J	<50	<25	<5	<5	<50
Vinyl Chloride	2		<2	<20	<10	<2	<2	<20
Chloroethane	5		<5	<50	<25	<5	<5	<50
Methylene chloride	5		<5	<50	<25	<5	<5	<50
Acetone	50		<10 J	<100	<50	<10	<10	<100
Carbon disulfide	50		<5	<50	<25	<5	<5	<50
1,1-Dichloroethene	5		<5	<50	**2 J**	**0.6 J**	<5	**56 J**
1,1-Dichloroethane	5		<5	<50	<25	<5	<5	<50
cis-1,2-Dichloroethene	5		<5	**7 J**	**2 J**	<5	<5	<50
trans-1,2-Dichloroethene	5		<5	<50	<25	<5	<5	<50
Chloroform	7		**1 J**	<50	<25	<5	<5	<50
1,2-Dichloroethane	5		<5	<50	<25	<5	<5	<50
2-Butanone	50		<10	<100	<50	<10	<10	<100
1,1,1-Trichloroethane	5		**0.6 J**	<50	<25	<5	<5	<50
Carbon tetrachloride	5		**2 J**	<50	<25	<5	<5	<50
Bromodichloromethane	50		<5	<50	<25	<5	<5	<50
1,2-Dichloropropane	5		<5	<50	<25	<5	<5	<50
cis-1,3-Dichloropropene	5		<5	<50 J	<25	<5 J	<5	<50
Trichloroethene	5		**4 J**	**940**	**830**	**3 J**	**2 J**	**1300**
Dibromochloromethane	5		<5	<50	<25	<5	<5	<50
1,1,2-Trichloroethane	5		<5	<50	<25	<5	<5	<50
Benzene	0.7		<0.7	<7	<4	**0.2 J**	<0.7	<7
trans-1,3-Dichloropropene	5		<5	<50 J	<25	<5 J	<5	<50
Bromoform	50		<5	<50	<25	<5	<5	<50
4-Methyl-2-pentanone	50		<10	<100	<50 J	<10	<10 J	<100
2-Hexanone	50		<10	<100	<50	<10	<10	<100
Tetrachloroethene	5		<5	<50	**2 J**	**2 J**	**0.6 J**	**33 J**
1,1,2,2-Tetrachloroethane	5		<5	<50	<25	<5	<5	**16 J**
Toluene	5		<5	<50	<25	<5	<5	<50
Chlorobenzene	5		<5	<50	<25	<5	<5	<50
Ethylbenzene	5		<5	<50	<25	<5	<5	<50
Styrene	5		<5	<50	<25	<5	<5	<50
Xylene (total)	5		<5	<50	<25	<5	<5	<50
Freon-113 *	5		<5	<50	**1 J**	<5	<5	**13 J**
Total VOCs			**7.6**	**947**	**837**	**5.8**	**2.6**	**1,418**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-75D2 GM-75D2 04/10/02	GM-75D2 REP-2 04/10/02	GP-1 GP-1 01/23/02	GP-1 GP-1 04/15/02	GP-3 GP-3 01/23/02	GP-3 GP-3 04/15/02
Chloromethane	5		<50	<50	<25	<25	<50	<100
Bromomethane	5		<50	<50	<25	<25 J	<50	<100 J
Vinyl Chloride	2		<20	<20	<10	<10	**24 J**	<40
Chloroethane	5		<50	<50	<25	<25	<50	<100
Methylene chloride	5		<50	<50	<25	<25	<50	<100
Acetone	50		<100	<100	<50	<50 J	<100	<200 J
Carbon disulfide	50		<50	<50	<25	<25	<50	<100
1,1-Dichloroethene	5		**41 J**	**37 J**	**9 J**	<25	**12 J**	<100
1,1-Dichloroethane	5		<50	<50	<25	<25	<50	<100
cis-1,2-Dichloroethene	5		<50	<50	**10 J**	**9 J**	**8 J**	**12 J**
trans-1,2-Dichloroethene	5		<50	<50	<25	<25	<50	<100
Chloroform	7		<50	<50	<25	<25	<50	<100
1,2-Dichloroethane	5		<50	<50	<25	<25	<50	<100
2-Butanone	50		<100	<100	<50	<50 J	<100	<200 J
1,1,1-Trichloroethane	5		<50	<50	<25	<25	<50	<100
Carbon tetrachloride	5		<50	<50	<25	<25	<50	<100
Bromodichloromethane	50		<50	<50	<25	<25	<50	<100
1,2-Dichloropropane	5		<50	<50	<25	<25	<50	<100
cis-1,3-Dichloropropene	5		<50	<50	<25	<25	<50	<100
Trichloroethene	5		**1000**	**940**	**490**	**440**	**2000**	**2100**
Dibromochloromethane	5		<50	<50	<25	<25	<50	<100
1,1,2-Trichloroethane	5		<50	<50	<25	<25	<50	<100
Benzene	0.7		<7	<7	<3.5	<4	<7	<14
trans-1,3-Dichloropropene	5		<50	<50	<25	<25	<50	<100
Bromoform	50		<50	<50	<25	<25	<50	<100
4-Methyl-2-pentanone	50		<100	<100	<50	<50	<100	<200
2-Hexanone	50		<100	<100	<50	<50 J	<100	<200 J
Tetrachloroethene	5		**4 J**	**3 J**	**79**	**69**	**74 J**	**59 J**
1,1,2,2-Tetrachloroethane	5		<50	<50	<25	<25	<50	<100
Toluene	5		<50	<50	<25	<25	<50	<100
Chlorobenzene	5		<50	<50	<25	<25	<50	<100
Ethylbenzene	5		<50	<50	<25	<25	<50	<100
Styrene	5		<50	<50	<25	<25	<50	<100
Xylene (total)	5		<50	<50	<25	<25	<50	<100
Freon-113 *	5		<50	<50	**13 J**	**10 J**	**29 J**	**26 J**
Total VOCs			**1,045**	**980**	**601**	**528**	**2,147**	**2,197**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GP-1/3 INFLUENT GP-1/3INFLUENT 01/23/02	GP-1/3 INFLUENT GP 1/3 INF 04/15/02	GP-1/3 EFFLUENT GP-1/3EFFLUENT 01/23/02	GP-1/3 EFFLUENT GP 1/3 EFF 04/15/02
Chloromethane	5		<50	<50	<5	<5
Bromomethane	5		<50	<50 J	<5	<5 J
Vinyl Chloride	2		**10 J**	<20	<2	<2
Chloroethane	5		<50	<50 J	<5	<5 J
Methylene chloride	5		<50	<50	<5	<5
Acetone	50		<160	<100 J	<10	<10 J
Carbon disulfide	50		<50	<50	<5	<5
1,1-Dichloroethene	5		**8 J**	**9 J**	<5	<5
1,1-Dichloroethane	5		<50	<50	<5	<5
cis-1,2-Dichloroethene	5		**10 J**	**10 J**	<5	<5
trans-1,2-Dichloroethene	5		<50	<50	<5	<5
Chloroform	7		<50	<50	<5	<5
1,2-Dichloroethane	5		<50	<50	<5	<5
2-Butanone	50		<100	<100 J	<10	<10 J
1,1,1-Trichloroethane	5		<50	<50	<5	<5
Carbon tetrachloride	5		<50	<50	<5	<5
Bromodichloromethane	50		<50	<50	<5	<5
1,2-Dichloropropane	5		<50	<50	<5	<5
cis-1,3-Dichloropropene	5		<50	<50	<5	<5
Trichloroethene	5		**1200**	**1100**	**3 J**	<5
Dibromochloromethane	5		<50	<50	<5	<5
1,1,2-Trichloroethane	5		<50	<50	<5	<5
Benzene	0.7		<7	<7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<50	<50	<5	<5
Bromoform	50		<50	<50	<5	<5
4-Methyl-2-pentanone	50		<100	<100	<10	<10
2-Hexanone	50		<100	<100 J	<10	<10
Tetrachloroethene	5		**75 J**	**81**	<5	<5
1,1,2,2-Tetrachloroethane	5		<50	<50	<5	<5
Toluene	5		<50	<50	<5	<5
Chlorobenzene	5		<50	<50	<5	<5
Ethylbenzene	5		<50	<50	<5	<5
Styrene	5		<50	<50	<5	<5
Xylene (total)	5		<50	<50	<5	<5
Freon-113 *	5		**13 J**	**18 J**	<5	<5
Total VOCs			**1,316**	**1,218**	**3**	0

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
*	Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP	Replicate sample.
	Value exceeds associated Standard, Criteria, and Guidance value.

Bold type indicates compound detected above reporting limit.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	ONCT-1 ONCT-1 01/23/02	ONCT-1 ONCT-1 04/15/02	ONCT-2 ONCT-2 01/23/02	ONCT-2 ONCT-2 04/15/02	ONCT-3 ONCT-3 01/23/02	ONCT-3 ONCT-3 04/15/02
Chloromethane	5		<50	<50	<10	<10	<5	<5
Bromomethane	5		<50	<50 J	<10	<10	<5	<5 J
Vinyl Chloride	2		<20	<20	<4	<4	<2	<2
Chloroethane	5		<50	<50	<10	<10	<5	<5
Methylene chloride	5		<50	<50	<10	**2 J**	<5	<5
Acetone	50		<110	<100 J	<20	<20	<10	<10 J
Carbon disulfide	50		<50	<50	<10	<10	<5	<5
1,1-Dichloroethene	5		<50	<50	**4 J**	**4 J**	**1 J**	**1 J**
1,1-Dichloroethane	5		<50	<50	**2 J**	<10	**1 J**	<5
cis-1,2-Dichloroethene	5		<50	<50	**2 J**	**2 J**	**4 J**	**6**
trans-1,2-Dichloroethene	5		<50	<50	<10	<10	<5	<5
Chloroform	7		<50	<50	<10	<10	**1 J**	**1 J**
1,2-Dichloroethane	5		<50	<50	<10	<10	<5	<5
2-Butanone	50		<100	<100 J	<20	<20	<10	<10 J
1,1,1-Trichloroethane	5		<50	<50	**2 J**	<10	**0.6 J**	<5
Carbon tetrachloride	5		<50	<50	<10	<10	<5	<5
Bromodichloromethane	50		<50	<50	<10	<10	<5	<5
1,2-Dichloropropane	5		<50	<50	<10	<10	<5	<5
cis-1,3-Dichloropropene	5		<50	<50	<10	<10	<5	<5
Trichloroethene	5		**1100**	**1200**	**180**	**180**	**21**	**22**
Dibromochloromethane	5		<50	<50	<10	<10	<5	<5
1,1,2-Trichloroethane	5		<50	<50	<10	<10	<5	<5
Benzene	0.7		**5 J**	<7	<1.4	<1	<0.7	<0.7
trans-1,3-Dichloropropene	5		<50	<50	<10	<10	<5	<5
Bromoform	50		<50	<50	<10	<10	<5	<5
4-Methyl-2-pentanone	50		<100	<100	<20	<20	<10	<10
2-Hexanone	50		<100	<100 J	<20	<20	<10	<10 J
Tetrachloroethene	5		<50	**10 J**	**9 J**	**8 J**	**10**	**9**
1,1,2,2-Tetrachloroethane	5		<50	<50	<10	<10	<5	<5
Toluene	5		<50	<50	<10	<10	<5	<5
Chlorobenzene	5		<50	<50	<10	<10	<5	<5
Ethylbenzene	5		<50	<50	<10	<10	<5	<5
Styrene	5		<50	<50	<10	<10	<5	<5
Xylene (total)	5		<50	<50	<10	<10	<5	<5
Freon-113 *	5		**6 J**	<50	**2 J**	<10	**1 J**	<5
Total VOCs			**1,111**	**1,210**	**201**	**196**	**39.6**	**39**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: ONCT INFLUENT SAMPLE ID: ONCT-INFLUENT DATE: 01/23/02	ONCT INFLUENT ONCTINF 04/15/02	ONCT INFLUENT REP-3ONCT 04/15/02	ONCT EFFLUENT ONCT-EFFLUENT 01/23/02	ONCT EFFLUENT ONCTEFF 04/15/02
Chloromethane	5	<50	<25	<50	<5	<5
Bromomethane	5	<50	<25 J	<50 J	<5	<5 J
Vinyl Chloride	2	<20	<10	<20	<2	<2
Chloroethane	5	<50	<25	<50	<5	<5
Methylene chloride	5	<50	<25	<50	<5	**0.6 J**
Acetone	50	<130	<50 J	<100 J	<10	<10 J
Carbon disulfide	50	<50	<25	<50	<5	<5
1,1-Dichloroethene	5	<50	<25	<50	<5	<5
1,1-Dichloroethane	5	<50	<25	<50	<5	<5
cis-1,2-Dichloroethene	5	<50	<25	<50	<5	<5
trans-1,2-Dichloroethene	5	<50	<25	<50	<5	<5
Chloroform	7	<50	<25	<50	<5	<5
1,2-Dichloroethane	5	<50	<25	<50	<5	<5
2-Butanone	50	<100	<50 J	<100 J	<10	<10 J
1,1,1-Trichloroethane	5	<50	<25	<50	<5	<5
Carbon tetrachloride	5	<50	<25	<50	<5	<5
Bromodichloromethane	50	<50	<25	<50	<5	<5
1,2-Dichloropropane	5	<50	<25	<50	<5	<5
cis-1,3-Dichloropropene	5	<50	<25	<50	<5	<5
Trichloroethene	5	**790**	**500 J**	**1000 J**	<5	<5
Dibromochloromethane	5	<50	<25	<50	<5	<5
1,1,2-Trichloroethane	5	<50	<25	<50	<5	<5
Benzene	0.7	<7	<4	<7	<0.7	<0.7
trans-1,3-Dichloropropene	5	<50	<25	<50	<5 J	<5
Bromoform	50	<50	<25	<50	<5	<5
4-Methyl-2-pentanone	50	<100	<50	<100	<10	<10
2-Hexanone	50	<100	<50 J	<100 J	<10	<10 J
Tetrachloroethene	5	**29 J**	**8 J**	**77 J**	<5	<5
1,1,2,2-Tetrachloroethane	5	<50	<25	<50	<5	<5
Toluene	5	<50	<25	<50	<5	<5
Chlorobenzene	5	<50	<25	<50	<5	<5
Ethylbenzene	5	<50	<25	<50	<5	<5
Styrene	5	<50	<25	<50	<5	<5
Xylene (total)	5	<50	<25	<50	<5	<5
Freon-113 *	5	**17 J**	<25 J	**16 J**	<5	<5
Total VOCs		**836**	**508**	**1,093**	0	**0.6**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
Value exceeds associated Standard, Criteria, and Guidance value.
Bold type indicates compound detected above reporting limit.

ARCADIS

Table 11. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	WELL: / SAMPLE ID: / DATE:	GM-33D2 GM 33D2 04/03/02	GM-38D REP-4 04/18/02	GM-75D2 GM-75D2 04/10/02	GM-75D2 REP-2 04/10/02	GM-78S GM-78S 04/09/02	GM-79D GM-79D 04/09/02	GM-79I GM-79I 04/09/02	HN-42I HW-42I 03/26/02	MW-52I MW-52I 04/15/02	ONCT INFLUENT REP-3ONCT 04/15/02
Unknown		41 N	180 N	370 N	180 N	12 N	14 N	34 N	--	260 N	190 N
Unknown		--	--	1100 N	390 N	12 N	14 N	--	--	--	--
Unknown		--	--	--	--	22 N	--	--	--	--	--
Trichlorofluoromethane		--	--	--	--	--	--	--	0.70 N	--	--
Methyl tert-butyl ether		--	--	--	--	--	--	--	--	--	--

ug/L Micrograms per liter.
-- Not Detected.
N TICs are identified based on review of mass spectrometry results via a comprehensive library search of all organic compounds. However, calibrations were not run for these constituents; therefore, the results should be used for qualitative purposes only.

NYSDEC 053676

Table 11. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	WELL: SAMPLE ID: DATE:	TRIP BLANK TB 4/9/02 04/09/02	TRIP BLANK TB042602 04/26/02	WATER EQ.BLANK FB 4/9/02 04/09/02	WATER EQ.BLANK FB041502 04/15/02
Unknown		7.8 N	17 N	8.9 N	--
Unknown		6.1 N	--	97 N	--
Unknown		--	--	32 N	--
Trichlorofluoromethane		--	--	--	--
Methyl tert-butyl ether		--	--	--	5.2 N

ug/L Micrograms per liter.
-- Not Detected.
N TICs are identified based on review of mass spectrometry results via a comprehensive library search of all organic compounds. However, calibrations were not run for these constituents; therefore, the results should be used for qualitative purposes only.

NYSDEC 053677

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	TRIP BLANK TB032502 03/25/02	TRIP BLANK TB032602 03/26/02	TRIP BLANK TB032702 03/27/02	TRIP BLANK TB032802 03/28/02	TRIP BLANK TB 3/29/02 03/29/02	TRIP BLANK TB 4/2/02 04/02/02
Chloromethane		<5	<5	<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5 J
Methylene chloride		<5	<5	<5	<5	<5	<5
Acetone		<10	<10	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		0	0	0	0	0	0

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
Bold type indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	TRIP BLANK TB 4/3/02 04/03/02	TRIP BLANK TB 4/4/02 04/04/02	TRIP BLANK TB 4/9/02 04/09/02	TRIP BLANK TB 04/10/02 04/10/02	TRIP BLANK TB 4-11-02 04/11/02	TRIP BLANK TB 4-12-02 04/12/02
Chloromethane		<5	**0.8 J**	<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		<5	**1 JB**	**0.7 J**	<5	**2 J**	**0.7 J**
Acetone		<10	**4 JB**	<10	<10	**19**	**12**
Carbon disulfide		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5
2-Butanone		**2 JB**	**2 J**	<10	**4 JB**	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10 J	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	**0.6 J**	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
Toluene		<5	**0.3 J**	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		**2**	**8.1**	**0.7**	**4**	**21.6**	**12.7**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
Bold type indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	TRIP BLANK TB041502 04/15/02	TRIP BLANK TB041602 04/16/02	TRIP BLANK TB041702 04/17/02	TRIP BLANK TB041802 04/18/02	TRIP BLANK TB042302 04/23/02	TRIP BLANK TB042502 04/25/02
Chloromethane		<5	<5	<5	<5	<5	<5
Bromomethane		<5 J	<5	<5	<5	<5	<5 J
Vinyl Chloride		<2	<2	<2	<2	<2 J	<2
Chloroethane		<5 J	<5	<5	<5	<5 J	<5
Methylene chloride		<5	<5	<5	<5	<5	<5
Acetone		<10 J	<10 J	<10 J	<10 J	<10 J	<10 J
Carbon disulfide		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5
2-Butanone		<10 J	<10	<10	<10	<10 J	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10
2-Hexanone		<10 J	<10	<10	<10	<10 J	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5 J	<5 J
Freon-113 *		<5	<5 J	<5 J	<5 J	<5	<5
Total VOCs		0	0	0	0	0	0

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
Bold type indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	TRIP BLANK TB042602 04/26/02	TRIP BLANK TB050302 05/03/02	WATER EQ.BLANK FB032502 03/25/02	WATER EQ.BLANK FB032602 03/26/02	WATER EQ.BLANK FB032702 03/27/02
Chloromethane		<5	<5	<5	<5	<5
Bromomethane		<5 J	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5
Methylene chloride		<5	<5	<5	<5	<5
Acetone		<10 J	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5
Vinyl Acetate		<5 J	<5 J	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5
Total VOCs		0	0	0	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
Bold type indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB032802 03/28/02	WATER EQ.BLANK FB 3/29/02 03/29/02	WATER EQ.BLANK FB 4/2/02 04/02/02	WATER EQ.BLANK FB 4/3/02 04/03/02
Chloromethane		<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2
Chloroethane		<5	<5	<5 J	<5
Methylene chloride		<5	<5	<5	<5
Acetone		<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5
Chloroform		<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5
Bromoform		<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5
Toluene		<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5
Styrene		<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5
Total VOCs		0	0	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
Bold type indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB 4/4/02 04/04/02	WATER EQ.BLANK FB 4/9/02 04/09/02	WATER EQ.BLANK FB 04/10/02 04/10/02	WATER EQ.BLANK FB 4-11-02 04/11/02
Chloromethane		**0.7 J**	<5	<5	<5
Bromomethane		<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5
Methylene chloride		**0.8 JB**	<5	<5	**0.7 J**
Acetone		**4 JB**	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5
Chloroform		<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5
Bromoform		<5	<5	<5	<5
4-Methyl-2-pentanone		<10 J	<10	<10	<10
2-Hexanone		<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5
Toluene		**0.3 J**	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5
Styrene		<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5
Freon-113.*		<5	<5	<5	<5
Total VOCs		5.8	0	0	0.7

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
Bold type indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB 4-12-02 04/12/02	WATER EQ.BLANK FB041502 04/15/02	WATER EQ.BLANK FB050302 05/03/02
Chloromethane		<5	<5	<5
Bromomethane		<5	<5 J	<5
Vinyl Chloride		<2	<2	<2
Chloroethane		<5	<5 J	<5
Methylene chloride		<5	<5	<5
Acetone		<10	<10 J	<10
Carbon disulfide		<5	<5	<5
1,1-Dichloroethene		<5	<5	<5
1,1-Dichloroethane		<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5
Chloroform		<5	<5	<5
1,2-Dichloroethane		<5	<5	<5
2-Butanone		<10	<10 J	<10
1,1,1-Trichloroethane		<5	<5	<5
Carbon tetrachloride		<5	<5	<5
Bromodichloromethane		<5	<5	<5
1,2-Dichloropropane		<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5
Trichloroethene		<5	<5	<5
Dibromochloromethane		<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5
Benzene		<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5
Bromoform		<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10
2-Hexanone		<10	<10 J	<10
Tetrachloroethene		<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5
Toluene		<5	<5	<5
Chlorobenzene		<5	<5	<5
Ethylbenzene		<5	<5	<5
Styrene		<5	<5	<5
Xylene (total)		<5	<5	<5
Vinyl Acetate		<5	<5	<5 J
Freon-113 *		<5	<5	<5
Total VOCs		0	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
Bold type indicates a detection.

ARCADIS

Table 13. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater Samples, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC SCGs (1)	WELL: / SAMPLE ID: / DATE:	10631 N-10631 01/02/02	10631 N-10631 03/27/02	GM-16SR GM-16SR 01/02/02	GM-16SR GM-16SR 03/27/02	GM-17SR GM-17SR 05/03/02	GM-18S GM-18S 03/27/02	GM-32S* GM-32S 06/23/00	GM-32S GM-32S 04/12/02	GM-78S GM78S 01/15/02	GM-78S GM-78S 04/09/02
Cadmium, Total	5		**1.8 B**	**2.3 B**	<1.2	<10	<10	<10	<5	<10	<1.2	<10
Cadmium, Dissolved	5		--	**2.1 B**	--	<10	<10	<10	<5	<10	--	--
Chromium, Total	50		**22.2**	**35.4**	**1.5 B**	**2.4 B**	**3.9 B**	**2 B**	**100**	**109**	**9.1 B**	**3.4 B**
Chromium, Dissolved	50		--	**19.6**	--	<10	<10	<10	**97**	**98.6**	--	--

(1) Standards, Criteria, and Guidance Values.
ug/L Micrograms per liter.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract-required detection limit.
NYSDEC New York State Department of Environmental Conservation.
EQ Equipment.
[ ] Value exceeds associated SCG value.
Bold type constituent detected.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
-- Not analyzed.
* Source of water quality data: Gannett Fleming Engineers and Architects, P.C. (2000).

NYSDEC 053685

Table 13. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater Samples, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC SCGs (1)	WELL: SAMPLE ID: DATE:	GM-78I GM78I 01/15/02	GM-78I GM-78I 04/09/02	MW-01GF* MW-1GF 05/02/00	MW-01GF MW-1GF 04/12/02	MW-02GF* MW-2GF 05/02/00	MW-02GF MW-2GF 04/12/02	MW-03R MW-3R 01/02/02	MW-03R MW-3R 03/27/02	WATER EQ.BLANK FB032702 03/27/02
Cadmium, Total	5		<1.2	<10	<5	<10	**6**	<10	**23.7**	**28.4**	<10
Cadmium, Dissolved	5		–	–	<5	<10	<5	<10	–	**27.1**	–
Chromium, Total	50		**4.5 B**	**6.2 B**	**100**	**3.3 B**	**370**	**41.1**	**53.2**	**57.9**	<10
Chromium, Dissolved	50		–	–	<5	<10	**340**	**45.1**	–	**50**	–

(1) Standards, Criteria, and Guidance Values.
ug/L Micrograms per liter.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract-required detection limit.
NYSDEC New York State Department of Environmental Conservation.
EQ Equipment.
[ ] Value exceeds associated SCG value.
Bold type constituent detected.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
– Not analyzed.
* Source of water quality data: Gannett Fleming Engineers and Architects, P.C. (2000).

NYSDEC 053686

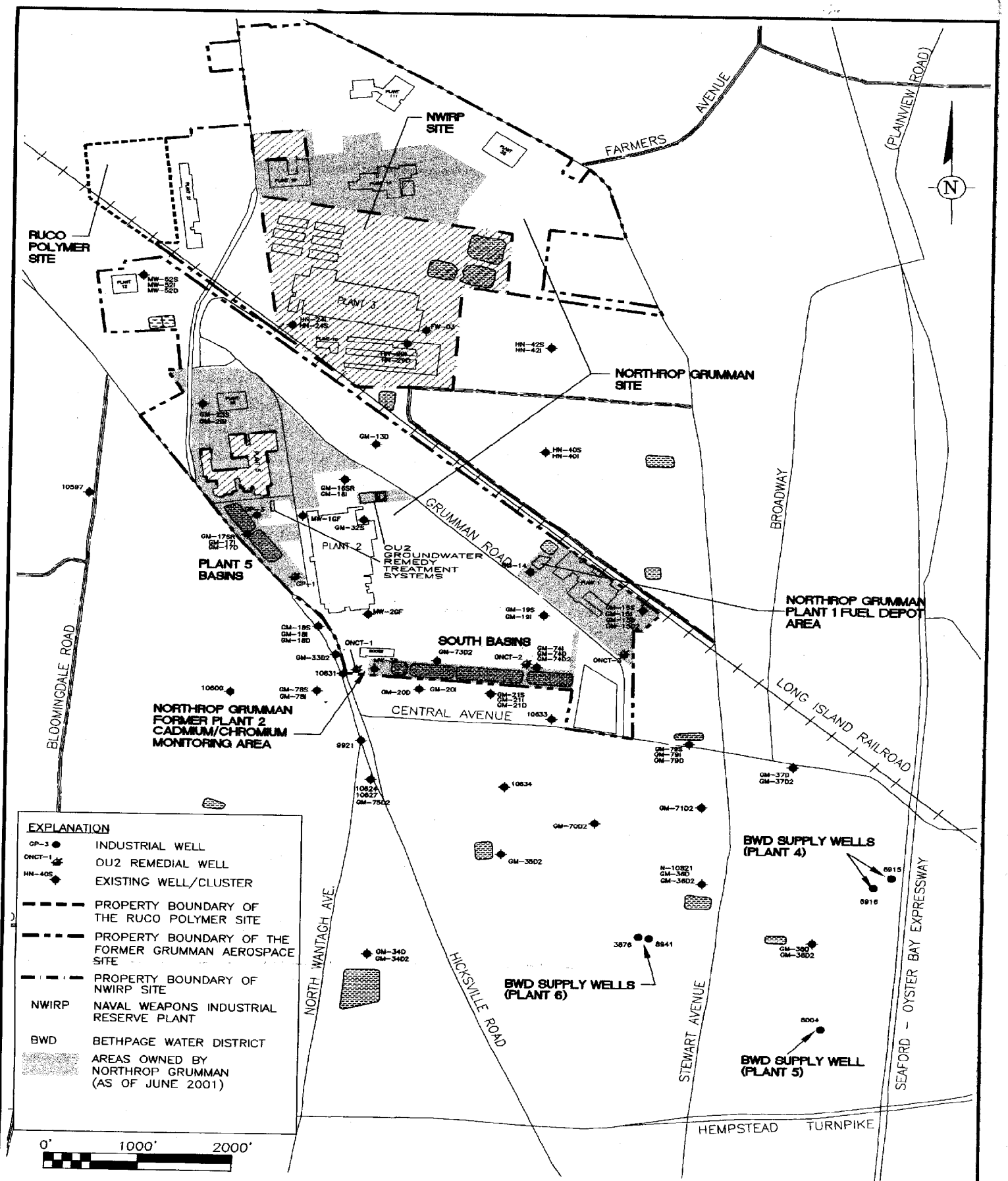
Table 13. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater Samples, Fourth Quarter 2001 and First Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB 4/9/02 04/09/02	WATER EQ.BLANK FB 4-12-02 04/12/02	WATER EQ.BLANK FB050302 05/03/02
Cadmium, Total	5		<10	<10	<10
Cadmium, Dissolved	5		--	--	--
Chromium, Total	50		<10	<10	<10
Chromium, Dissolved	50		--	--	--

(1) Standards, Criteria, and Guidance Values.
ug/L Micrograms per liter.
B Detected between the IDL and CRDL.
IDL Instrument detection limit.
CRDL Contract-required detection limit.
NYSDEC New York State Department of Environmental Conservation.
EQ Equipment.
[ ] Value exceeds associated SCG value.
Bold type constituent detected.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
– Not analyzed.
* Source of water quality data: Gannett Fleming Engineers and Architects, P.C. (2000).

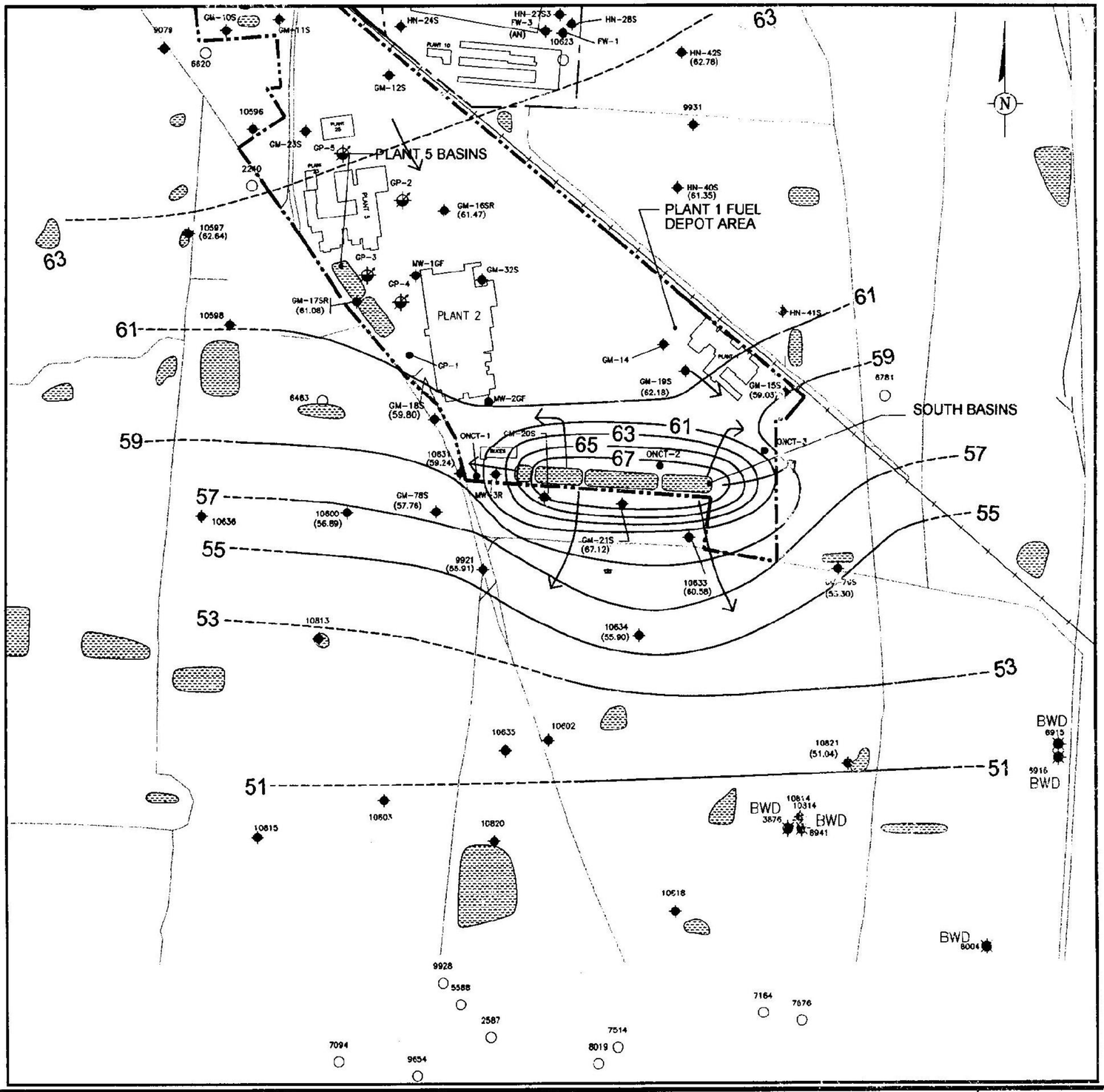
NYSDEC 053687

FIGURES



ARCADIS G&M	NORTHROP GRUMMAN CORPORATION BETHPAGE, NEW YORK	DRAWN A.G.	DATE 10/23/02	PROJECT MANAGER CSG	DEPARTMENT MANAGER
		SITE PLAN OU2 GROUNDWATER REMEDY AND WELL LOCATIONS		LEAD DESIGN PROF.	CHECKED D.S.
				PROJECT NUMBER NY001348.001	DRAWING NUMBER 1

FILE: G:\PROJECT\NORTHROP GRUMMAN\CADD\OU2SITS_LOCATION_REV3.DWG, DATE: 10/23/2002 04:44:21 PM, LAYOUT NAME: REMEDIAL



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-19S (62.18) — LOCATION AND DESIGNATION OF SHALLOW MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- 9554 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-2 — LOCATION AND DESIGNATION OF GRUMMAN INDUSTRIAL SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- ONCT-1 — LOCATION AND DESIGNATION OF ON-SITE OU2 REMEDIAL WELL (SHOWN FOR REFERENCE ONLY)
- DIRECTION OF HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)

OU2 OPERABLE UNIT 2

BWD BETHPAGE WATER DISTRICT

AN ANOMALOUS MEASUREMENT

NOTES:

1. THIS FIGURE INCLUDES LOCATIONS OF MONITORING WELLS AND PUBLIC SUPPLY WELLS AS OF SEPTEMBER 25, 2001.
2. OU2 WELLS ONCT-1, ONCT-2, ONCT-3, AND GP-1 ARE SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.
5. BASIN LOCATIONS OBTAINED FROM USGS TOPOGRAPHIC MAPS (HICKSVILLE, AMITYVILLE, HUNTINGTON, AND FREEPORT QUADRANGLES), AND INFORMATION PROVIDED BY NORTHROP GRUMMAN.

0 800 FT

ARCADIS G&M

88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

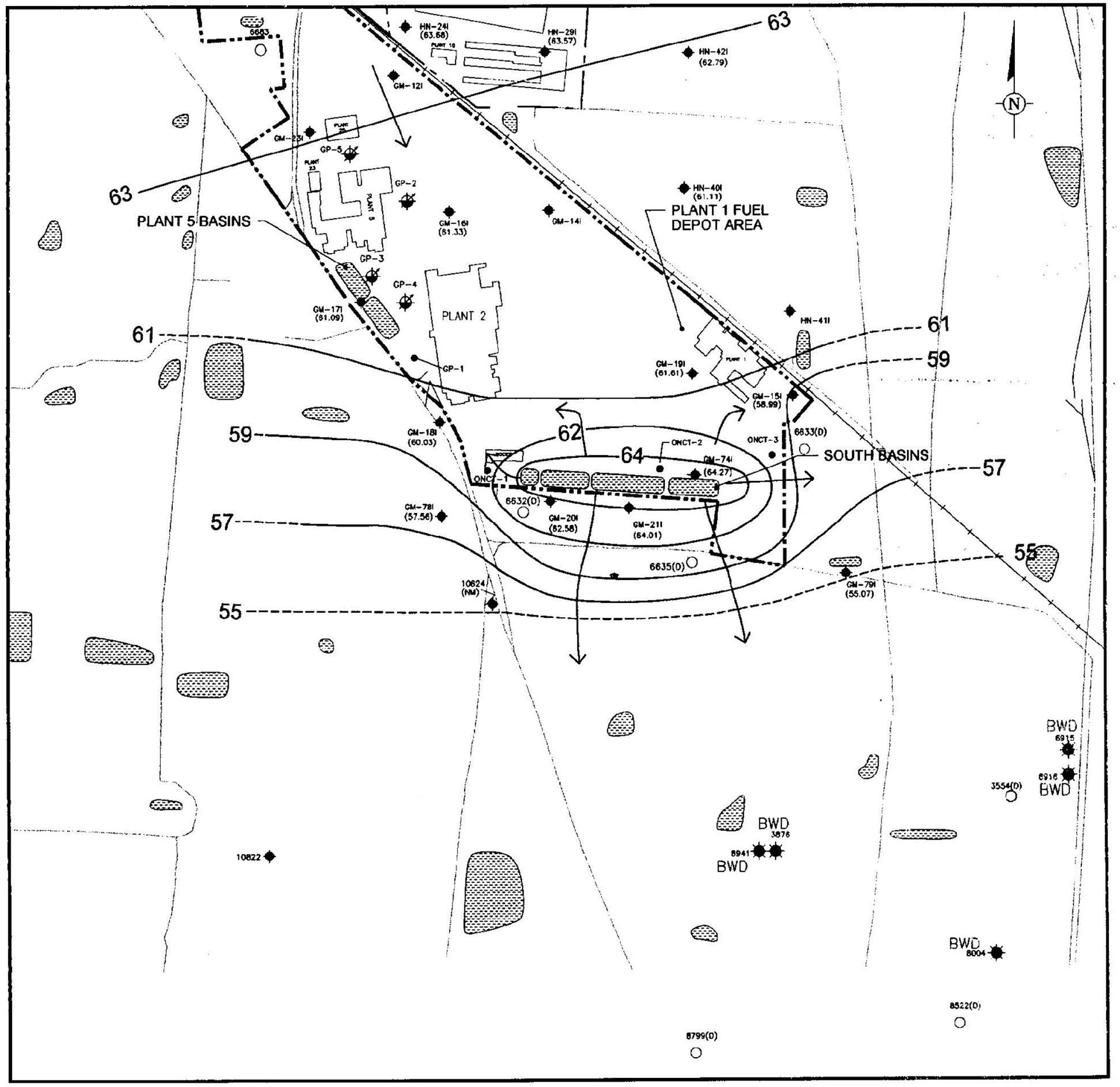
NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	8/6/02	CSC	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001348.006	2

WATER-TABLE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE SHALLOW ZONE
APRIL 15, 2002

FILE: G:\APROJECT\NORTHROP GRUMMAN\CADD\SHALLOW_Q1-02APRIL.DWG, DATE: 10/08/2002 02:53:04PM

NYSDEC 053690



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-15I (58.99) — LOCATION AND DESIGNATION OF INTERMEDIATE MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- 6683 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-3 — LOCATION AND DESIGNATION OF GRUMMAN INDUSTRIAL SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- ONCT-1 — LOCATION AND DESIGNATION OF ON-SITE OU2 REMEDIAL WELL (SHOWN FOR REFERENCE ONLY)
- DIRECTION OF HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- 62 — LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)

OU2 OPERABLE UNIT 2
NM NOT MEASURED
BWD BETHPAGE WATER DISTRICT
USGS UNITED STATES GEOLOGICAL SURVEY

NOTES:

1. THIS FIGURE INCLUDES LOCATIONS OF MONITORING WELLS AND PUBLIC SUPPLY WELLS AS OF SEPTEMBER 25, 2001.
2. OU2 WELLS ONCT-1, ONCT-2, ONCT-3, AND GP-1 ARE SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.
5. BASIN LOCATIONS OBTAINED FROM USGS TOPOGRAPHIC MAPS (HICKSVILLE, AMITYVILLE, HUNTINGTON, AND FREEPORT QUADRANGLES), AND INFORMATION PROVIDED BY NORTHROP GRUMMAN.
6. DEPTH TO WATER AT THE FOLLOWING WELLS WAS AS FOLLOWS: GM-23I (APRIL 12), HN-24I AND HN-29I (APRIL 11), HN-40I (MARCH 25), AND HN-40I (MARCH 26).

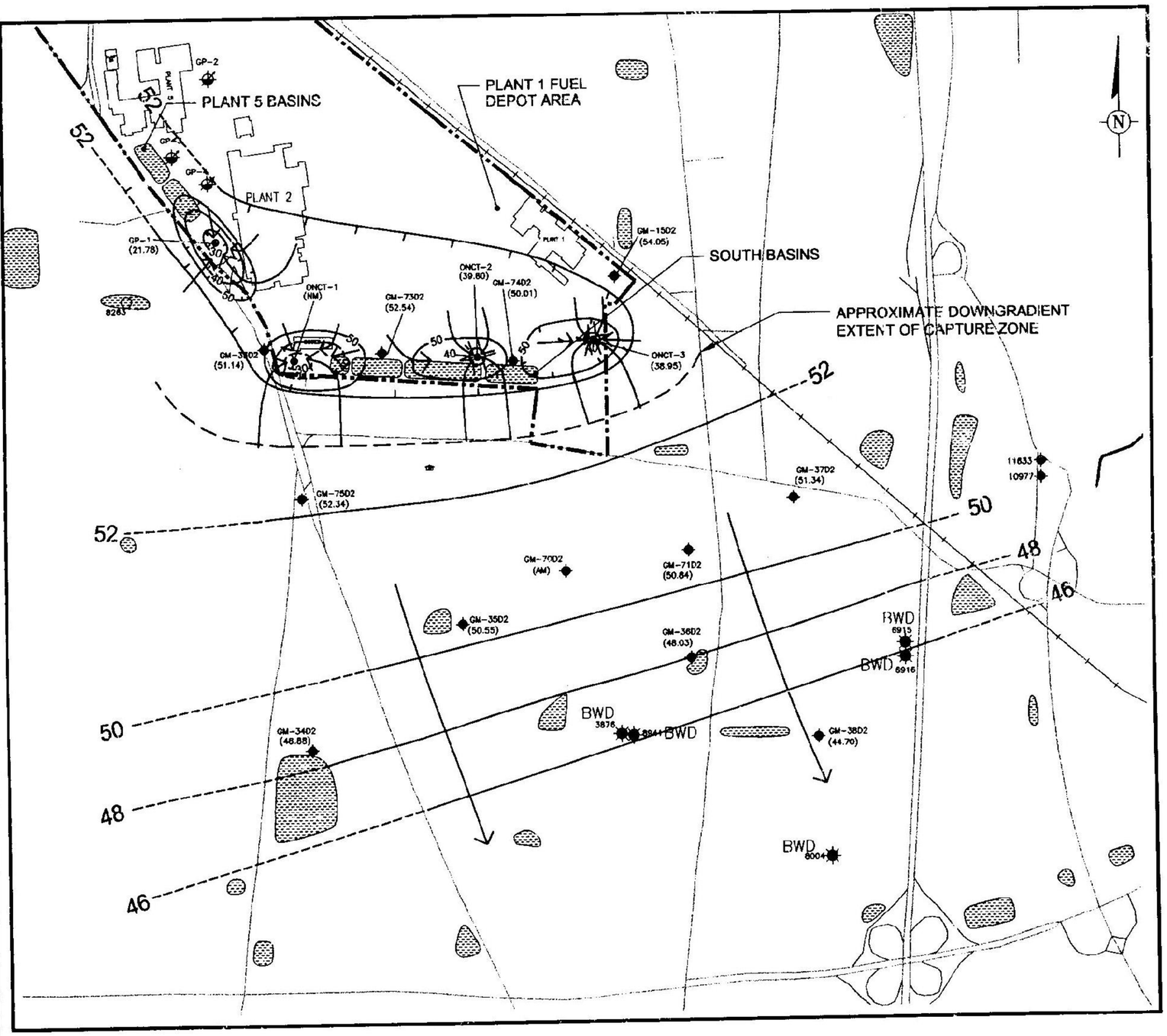
0 800 FT

ARCADIS G&M
88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE INTERMEDIATE ZONE
APRIL 15, 2002

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AC	8/6/02	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001348.006	3



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- RECHARGE BASIN
- GM-36D2 (48.03) — LOCATION AND DESIGNATION OF D2 (VERY DEEP) MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL.
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL
- 8263 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-3 — LOCATION AND DESIGNATION OF GRUMMAN PRODUCTION WELL
- ONCT-3 (38.95) — LOCATION AND DESIGNATION OF ON-SITE OU2 REMEDIAL WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- DIRECTION OF HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- 52 — LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)
- LINE OF EQUAL WATER-LEVEL ELEVATION DENOTING A DECREASE IN POTENTIOMETRIC SURFACE ELEVATION IN FT. MSL.

OU2	OPERABLE UNIT 2
GPM	GALLONS PER MINUTE
AM	ANOMALOUS MEASUREMENT
BWD	BETHPAGE WATER DISTRICT
USGS	UNITED STATES GEOLOGICAL SURVEY
NM	NOT MEASURED

NOTES:

1. THIS FIGURE INCLUDES LOCATIONS OF MONITORING WELLS AND PUBLIC SUPPLY WELLS AS OF SEPTEMBER 25, 2001.
2. OU2 REMEDIAL WELLS GP-1, ONCT-1, ONCT-2, AND ONCT-3 ARE SCREENED IN THE D2 ZONE AND WERE PUMPING AT 1,080 GPM, 1,100 GPM, 590 GPM, AND 692 GPM, RESPECTIVELY AT THE TIME OF MEASUREMENT.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.
5. INDUSTRIAL SUPPLY WELL GP-3 IS SCREENED IN THE D2 ZONE AND WAS PUMPING AT AN AVERAGE RATE OF 679 GPM DURING THE FIRST QUARTER OF 2002.
6. BASIN LOCATIONS OBTAINED FROM USGS TOPOGRAPHIC MAPS (HICKSVILLE, AMITYVILLE, HUNTINGTON, AND FREEPORT QUADRANGLES), AND INFORMATION PROVIDED BY NORTHROP GRUMMAN.

FILE: G:\APROJECT\NORTHROP GRUMMAN\CADD\DEEP 1Q-02.DWG, DATE: 10/15/2002 02:49:01PM

ARCADIS G&M
88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE D2 ZONE
APRIL 15, 2002

DRAWN: AG	DATE: 10/15/02
PROJECT MANAGER: CGS	DEPARTMENT MANAGER: MW
LEAD DESIGN PROF.	CHECKED: DES
PROJECT NUMBER: NY001348.006	DRAWING NUMBER: 4

NYSDEC 053692

APPENDIX A

Appendix A

Water-Level Measurement Logs

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Project GRUMMAN M001348.0006.00002 Well _____ Site _____

Screen Setting _____ Measuring Point Description _____ Height Above Ground Surface _____

Static Water Level _____ Measured With _____ Date/Time 15 Apr 02

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

Distance From Well Measured To Pumping Well® _____ Discharge Rate _____ Orifice _____

Date & Time	Well Or ft (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3) 5pm
ONCT-3				69.75							692 gpm
ONCT-1				>127	(DTW too deep to measure)						1100
ONCT-2				70.20							590
GP-1				95.00							1080 gpm
GP-3				—							480
GP-1/3 INF				—							1550
~~GP 1/3~~											
GP 1/3 OFF				—							NO METER
GM13D				52.60							
MW-3R				40.71							
GM-7I				43.15							
GM-7D				50.47							
GM-7D2				57.35							
GM 73D2				52.08							
GM18D				51.52							
GM18I				49.00							
GM17SR				54.71							
GM17I				54.74							
GM17D				56.42							
GM16I				54.48							
GM16SR				54.39							
N-10597				47.21							
GM-15D				52.70							
GM-15D2				55.54							
GM-15S				50.32							
GM-15I				50.14							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Page 2 of 3

Project 6RUMMAN M001348.0006.T2 Well ____ Site ____

Screen Setting ____ Measuring Point Description ____ Height Above Ground Surface ____

Static Water Level ____ Measured With ____ Date/Time 15 Apr 98

Drawdown ☐ Start of Test ____ Pumping Well ____

Recovery ☐ End of Test ____

Distance From Well Measured To Pumping Well® ____ Discharge Rate ____ Orifice ____

Date & Time	Well Or t (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
GM-19S				~~47~~.68							
GM-19I				48.25							
~~GM-21D~~	GM21D			48.39							
~~GM-21I~~	GM21I			41.71							
GM21S				38.69							
N-10633				43.22							
GM-37D				45.13							
GM-37D2				45.83							
GM-38D				44.29							
GM-38D2				46.86							
~~GM~~-N10821				40.54							
GM-36D				40.97							
GM-36D2				43.57							
GM-70D2				46.84							
GM-71D2				47.61							
N-10634				45.30							
GM-35D2				45.73							
GM-20I				41.30							
GM-20D				43.61							
N10631				44.23							
GM-33D2				55.71							
GM-18S				47.80							
N-10600				45.52							
GM-78S				47.18							
GM-78I				47.50							
N992				38.32							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

Wtlvlptr.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Project GRUMMAN M001348.0006 T2 Well _____ Site _____

Screen Setting _____ Measuring Point Description _____ Height Above Ground Surface _____

Static Water Level _____ Measured With _____ Date/Time _____

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

Distance From Well Measured To Pumping Well® _____ Discharge Rate _____ Orifice _____

Date & Time	Well Or t (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
GM-34D				20.48							
GM-34D2				22.31							
N10627				38.30							
GM-75D2				41.29							
GM-79S				45.58							
GM-79D				47.20							
GM-79I				45.87							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

APPENDIX B

ARCADIS

Appendix B

Groundwater Sampling Logs

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: M001348.0006.00002 | Page: 1 of 1

Site Location: Bethpage NY | Date: 11 Apr 02

Site/Well No.: FW-03 | Replicate No.: | Code No.:

Weather: 60° Sunny | Sampling Time: Begin 3.18 End:

Evacuation Data		Field Parameters	I	1v	2v	3v
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	67	pH (s.u.)	8.49	8.44	8.36	8.02
Depth to Water (ft bmp)	62.5	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	338	238	338	335
Water Column in Well (ft)	4.5	Turbidity (NTU)	720			
Casing Diameter/Type	2" (0.16)	Temperature (°C)	16.7	16.9	16.9	16.7
Gallons in Well	0.72	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	2.16	~~Salinity (%)~~ Time	3.34	3.35	3.38	3.39
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 3.30 end	Remarks				
Pumping Rate (gpm)	Q=3/4 T=3 1v=1					
Evacuation Method						

Constituents Sampled		Container Description	Number	Preservative
4v (3.40)	5v (3.42)	SAMPLED DURING: 64		
7.88	7.70	PURGED 8 GAL		
300	333			
16.7	16.6			
—	80			

Sampling Personnel: GW/CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS G&M, Inc.

Low-Flow Groundwater Sampling Log

Project Number: NY001321.1 Task: 2 Well ID: GM-13D
Date: 15 Apr 02 Sampled By: MS SH
Sampling Time: 1120 Recorded By: MS
Weather: 70° F CLOUDY Coded Replicate No.: —

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

Purging Information
Casing Material: PVC Purge Method: LOW FLOW BLADDER
Casing Diameter: 4" Screen Interval (ft bmp): Top _____ Bottom _____
Sounded Depth (ft bmp): 240 Pump Intake Depth (ft bmp): _____
Depth to Water (ft bmp): 52.35 Purge time Start: 1020 Finish: 1120

Field Parameter Measurements Taken During Purging

Time	Minutes Elapsed	Rate (mL/min)	Volume Purged	Temp (°C)	pH (SI Units)	Conductivity (mS/cm)	REDOX (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)	Comments
1025	5	200	0	21.6	5.96	136.7	204	2.9	—	52.35	
1030	10	"	—	17.0	5.90	340	167	1.2	—	—	
1035	15	"	—	16.2	5.89	278	207	0.6	—	—	
1040	20	"	—	16.0	5.52	276	219	0.5	—	52.41	
1045	25	"	—	15.8	5.52	272	224	0.6	—	—	
1050	30	"	—	15.7	5.50	273	229	0.5	—	—	
1055	35	"	25	15.8	5.48	269	233	0.5	—	52.37	
1100	40	"	—	15.8	5.48	270	236	0.5	—	—	
1105	45	"	—	15.7	5.47	262	239	0.4	—	—	
1110	50	"	—	15.7	5.46	262	241	0.4	—	52.39	
1115	55	"	—	15.8	5.46	261	244	0.3	—	—	
1120	60	"	5	15.8	5.46	262	244	0.4	13.8	52.41	
NOTE											

Sample Condition Color: colorless Odor: slight Appearance: clear
Sample Collection

Parameter:	Container:	No.	Preservative:
VOC	40 mL VOA	2	—

PID Reading: —

Comments: _____

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page ____ of ____

Project/No. N9001348.0006.00002 Well GM 14 Date 4/16/02

Screen Setting 15-55 Measuring Point Description TOC Casing Diameter (inches) 4"

Static Water Level 52.89 Measured Width ____ Well Materials X PVC ____ ST. Steel

Total depth 55 Pump On: ____ Pump Intake: ____

Purge Method Pump Off: ____ **Volumes Purged** ____

Centrifugal ____ **Sample Time:** ____

Submersible ____ Sampled By: ____

Other ____ Bailer Type: ____

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
Product Detected - .1 Ft											
52.88 - 52.89											
No Sample Taken - (See Work Plan)											

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M001227.0006 Task: 09002 Well ID: GM-15D
Date: 28 Mar 02 Sampled By: SH, CL
Sampling Time: 8.35 Recorded By: CL
Weather: sunny 35° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow / BLADDER PUMP
Casing Diameter: 4" Purge Rate: 450 ml/mn
Total Depth: 342 Total Volume Purged: 9 Gal
Depth to Water: 52.28 Pump Intake Depth ~336'
Water Column: Pump on: 9.00 Off: 10.10
Gallons/Foot: Parameters Sampled: See COC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (umhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
				~~215~~	~~+~~	~~172.6~~	~~+~~			
9.05			11	215	5.14	172.6	14.6	52.31	0.6	
9.10			24	235	5.01	168.6	15.0	"	0.4	
9.15			80	195	5.35	162.0	15.3	52.32	0.5	
9.20			65	137	5.40	106.0	15.6	52.34	0.8	
9.25			55	176	5.08	105.4	15.6	"	0.95	
9.30			17	194	5.06	105.8	15.5	"	1.0	
9.35			32	206	4.99	106.2	15.5		0.95	
9.40				213	5.01	100.9	15.5		1.0	
9.45				220	4.95	107.0	15.6	52.35	"	
9.50			17	238	4.94	107.1	15.8		"	
9.55				230	4.91	106.7	15.8		0.9	
10.00				238	4.90	106.7	15.8			
10.05			11	242	4.85	106.6	15.8	52.37	0.9	

Well Secure: ✓ Purge Water Disposal: A/C Sewer
Color: darker Turbidity(qualitative): clear
~~darker~~

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: MA01348.0006 Task: 0000B Well ID: GW15-D2
Date: 28 Mar 02 Sampled By: SH, CL
CL
Sampling Time: _____ Recorded By: _____
Weather: Sunny 50° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow / Bladder Pump
Casing Diameter: 4" Purge Rate: 450 mL/pulse ~~450 mL/min~~ 1 pulse/45 sec
Total Depth: _____ Total Volume Purged: 9 Gal
Depth to Water: 55.16 Pump Intake Depth 5
Water Column: _____ Pump on: 10.33 Off: 11.40
Gallons/Foot: _____ Parameters Sampled: See CoC
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
10.35	500 mL/min		8.0	209	5.59	100.4	14.4	55.21	5.0	
10.40				224	5.25	80.3	15.9		2.0	
10.45				227	5.21	79.4	16.0	55.16	1.8	
10.50			13	240	4.96	73.8	16.1		1.4	
10.55				246	5.07	69.5	16.2		1.7	
11.00				243	4.87	68.9	16.2	55.21	~~2.8~~	
11.05			30	255	5.01	66.8	16.2		4.3	
11.10				252	4.95	62.5	16.3		5.4	
11.15				253	5.10	62.1	16.2		5.0	
11.20			40	253	5.11	59.3	16.3	55.16	5.1	
11.25			24	255	5.08	56.6	16.3	—	5.4	
11.30			20	255	5.06	55.9	16.3	—	5.4	
11.35			20	257	5.04	55.2	16.3	55.16	5.5	

Well Secure: _____ Purge Water Disposal: _____
Color: colorless Turbidity(qualitative): clear
colorless

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project [redacted] GRUMMAN | Project No. MA001348.0006.00002 | Page 1 of 1

Site Location BETHPAGE NY | Date 28Mar02

Site/Well No. 6M-15I | Replicate No. | Code No.

Weather 50° SUNNY | Sampling Time: Begin 1.20 | End 3.10

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point	TOC	Color				colorless
MP Elevation (ft)		Odor				odorless
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	105'	pH (s.u.)	5.32	5.24	5.12	5.09
Depth to Water (ft bmp)	94.00	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	250	266	264	266
Water Column in Well (ft)	11'	Turbidity (NTU)				2.8
Casing Diameter/Type	4" (0.65)	Temperature (°C)	14.3	15.1	15.4	15.1
Gallons in Well	7.15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	22	Salinity (%)				
Sample ~~Pump Intake~~ ~~Setting (ft bmp)~~ PACKER Pressure	80 PSI	Sampling Method				
Purge Time	begin 1.30 end 3.00	Remarks	5 GAL PAILS: HTI			
Pumping Rate (gpm)						
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel SH, CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Grumman | Project No. N001348.0006.TC | Page 1 of 1

Site Location: Bethpage, NY | Date: 3/28/02

Site/Well No.: 155 10 | Replicate No. | Code No.

Weather: Clear, 45° | Sampling Time: Begin ~~10:30~~ Begin 11:45 am End 12:30 pm

Evacuation Data		Field Parameters	F	10	20	30
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	80 (70 - 80)	pH (s.u.)	5.18	5.32	5.29	5.32
Depth to Water (ft bmp)	50	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	176	189	189	213
Water Column in Well (ft)	30	Turbidity (NTU)				5.6
Casing Diameter/Type	4" (.65)	Temperature (°C)	17.0	17.1	16.7	16.7
Gallons in Well	20	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	60	Salinity (%) TM	11.55	12.02	12.09	12.16
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 11.53 end 12.23	Remarks				
Pumping Rate (gpm)	Q=3 T=20 IV=7					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: SH / CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001348.0006.00002 | Page 1 of 1

Site Location: Bethpage NY | Date: 26 Mar 02

Site/Well No.: GW-16I | Replicate No.: | Code No.:

Weather: cloudy, 40°, windy | Sampling Time: Begin 11.00 End

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	145.00
Depth to Water (ft bmp)	134.0
Water-Level Elevation (ft)	1
Water Column in Well (ft)	11.00
Casing Diameter/Type	4 (0.65)
Gallons in Well	~~9.15~~
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ PACKER PRESSURE Setting (ft bmp)	90 PSI
Purge Time	begin 11:05 end
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters	I	1	2	3
Color				
Odor				
Appearance				
pH (s.u.)	6.24	6.93	6.86	6.85
Conductivity (mS/cm)	193	321	325	334
(µmhos/cm)				
Turbidity (NTU)				
Temperature (°C)	13.7	13.4	14.8	14.6
Dissolved Oxygen (mg/L)				
Salinity (%)		—		
Sampling Method	DEDICATED BLADDER			
Remarks	5 GAL PRGD. W/ 1½			

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Greenman | Project No. N4001348.0006.00002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 3/27/02

Site/Well No.: 16 SR | Replicate No. ____ | Code No. ____

Weather: Windy, 40° | Sampling Time: Begin 9:30 End ____

Evacuation Data		Field Parameters	1	10	20	30
Measuring Point		Color				Gray/Brn
MP Elevation (ft)		Odor				None
Land Surface Elevation (ft)		Appearance				Cloudy
Sounded Well Depth (ft bmp)	70 (60-70)	pH (s.u.)	7.35	6.64	6.85	6.85
Depth to Water (ft bmp)	54.15	Conductivity (µmhos/cm)	1 570	144	143	150.8
Water-Level Elevation (ft)		Turbidity (NTU)	38	12	6.8	4.2
Water Column in Well (ft)	15.85	Temperature (°C)	14.2	15.1	15.1	14.2
Casing Diameter/Type	4" (.65)	Dissolved Oxygen (mg/L)				
Gallons in Well	10.3	Salinity (%)	10.00	10:05	10:10	10:15
Gallons Pumped/Bailed Prior to Sampling	30.9	Sampling Method				
Sample Pump Intake Setting (ft bmp)		Remarks				
Purge Time	begin 10:00 end ____					
Pumping Rate (gpm)	Q=2 T=15 V=5					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW/SH

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N400/348.0006 Task: 3 Well ID: GM 17D
Date: 2 Apr 02 Sampled By: SH, CL
Sampling Time: _____ Recorded By: CL
Weather: p. cloudy 50° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate: _____
Total Depth: 298 Total Volume Purged: 10 GAL
Depth to Water: 56.14 Pump Intake Depth _____
Water Column: ~~56.14~~ Pump on: 10.32 Off: 11.58
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
10:40	CC		3.4	386	5.96	132.0	12.2	56.14	2.0	
10.45	DD		2.7	328	5.66	111.2	13.3	—	6.6	
10.50			—	324	5.37	73.8	13.3	—		
10.55			—	324	5.30	104.9	13.5	56.14	7.5	
11.00			3.9	310	5.33	107.9	13.7	—	7.3	
11.05			—	307	5.27	103.1	13.5	—	7.1	
11.10			—	305	5.23	102.8	13.7	—	7.2	
11.18			1.9	305	5.23	101.7	13.8	56.14	7.2	
11.20			—	305	5.24	101.5	13.9	—	7.1	
11.25			—	305	5.12	101.4	14.0	—	7.2	
11.30			—	305	5.23	100.7	14.1	—	7.2	
11.35			—	307	5.18	100.6	14.2	—	7.2	
11.40			2.2	306	5.20	100.7	14.2	56.14	7.2	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M001348.0006 Task: 3 Well ID: GM17I
Date: 2Apr02 Sampled By: SH, CL
Sampling Time: _____ Recorded By: CL
Weather: SUNNY 55° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow - Medium Flow
Casing Diameter: 4" Purge Rate: 300 ml/min
Total Depth: _____ Total Volume Purged: 5 gals
Depth to Water: 54.28 Pump Intake Depth _____
Water Column: _____ Pump on: 12.23 Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12.30	300		10	278	5.83	131.6	13.0	54.30	9.5	
12.35			—	272	5.86	130.8	13.5	—	9.5	
12.40			—	269	5.88	131.3	13.5	—	9.5	
12.45			8.3	262	5.89	130.2	13.6	54.30	9.5	
12.50			—	251	5.90	130.1	13.8	—	9.5	
12.55			—	255	5.91	129.8	14.0	—	9.5	
1.00			4.4	252	5.91	129.8	14.1	54.30	9.5	
1.05										

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: N4001348.0006.00002 | Page: 1 of 1

Site Location: BETHPAGE NY | Date: 3 May 02

Site/Well No.: 175R | Replicate No.: — | Code No.: —

Weather: 70° sunny | Sampling Time: Begin 1.15 pm | End —

Evacuation Data	
Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	70'
Depth to Water (ft bmp)	54.25
Water-Level Elevation (ft)	—
Water Column in Well (ft)	15.75'
Casing Diameter/Type	4" (0.65)
Gallons in Well	10.25
Gallons Pumped/Bailed Prior to Sampling	(3v) 30.75
Sample Pump Intake Setting (ft bmp)	25'
Purge Time	begin 1.31 pm end 1.51 pm
Pumping Rate (gpm)	Q=2gpm T=>15 min 1v=>5 min
Evacuation Method	PeDI FLOW SUB.

Field Parameters	I	1v	2v	3v
Color				None
Odor				None
Appearance				clear
pH (s.u.)	6.74	6.35	6.39	6.25
Conductivity (mS/cm)	—	—	—	—
~~(µmhos/cm)~~ µS/cm	127.3	124.7	124	123.6
Turbidity (NTU)	17	9.8	6.3	3.3
Temperature (°C)	14.9	14.9	14.9	14.9
Dissolved Oxygen (mg/L)	—	—	—	—
~~Salinity (%)~~ TIME	1.35 pm	1.40	1.47	1.50 pm
Sampling Method	PeDI FLOW SUB.			
Remarks	—			

Constituents Sampled	Container Description	Number	Preservative
See C.O.C.			

Sampling Personnel: GW/CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	(4" = 0.65)
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. M001348.0000.00002 Well GM 18D Date 4/2/02

Screen Setting 290-300 Measuring Point Description TOC Casing Diameter (inches) 4"

Static Water Level 51.3 Measured Width _____ Well Materials X PVC ___ ST. Steel

Total depth 300 Pump On: 150 Pump Intake: 295

Purge Method Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: _____

Submersible _____

Other Bladder Bailer Type: — Sampled By: SH/CL

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
200	CC	500	57.31		5.63	121.9	32	266	6.9	16.1	
205		↓	—		5.37	121.5	—	273	7.2	16.3	
210			—		5.49	121.7	—	269	7.2	16.4	
215	DD		57.40		5.46	121.4	100	244	7.3	16.3	
220	DD		—		5.29	121.4	—	246	7.3	16.2	
225	CC		57.30		5.30	121.1	55	248	7.6	16.4	
230			—		5.30	121.4	—	251	7.6	16.4	
235			57.20		5.33	121.2	32	245	7.6	16.3	
240		↓	—		5.34	121.1	—	256	7.7	16.3	
245					5.30	121.0	21	256	7.7	16.4	

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: W. Grumman | Project No. 1W4001348.0006-TZ | Page 1 of

Site Location: Bethpage, NY | Date: 4/2/02

Site/Well No.: GM 18I | Replicate No. | Code No.

Weather: Clear, 40°, Windy | Sampling Time: Begin 255 | End 405

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	105'
Depth to Water (ft bmp)	94'
Water-Level Elevation (ft)	
Water Column in Well (ft)	11'
Casing Diameter/Type	4"
Gallons in Well	7.2
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ Packer Setting (ft bmp)	Press 90 PSI
Purge Time	begin 3:40 end 4:00
Pumping Rate (gpm)	
Evacuation Method	Bed Bladder Pump

Field Parameters	I	W	2U	3U
Color				
Odor				
Appearance				
pH (s.u.)	5.88	5.59	5.46	5.57
Conductivity (mS/cm)				
(µmhos/cm)	197	153.3	151.2	~~150.0~~
Turbidity (NTU)				3.4
Temperature (°C)	16.0	16.2	16.3	16.0
Dissolved Oxygen (mg/L)				
Salinity (%) Time	3.15	3.35	3.46	4.0
Sampling Method				

Remarks

Constituents Sampled	Container Description	Number	Preservative
DTW: 48.75			

Sampling Personnel: SH/CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

5.57 1600

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: 6RUMMW | Project No.: MW001319.0004.00002 | Page: 1 of 1

Site Location: Dethpage NY | Date: ~~6MW85~~ 27 March

Site/Well No.: 6MW85 | Replicate No.: | Code No.:

Weather: Sunny 55° | Sampling Time: Begin 2:50 | End:

Evacuation Data		Field Parameters	I	1	2	3
Measuring Point		Color				clear
MP Elevation (ft)		Odor				slight
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	67	pH (s.u.)	6.41	6.45	6.29	6.29
Depth to Water (ft bmp)	46.85	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	189.4	176.1	184.3	136.3
Water Column in Well (ft)	20.15	Turbidity (NTU)	>200	15	7.9	5.1
Casing Diameter/Type	2" (0.16)	Temperature (°C)	16.4	16.7	17.3	17.1
Gallons in Well	3.22	Dissolved Oxygen (mg/L)	3.03	3.06	3.09	3.12
Gallons Pumped/Bailed Prior to Sampling	3x → 9.66	Salinity (%)	Trc			
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 3:02 end	Remarks	slight odor			
Pumping Rate (gpm)	Q=1 T=9.10 V=3					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW, CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. M001348.0006.00002 | Page 1 of 1

Site Location: BETHPAGE NY | Date: 16 Apr 02

Site/Well No.: GM-20D | Replicate No.: — | Code No.: —

Weather: 85° clear | Sampling Time: Begin 11.00 am | End 12.49 pm

Evacuation Data (from 10 Oct 01)

Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	226'
Depth to Water (ft bmp)	215'
Water-Level Elevation (ft)	—
Water Column in Well (ft)	11'
Casing Diameter/Type	4"
Gallons in Well	7.2
Gallons Pumped/Bailed Prior to Sampling	22
Sample ~~Pump Intake~~ Setting ~~(ft bmp)~~	PACKER PRESSURE 105 PSI
Purge Time	begin 11.15 am end 12.47 pm
Pumping Rate (gpm)	—
Evacuation Method	DED. BLADDER PUMP

Field Parameters

	I	1V	2V	3V
Color				NONE
Odor				NONE
Appearance		SLIGHTLY TURBID		
pH (s.u.)	6.61	6.11	5.88	5.94
Conductivity (mS/cm)				
(µmhos/cm)	152.4	117.5	120.3	116.7
Turbidity (NTU)				117.6
Temperature (°C)	16.7	17.9	17.3	19.0
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: DED. BLADDER PUMP

Remarks: 5 GAL PAILS: 1111 ½

Constituents Sampled	Container Description	Number	Preservative
See C.O.C.			
INIT DTW: 43.70'			
DTW @ 11.47 am: 43.75'			
FINAL DTW: 43.65			

Sampling Personnel: SH/CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

LOG COMPLETED 1 May 02 from field notes by CL

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. NY001348.0006.00002 | Page 1 of 1

Site Location: BETHPAGE NY | Date: 16 Apr 02

Site/Well No.: GM-20I | Replicate No.: — | Code No.: —

Weather: 85° CLEAR | Sampling Time: Begin 1251 pm | End 2.45 pm

Evacuation Data (FROM 1 OCT 2001)

Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	105'
Depth to Water (ft bmp)	94'
Water-Level Elevation (ft)	—
Water Column in Well (ft)	11'
Casing Diameter/Type	4"
Gallons in Well	7.2
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake Setting (ft bmp)~~ PACKER PRESSURE	70 PSI
Purge Time	begin 1257 pm end 2.35 pm
Pumping Rate (gpm)	
Evacuation Method	DEDICATED BLADDER PUMP

Field Parameters

	I	1V	2V	3V
Color				~~colorless~~
Odor				odorless
Appearance				~~CLEAR~~ TURBID
pH (s.u.)	8.92	6.12	6.14	6.14 *
Conductivity (mS/cm)				
(umhos/cm)	193	276	297	258
Turbidity (NTU)				254
Temperature (°C)	15.8	16.5	15.9	15.5
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: DED. BLADDER PUMP

Remarks: 5 GAL PAILS : 1111 ½

* pH meter SUSPECTED TO BE FAULTY

Constituents Sampled	Container Description	Number	Preservative
see C.O.C.			
INIT. DTW : 41.25'			
FINAL DTW : 40.85'			

Sampling Personnel: SH / CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	(4" = 0.65)
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

LOG COMPLETED 1 May 02 from field notes by CL

p. 1 of 2

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M001348.0006 Task: 2 Well ID: GM 21D
Date: 29 Mar 02 Sampled By: SM, CL
Sampling Time: _____ Recorded By: CL
Weather: cloudy 50° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow / Bladder Pump
Casing Diameter: 4" Purge Rate: _____
Total Depth: 288 Total Volume Purged: _____
Depth to Water: 47.81 Pump Intake Depth _____
Water Column: _____ Pump on: 8.54 am Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
9.00	500		—	199	5.80	84.6	10.9	47.85	4.0	
9.05			—		5.39	58.3	11.2	—	1.0	
9.10			—	233	5.08	57.3	11.4	47.83	0.6	
9.15			—	249	5.02	51.3	11.5	—	0.55	
9.20			950	243	4.95	52.3	11.7	47.84	0.6	
9.25			900	251	4.99	53.8	11.8	—	0.8	
9.30			1100	253	4.92	55.3	11.8	47.84	1.0	
9.35			—	257	4.89	61.6	12.0	—	1.4	
9.40		9	1000	258	5.01	64.2	12.1	47.85	1.6	
9.45			—	—	—	—	12.1	—	1.9	
9.50			900	254	5.05	73.5	12.2	—	2.3	
9.55			—	259	5.03	76.7	12.1	47.84	2.4	
10.00			650	260	5.00	79.1	12.3	—	2.7	
.05			550	262	5.02	82.4	12.5	—	3.2	
.10			—	262	5.03	83.9	12.5	—	3.4	
.15			450	265	5.03	86.6	12.6	47.85	3.8	
.20			360	266	5.03	88.8	12.7	—	3.9	
.25			340	267	5.00	90.5	12.7	—	3.9	
.30			270	268	5.02	91.8	12.8	—	4.0	
10.35			—	268	4.97	93.7	12.9	—	4.2	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

.5G:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmpfrm.xls- Sheet1

p. 2 of 2

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M001348.0006 Task: 2 Well ID: GM 21D cont'd
Date: 29 Mar 02 Sampled By: SH, CL
Sampling Time: _____ Recorded By: CL
Weather: sunny 55° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow / bladder pump
Casing Diameter: 4" Purge Rate: _____
Total Depth: 289 Total Volume Purged: _____
Depth to Water: 47.81 Pump Intake Depth _____
Water Column: _____ Pump on: 8:54 am Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
10.40			210	271	5.02	94.9	12.8	47.85	4.4	
10.45			—	272	5.01	95.8	12.9	—	4.4	
10.50			160	272	5.03	97.1	12.9	—	4.6	
10.55			130	274	5.03	98.2	12.9	47.85	4.6	
11.00			—	276	5.02	99.4	12.9	—	4.7	
11.05			130	275	5.00	99.5	12.9	—	4.8	
11.10			100	278	5.03	100.1	12.9	47.85	4.9	
11.15			85	279	5.01	101.0	12.9	—	5.0	
11.20			80	280	5.01	101.1	13.0	—	5.0	
11.25			70	281	4.99	101.6	12.9	—	5.1	
11.30			70	—	5.00	101.5	12.8	—	—	
11.35			60	282	5.02	101.5	12.8	47.85	5.1	
11.40			55	283	4.99	101.9	12.9	—	5.1	

Well Secure: _____ Purge Water Disposal: _____
Color: blue Turbidity(qualitative): clear
odorless

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N7001348.0006.00002 (Grumman) | Project No. ← | Page 1 of ____

Site Location: Bethpage NY | Date: 29 Mar 02

Site/Well No.: GM 2I | Replicate No. ____ | Code No. ____

Weather: sunny, 50° | Sampling Time: Begin 1.00 | End ____

Evacuation Data		Field Parameters	I	1	2	3
Measuring Point	TOC	Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	140'	pH (s.u.)	8.19	9.31	9.39	9.50
Depth to Water (ft bmp)	129'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	168.2	180.9	182.9	182.9
Water Column in Well (ft)	11'	Turbidity (NTU)				1.9
Casing Diameter/Type	4"	Temperature (°C)	~~13~~ 12.1	11.9	11.9	11.8
Gallons in Well	7.2	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	22	Salinity (%)				
Sample ~~Pump Intake~~ Setting (ft bmp)	PACKER PRESSURE 90 PSI	Sampling Method	Pump Discharge			
Purge Time	begin ____ end ____	Remarks	DTW: 39.90			
Pumping Rate (gpm)						
Evacuation Method	Ded. Bladder Pump		HH - 5 Gal Pails			

Constituents Sampled	Container Description	Number	Preservative
see C.O.C			

Sampling Personnel: SH, CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: U. Commons | Project No.: 1V4001348.0006.T2 | Page: 1 of ____

Site Location: Bethpage NY | Date: 3/29/02

Site/Well No.: GM-21S | Replicate No.: ____ | Code No.: ____

Weather: Clear, 50° | Sampling Time: Begin 11:45 | End 12:20

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	67.00	pH (s.u.)	5.44	5.85	5.83	5.95
Depth to Water (ft bmp)	37.84	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	119	116	114	115
Water Column in Well (ft)	29.16	Turbidity (NTU)				9.1
Casing Diameter/Type	2" (.16)	Temperature (°C)	12.3	12.3	12.3	12.3
Gallons in Well	4.6	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	14	Salinity (%)	Time: 11.58	12.03	12.08	12.13
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 11.55 end 12.15	Remarks				
Pumping Rate (gpm)	Q = 1 gpm T = 15 mins					
Evacuation Method	U 1V = 5 MIAS					

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: SH/CC

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. M2.1348.0006.00003 | Page 1 of 1

Site Location: Bethpage NY | Date: 12 Apr 02

Site/Well No.: GM-23I | Replicate No. | Code No.

Weather: 60° cloudy | Sampling Time: Begin 3.00 | End 4.40

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	120'	pH (s.u.)	6.02	5.25	5.20	5.06
Depth to Water (ft bmp)	109'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	153.9	141.8	126.7	128.0
Water Column in Well (ft)	11	Turbidity (NTU)	CLEAR	CLEAR	CLEAR	CLEAR
Casing Diameter/Type	4"	Temperature (°C)	16.2	16.0	15.6	15.6
Gallons in Well	7.2	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	22	~~Salinity (%)~~	TNC	3.17	3.40	4.02	4.27
~~Sample Pump Intake Setting (ft bmp)~~ P	70PSI	Sampling Method				
Purge Time	begin 3.12 end 4.35	Remarks				
Pumping Rate (gpm)						
Evacuation Method	DED. BLADDER					

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW/CL

Well Casing Volumes

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

g point	ml	milliliter	NTU	Nephelometric Turbidity Units
	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
	msl	mean sea-level	s.u.	Standard units
ute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
ter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: M001348.0006.00002 | Page: 1 of 1

Site Location: Bethpage NY | Date: 12 Apr 02

Site/Well No.: GM-32S | Replicate No.: | Code No.:

Weather: 60° cloudy | Sampling Time: Begin 2:00 End 2.50

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	51
Depth to Water (ft bmp)	48
Water-Level Elevation (ft)	
Water Column in Well (ft)	3'
Casing Diameter/Type	4" (0.65)
Gallons in Well	2
Gallons Pumped/Bailed Prior to Sampling	6
Sample Pump Intake Setting (ft bmp)	46'
Purge Time	begin 2.15 end 2.45
Pumping Rate (gpm)	Q=½ T=12 1V=4
Evacuation Method	

Field Parameters	I	1v	2v	3v	4v
Color					
Odor					
Appearance					
pH (s.u.)	6.00	5.77	5.69	5.70	5.67
Conductivity (mS/cm)					
(µmhos/cm)	277	281	291	280	298
Turbidity (NTU)	7200	384	93.4	23.9	31.3
Temperature (°C)	16.2	17.4	17.9	18.0	17.8
Dissolved Oxygen (mg/L)					
~~Salinity (%)~~ TDS	2.19	2.23	2.27	2.31	2.38
Sampling Method					
Remarks					

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW/CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

(Rep 1)

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. NY001348.0006.00002 Well GM 33D2 Date 4/3/02

Screen Setting 500-520 Measuring Point Description _____ Casing Diameter (inches) 4"

Static Water Level 55.65 Measured Width _____ Well Materials X PVC ___ ST. Steel

Total depth 520 Pump On: 255 Pump Intake: _____

Purge Method Pump Off: 4.10 Volumes Purged _____

Centrifugal _____ Sample Time: _____

Submersible _____ Sampled By: SH/CL

Other Disp Bladder Filter Type: _____

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
~~1520~~											
05	0		—		6.36	114.2	0.80	91	4.6	16.9	
10			—		6.36	114.1	—	—	4.7	16.9	
15			—		6.33	113.5	—	106	4.8	16.9	
20	15		55.65		6.30	114.0	—	119	5.2	17.0	clear
25			—		6.26	113.7	—	124	5.4	17.1	
30			—		5.76	113.8	—	150	6.1	17.1	
35	30		—		5.66	114.5	—	171	6.0	17.0	
40			55.65		5.61	114.1	—	171	6.1	17.0	
~~45~~			—		5.72	116.0	—	190	6.1	16.9	
50	45		—		5.73	115.7	—	193	6.1	17.0	
55			—		5.75	115.9	—	195	6.1	17.0	10 gals
1600			—		5.65	115.8	—	198	6.1	16.9	0 CLEAR
~~05~~	~~60~~										

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. NH001398.0006.00002 Well GM 34D Date 4/3/02

Screen Setting 309-319 Measuring Point Description — Casing Diameter (inches) 2

Static Water Level 20.27 Measured Width — Well Materials PVC / ~~ST. Steel~~

Total depth 319 Pump On: 1320 Pump Intake: 314

Purge Method Pump Off: 2.35 Volumes Purged —

Centrifugal — Sample Time: —

Submersible — Sampled By: SH/CL

Other Bladder Bailer Type: —

Time	Minutes Elapsed	Rate (gpm) (ML)~~x~~	DTW	~~Gallons~~ Purged DTW	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
1325		500	←	20.27	6.60	195	—	38	1.25	15.7	
30			—	—	7.34	196	—	38	.5	15.2	
35			←	20.28	8.47	195	19	-74	.4	15.1	
40			—	—	7.82	213	—	-99	.3	15.0	
45			—	—	7.18	212	—	-91	.4	15.1	
50				—	6.80	211	—	-70	.4	15.0	
53		↓	—	20.28	6.53	211	23	-43	.4	15.0	
1400				—	6.31	207	—	-10	.5	15.0	
05				—	6.18	207	—	11	.5	15.1	5 gals
10				—	6.09	206	—	25	0.2	15.1	
15				20.28	6.06	206	8.5	32	0.2	15.0	
20				—	6.02	205	—	36	0.2	14.9	
1425				—	5.97	205	6.7	36	0.2	14.9	10 gals

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. NY001348.0006.00002 Well GM34D2 Date 3Apr02

Screen Setting 510-520 Measuring Point Description _____ Casing Diameter (inches) 4"

Static Water Level 22.10 Measured Width _____ Well Materials (PVC) ~~ST. Steel~~

Total depth 520 Pump On: 11.10 am Pump Intake: 515

Purge Method low flow Pump Off: 1.05 pm Volumes Purged _____

Centrifugal _____ Sample Time: _____

Submersible _____

Other Bladder Bailer Type: _____ Sampled By: SH, CL

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
11.20 AM			22.10		6.99	96.1	75	238	2.4	17.4	
11.25			—		7.21	81.7	—	226	0.9	17.1	
11.30			—		7.59	78.5	—	203	0.6	17.1	
11.35			22.12		8.09	77.4	34	173	0.4	16.7	
11.40	20		—		8.28	77.9	—	160	0.4	16.4	
11.45			—		8.54	78.9	—	141	0.3	16.3	
11.50			—		8.74	81.2	16	139	0.3	16.3	
11.55			22.15		8.82	82.8	—	119	0.3	16.5	
12.00	40		—		8.82	84.1	—	111	0.3	16.6	
12.05			—		8.05	87.5	450	126	0.7	17.2	Grey-brown turbidity
12.10			—		7.43	98.0	—	-50	1.0	17.2	
12.20	60		22.19		6.66	102.8	170	-47	2.0	16.9	
12.25	to		—		6.39	104.6	—	-39	2.3	16.3	
12.30			—		6.15	105.0	95	-39	2.6	16.1	
12.35			—		5.98	105.4	—	+22	2.7	16.0	
12.40			22.21	8	5.9	105.2	60	43	3.0	15.8	
12.50	90		—		5.84	105.4	55	54	3.0	15.5	
12.55			—		5.80	105.5	—	66	3.0	15.7	
1.00			22.21	9	5.83	104.6	50	71	3.1	16.2	
* Grey-brown Color											

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY000345.6.2 | Page: 1 of 1

Site Location: BETHPAGE NY | Date: 26 APR 02

Site/Well No.: GM-~~37D~~ 35D2 (SCL Intg, or) | Replicate No.: — | Code No.: —

Weather: 65° SUNNY | Sampling Time: Begin 1300 End 1520

Evacuation Data	
Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	530'
Depth to ~~Water~~ (ft bmp)	507'
PACKER	
Water-Level Elevation (ft)	
Water Column in Well (ft)	23'
Casing Diameter/Type	4"
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
Sample Pump Intake Setting (ft bmp)	225 PSI
Purge Time	begin 1300 end 1520
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER

Field Parameters	I	1V	2V	3V
Color				colorless
Odor				colorless
Appearance				clear
pH (s.u.)	6.59	6.28	6.61	7.44
Conductivity (mS/cm)				
(µmhos/cm)	2516	1178	1270	1322
Turbidity (NTU)				
Temperature (°C)	17.1	16.8	16.7	16.0
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				

Remarks: 5 gal PAILS: IIII
SPLIT W/ 42M
DTW: 46.01

Constituents Sampled	Container Description	Number	Preservative
VOC	40 mL VOA	2	—

Sampling Personnel: MS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. N4003.4S.0026.00002 | Page 1 of ____

Site Location: BETHPAGE NY | Date: 23 APR 02

Site/Well No.: GM 26-D | Replicate No.: — | Code No.: —

Weather: 50° P CLOUDY | Sampling Time: Begin 1600 | End 1110

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point	TOC	Color			colorless	
MP Elevation (ft)		Odor			odorless	
Land Surface Elevation (ft)		Appearance			clear	
Sounded Well Depth (ft bmp)	214'	pH (s.u.)	5.59	5.37	5.35	5.43
Depth to ~~Water~~ (ft bmp) PACKER	202'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	804	805	788	794
Water Column in Well (ft)	12'	Turbidity (NTU)				
Casing Diameter/Type	4"	Temperature (°C)	10.1	12.7	12.2	12.0
Gallons in Well	8	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	24	Salinity (%)				
Sample Pump Intake Setting (ft bmp) PACKER PRESSURE	110 PSI	Sampling Method				
Purge Time begin 1000 end 1110		Remarks	5 GAL PAILS: 111			
Pumping Rate (gpm)			SPLIT W/ HZM			
Evacuation Method	DED BLADDER		TB W/ 41.16			

Constituents Sampled	Container Description	Number	Preservative
VOC	40ml VOA	2	—

Sampling Personnel: MS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001318.6.2 | Page: 1 of ____

Site Location: BETHPAGE NY | Date: 23 APR 02

Site/Well No.: GM-36D2 | Replicate No.: ____ | Code No.: ____

Weather: 50° P. CLOUDY | Sampling Time: Begin 1130 End 1310

Evacuation Data	
Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	540'
Depth to Water (ft bmp)	318'
Water-Level Elevation (ft)	
Water Column in Well (ft)	221
Casing Diameter/Type	4"
Gallons in Well	15 gal
Gallons Pumped/Bailed Prior to Sampling	45
Sample Pump Intake Setting (ft bmp)	PACKER PRESSURE 235 PSI
Purge Time	begin 1130 end 1310
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER

Field Parameters	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	8.29	11.22	10.15	9.43
Conductivity (mS/cm)				
(µmhos/cm)	812	2900	1130	951
Turbidity (NTU)				
Temperature (°C)	10.9	12.1	12.1	13.0
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

Remarks: 5 GAL PAILS: IIII IIII
SPLIT W/ HZM
DTW: 43.84

Constituents Sampled	Container Description	Number	Preservative
VOC	40 mL VOA	2	____

Sampling Personnel: MS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: N4001348.6.2 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 25 APR 2002

Site/Well No.: GM-37D | Replicate No.: | Code No.:

Weather: 55° CLOUDY | Sampling Time: Begin 0840 End 1240

Evacuation Data	
Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	262'
Depth to ~~Water~~ PACKER (ft bmp)	240'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	4"
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
~~Sample Pump Intake~~ Setting (ft bmp)	PACKER PRESSURE 110 PSI
Purge Time	begin 0845 end 1235
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER

Field Parameters	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	4.87	4.66	4.74	4.83
Conductivity (mS/cm)				
(µmhos/cm)	1600	1680	1640	1640
Turbidity (NTU)				
Temperature (°C)	11.5	14.1	13.1	12.9
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

SPLIT W/ HZM

5 gal PAILS: IN IIII

DTW 45.24

Constituents Sampled	Container Description	Number	Preservative
VOC	40 mL VOA VIAL	2	

Sampling Personnel: MS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001348.6.2 | Page: 1 of 1

Site Location: BETHPAGE NY | Date: 26 APR 02

Site/Well No.: GM-37D2 | Replicate No.: — | Code No.: —

Weather: 50° SUNNY | Sampling Time: Begin 0720 End 1240

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point	TOC	Color			colorless	
MP Elevation (ft)		Odor			odorless	
Land Surface Elevation (ft)		Appearance			clear	
Sounded Well Depth (ft bmp)	~~530'~~ 390'	pH (s.u.)	5.38	5.10	5.22	5.09
Depth to ~~Water~~ (ft bmp) PACKER	~~587~~ 367'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	1481	1195	1954	1668
Water Column in Well (ft)	23'	Turbidity (NTU)				
Casing Diameter/Type	4"	Temperature (°C)	8.2	11.5	14.1	13.7
Gallons in Well	15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	4	Salinity (%)				
~~Sample Pump Intake Setting (ft bmp)~~ PACKER PRESSURE	180 PSI	Sampling Method				
Purge Time	begin 0720 end 1240	Remarks				
Pumping Rate (gpm)		5 GAL PAILS: IN ||||				
Evacuation Method	DED BLADDER	SPLIT W/ H2M				
		DTW: 45.58				

Constituents Sampled	Container Description	Number	Preservative
VOC	40 mL VOA	2	—

Sampling Personnel: MS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Grumman | Project No. NY001348.0000.12 | Page 1 of ____

Site Location: Bethpage, NY | Date: 4/18/02

Site/Well No.: GM 38D | Replicate No.: Rep-4 | Code No.: ____

Weather: Clear, 80° | Sampling Time: Begin 8:40 | End 11:00

Evacuation Data		Field Parameters	I	10	20	30
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	340'	pH (s.u.)	5.48	5.02	5.07	5.04
Depth to ~~Water~~ Packer (ft bmp)	317'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	160.4	101.1	100.3	96.9
Water Column in Well (ft)	23'	Turbidity (NTU)				
Casing Diameter/Type	4"	Temperature (°C)	21.0	20.9	21.9	20.2
Gallons in Well	15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45	Salinity (%)				
~~Sample Pump Intake~~ Packer ~~Setting (ft bmp)~~ Press	145 PSI	Sampling Method				
Purge Time	begin 9:00 end 16:45	~~Remarks~~ Time	9:05	9:35	10:09	10:42
Pumping Rate (gpm)						
Evacuation Method	Ded Bladder					

Constituents Sampled	Container Description
VOC	40 ML VIAL

~~Number~~ DTW	Time	~~Preservative~~ Amount Purged	Time
44.71	Initial	5	9:11
44.76	9:10	10	9:19
44.90	9:52	15	9:35
44.95	10:15	20	9:45
45.01	10:35	25	9:57
		30	10:07
		35	10:19
		40	10:30
		45	10:42

Sampling Personnel: SH

Well Casing Volumes

Gal./Ft.			
1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Grumman | Project No. 01348.0006.00002 | Page 1 of 1

Site Location: Bethpage, NY | Date: 4/18/02

Site/Well No.: 6M-38DR | Replicate No.: — | Code No.:

Weather: Sunny, 85° | Sampling Time: Begin 1100 End 1220

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	495'
Depth to ~~Water~~ Packer (ft bmp)	472
Water-Level Elevation (ft)	
Water Column in Well (ft)	23
Casing Diameter/Type	4"
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45.00
~~Sample Pump Intake~~ Packer Setting (ft bmp) Press	220 PSI
Purge Time	begin 1110 end 1400
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	10	20	30
Color				
Odor				
Appearance				
pH (s.u.)	4.83	4.80	5.11	5.35
Conductivity (mS/cm)				
(µmhos/cm)	80.7	78.4	79.0	79.1
Turbidity (NTU)				
Temperature (°C)	21.9	23.3	24.1	23.4
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ Turb				9.84
Sampling Method				
~~Remarks~~ Time	1114	1155	1230	

Constituents Sampled	Container Description	~~Number~~ DTW	Time	~~Preservative~~ Gals Purged	Time
VOC	40ML VOA VIAL	48.05	Initial	5	1130
		48.05	1120	10	1145
		48.05	1155	15	1155
		48.05	1240	20	1205
				25	1215
				30	1225
				35	1235
				40	1245
				45	1255

Sampling Personnel

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001321.1.2 | Page: 1 of ____

Site Location: BETHPAGE NY | Date: 4/17/02

Site/Well No.: GM-70D2 | Replicate No.: ____ | Code No.: ____

Weather: 90° SUNNY | Sampling Time: Begin 1155 End 1400

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	330'
Depth to ~~Water~~ (ft bmp) PACKER	308'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	4"
Gallons in Well	14.3
Gallons Pumped/Bailed Prior to Sampling	45
~~Sample Pump Intake~~ Setting (ft bmp)	PACKER PRESSURE 150 PSI
Purge Time	begin 1155 end 1400
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER PUMP

Field Parameters

	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	5.76	7.23	6.34	5.99
Conductivity (mS/cm)				
(µmhos/cm)	230	1010	1000	029
Turbidity (NTU)				
Temperature (°C)	24.7	24.3	24.3	25.9
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				

Remarks: 5gal buckets: IV III (45gal) SPLIT W/ HZM / BWD

Constituents Sampled	Container Description	Number	Preservative
DTW 47.28			
VOC	40mL VOA VIAL	2	

Sampling Personnel: MS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: N4001348.0006.2 | Page: 1 of 1

Site Location: BETHPAGE NY | Date: 25 Apr 2002

Site/Well No.: GM-71D2 | Replicate No.: | Code No.:

Weather: 50° RAINY | Sampling Time: Begin 1300 End 1515

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point	TOC	Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	464'	pH (s.u.)	6.19	6.35	5.10	5.3j
Depth to Water (ft bmp)	442'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	880	864	868	862
Water Column in Well (ft)	22'	Turbidity (NTU)				
Casing Diameter/Type	4"	Temperature (°C)	12.6	12.0	11.4	11.4
Gallons in Well	15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45	Salinity (%)				
Sample Pump Intake Setting (ft bmp)	PACKER PRESSURE 230 PST	Sampling Method				
Purge Time	begin 1300 end 1515	Remarks	5 GAL PAILS: IIIII			
Pumping Rate (gpm)			SPLIT W/ HZM3			
Evacuation Method	DED BLADDER PUMP		DTW: 47.84			

Constituents Sampled	Container Description	Number	Preservative
VOC	40mL VOA	2	—

Sampling Personnel: MS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. M00/348.0006.00002 Well GM-73D2 Date 4 Apr 02

Screen Setting 532-552 Measuring Point Description _____ Casing Diameter (inches) 4

Static Water Level 51.81 Measured Width _____ Well Materials (PVC) / ST. Steel

Total depth 552 Pump On: 3.15 Pump Intake: 542

Purge Method Pump Off: 4.20 **Volumes Purged** _____

Centrifugal _____ **Sample Time:** _____

Submersible _____

Other _____ Bailer Type: _____ Sampled By: SH/CL

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
3.20	0		51.84		5.39	165.6	11	277	0.85	12.0	
3.25			—		5.26	165.6	—	277	0.35	12.5	
3.30			—		5.25	165.5	—	268	0.30	12.5	
3.35	15		51.82		5.30	165.6	HIGH	261	7.9	12.6	YELLOW; HI-TURB
3.40			—	5	5.32	171.9	—	197	4.25	12.7	
3.45			—		5.18	169.8	450	211	4.85	12.6	
3.50	30		51.82		5.12	169.5	—	221	5.1	12.6	
3.55			—		5.06	168.8	75	221	5.2	12.6	
4.00			—	10	5.02	168.9	—	240	5.3	12.5	
4.05	45		—		5.01	168.3	38	247	5.3	12.6	
4.10			51.83		5.01	168.9	—	247	5.5	12.6	
4.15			—	13	—	—	30	—	—	—	SAMPLE
4.20	60										

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. M00134B.0006.00002 Well GM-74D Date 4 Apr 02

Screen Setting 295-305 Measuring Point Description — Casing Diameter (inches) 4

Static Water Level 50.25 Measured Width — Well Materials (PVC) / ST. Steel

Total depth 305 Pump On: 10.53 am Pump Intake: 300

Purge Method Pump Off: 11.55 Volumes Purged —

Centrifugal — Sample Time: —

Submersible —

Other — Bailer Type: — Sampled By: SM / CL

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
11.00 am			50.25		5.25	100.2	8.2	228	3.9	9.2	
11.05			—		4.94	99.0	—	263	5.6	10.6	
11.10			—		4.85	98.2	—	279	6.5	10.9	
11.15	15		50.25		4.90	98.4	34	~~281~~ 281	6.5	10.9	
11.20			—	4	4.84	98.3	—	285	6.4	10.9	(Reduced Rate)
11.25			—	-	4.83	97.9	-	288	6.4	11.1	
11.30	30		—		4.84	98.0	-	293	6.4	11.0	
11.35			50.25		4.84	98.6	—	295	6.4	11.1	
11.40			—		4.86	98.7	—	298	6.4	11.2	
11.45	45		—	8	4.84	98.7	9.6	296	6.6	11.4	
11.50			—	9	4.84	98.7	—	296	6.6	11.4	SAMPLED
~~11.55~~											
~~12.00~~	60										

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. NY001348.0006.00002 Well GM 74D2 Date 4/4/02

Screen Setting 542-562 Measuring Point Description — Casing Diameter (inches) 4"

Static Water Level 57.25 Measured Width — Well Materials X PVC ___ ST. Steel

Total depth 562 Pump On: 9.00 Pump Intake: 552

Purge Method Pump Off: 10.10 Volumes Purged ___

Centrifugal ___ Sample Time: ___

Submersible ___

Other Bladder Bailer Type: — Sampled By: SA/CC

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
9.05			57.27		5.86	35.8	34	226	4.1	8.6	
9.10			—		5.02	58.4	—	248	1.3	11.2	
9.15			—		5.07	59.3	—	251	1.2	11.4	
9.20	15		57.29		5.06	57.6	—	251	1.2	11.5	
9.25			—		5.18	56.4	—	255	1.7	11.6	
9.30			—	5	5.18	59.5	110	239	2.1	11.6	
9.35	30		—		5.15	60.1	—	245	2.3	11.7	
9.40			57.31		5.19	60.9	—	245	2.6	11.7	
9.45			—	8	5.18	62.2	55	247	2.4	11.8	
9.50	45		—	—	5.13	64.1	—	247	2.6	11.7	
9.55			—	—	5.17	66.5	—	246	2.7	11.7	
10.00			—	—	5.18	67.2	—	248	2.9	11.8	
10.05	60		57.33	13	5.13	69.8	20	246	3.0	11.8	

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. NM001349.0006.00002 Well GM-74I Date 4 Apr 07

Screen Setting 94-114' Measuring Point Description _____ Casing Diameter (inches) 4

Static Water Level 42.70' Measured Width _____ Well Materials (PVC) / ST. Steel

Total depth 114' Pump On: 1.45 pm Pump Intake: 104'

Purge Method Pump Off: 2.45 **Volumes Purged** _____

Centrifugal _____ **Sample Time:** _____

Submersible _____

Other _____ Bailer Type: _____ Sampled By: SH / CL

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW ft	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
1.50	0	550 ml/m	42.71		5.38	117.0	6.6	261	5.2	11.2	
1.55			—		5.50	116.3	~~6.4~~	262	6.4	11.5	
2.00			—		5.53	115.7	—	260	6.3	11.7	
2.05	15		42.74		5.54	115.7	—	260	6.3	11.7	
2.10			—		5.53	115.8	—	259	6.3	11.7	
2.15			—		5.52	115.8	—	261	6.4	11.7	
2.20	30		42.75		5.52	115.7	—	259	6.3	11.8	
2.25			—		5.51	115.7	—	~~263~~	6.3	11.8	
2.30			—		5.51	115.8	—	259	6.3	11.8	
2.35	45		42.75		5.51	115.7	4.3	259	6.3	11.8	

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M001348.0006 Task: 00002 Well ID: GM-75D2
Date: 10 Apr 02 Sampled By: GW, CL
Sampling Time: 11.10am Recorded By: CL
Weather: sunny, 65° Coded Replicate No.: Rep2

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate:
Total Depth: 525' Total Volume Purged:
Depth to Water: 41.40' Pump Intake Depth ~~520'~~ 515'
Water Column: Pump on: 11.46 AM Off: 12.57 pm
Gallons/Foot: Parameters Sampled:
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
11.50	0		4.3	243	5.83	192.5	15.6	41.40	1.2	
11.55			—	178	5.96	145.3	16.3	—	0.5	
12.00			—	133	5.93	~~135~~ 145.2	16.5	—	0.3	
12.05	15		—	112	5.92	145.4	16.7	41.35	0.4	
12.10		5	—	169	5.28	149.2	16.8	—	3.0	
12.15			—	211	5.20	151.5	16.9	—	3.0	
12.20	30		—	233	5.09	151.8	17.1	41.35	3.2	
12.25			10.2	244	5.05	151.9	17.1	—	3.2	
12.30			—	255	5.03	151.9	17.0	—	3.3	
12.35	45		—	263	5.00	151.3	17.2	—	3.0	
12.40		"	—	265	5.03	151.4	17.2	—	3.0	
12.45		10	—	269	5.01	151.8	17.2	—	3.0	
12.50	60	11.5-12	2.5	275	5.00	152.1	17.2	41.34	3.2	

Well Secure: Purge Water Disposal:
Color: Colorless Turbidity(qualitative): CLEAR
odorless

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. N400/348.0006.00002 Well GM-78I Date 9Apr02

Screen Setting 90'-110' Measuring Point Description — Casing Diameter (inches) 4"

Static Water Level 47.41 Measured Width — Well Materials (PVC) / ST. Steel

Total depth 110' Pump On: 12.40 Pump Intake: 100'

Purge Method Pump Off: — Volumes Purged —

Centrifugal — Sample Time: —

Submersible —

Other — Bailer Type: — Sampled By: GW/CL

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
12.45	0	300	47.42		5.72	230	1.8	301	7.3	17.5	
12.50			—		5.73	234	—	300	7.2	17.9	
12.55			—		5.72	238	—	294	7.15	18.2	
1.00	15		47.43		5.71	242	—	285	7.15	18.3	
1.05			—		5.70	243	—	279	7.15	18.2	CLEAR
1.10			—		5.70	246	—	270	7.15	18.3	
1.15	30		47.81		5.69	246	0.60	267	7.2	18.3	SAMPLED
1.20											
1.25											
1.30	45										

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. N400/348.0006.00002 | Page 1 of 1

Site Location: Bethpage NY | Date: 9 Apr 02

Site/Well No. GM-78S | Replicate No. | Code No.

Weather: Sunny 65° | Sampling Time: Begin 1.20 End 12.25

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	70' *
Depth to Water (ft bmp)	44.02' (from 7Sep01)
Water-Level Elevation (ft)	
Water Column in Well (ft)	26'
Casing Diameter/Type	4" (0.65) PVC
Gallons in Well	17
Gallons Pumped/Bailed Prior to Sampling	51
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 11.58 end 12.22
Pumping Rate (gpm)	Q=3 T=18 1V=6
Evacuation Method	

Field Parameters	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	5.88	5.80	5.54	5.55
Conductivity (mS/cm)				
(µmhos/cm)	390	365	396	386
Turbidity (NTU)	>200	28	9.4	6.2
Temperature (°C)	16.4	16.5	16.4	16.5
Dissolved Oxygen (mg/L)				
Salinity (%) TDS	12.00	12.06	12.12	12.18
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative
* M-Scope not operational, used water level from Sept 01, assumed to be higher			

Sampling Personnel

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. M001348.0006.00002 Well GM-79D Date 9 Apr 02

Screen Setting 280-290 Measuring Point Description _____ Casing Diameter (inches) 4

Static Water Level 47.08 Measured Width _____ Well Materials (PVC) / ST. Steel

Total depth 290 Pump On: 3.34 Pump Intake: 285

Purge Method Pump Off: 4.40 Volumes Purged _____

Centrifugal _____ Sample Time: _____

Submersible _____

Other _____ Bailer Type: _____ Sampled By: GW/CL

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
3.40	0		47.08		5.38	84.3	45	278	3.3	15.6	
3.45			—		5.01	74.9	>220	249	1.15	15.3	SLIGHTLY CLOUDY
3.50			47.09		5.37	79.0	>220	183	0.95	15.4	GRAY-ISH
3.55	15		—	4	5.26	75.7	—	181	1.1	15.5	
4.00			—		5.22	70.3	—	186	1.1	15.5	
4.05			—		5.21	69.7	—	189	1.0	15.6	
4.10	30		47.08		5.17	70.1	—	195	1.15	15.6	
4.15			—		5.15	70.1	450	198	1.1	15.6	
4.20			—		5.12	71.3	—	206	1.15	15.5	
4.25	45		—		5.11	71.2	370	207	1.0	15.6	
4.30			—	9	5.08	71.5	—	214	1.2	15.4	
4.35			—		5.06	72.1	—	219	1.0	15.2	
4.40	60		47.08	[illegible]	5.05	72.6	230	222	1.2	15.1	
4.45			—								SAMPLE (RAIN)
~~4.50~~			—								
											slightly cloudy odorless
					FINAL TURB: @ 4.45 → 210						

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Page 1 of 1

Project/No. M00134B.0006.00002 Well GM-79I Date 9 Apr 02

Screen Setting 170-180 Measuring Point Description _____ Casing Diameter (inches) 4

Static Water Level 45.65 Measured Width _____ Well Materials (PVC) / ST. Steel

Total depth 180 Pump On: 2.40 Pump Intake: 175

Purge Method Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: _____

Submersible _____

Other _____ Bailer Type: _____ Sampled By: GW/CL

Time	Minutes Elapsed	Rate (gpm) (ML)	DTW	Gallons Purged	pH	Cond. umhos ms/cm	TURB (NTUs)	Redox (mV)	Diss. O2 (mg/L)	TEMP. (C) (F)	REMARKS 3)
2.45	0	400	46.70		5.31	100.0	4.1	269	5.55	17.8	
2.50			—		5.37	101.1	—	279	4.30	17.4	
2.55			46.71		5.32	102.1	—	205	4.6	17.2	SLIGHTLY CLOUDY
3.00	15		—		5.20	100.2	—	217	4.7	17.0	
3.05			46.72		5.13	97.2	—	227	4.8	16.2	
3.10			—	5	5.09	96.5	—	236	4.8	16.1	
3.15	30		46.72		5.06	96.5	36	243	4.85	16.1	CLEAR
3.20			—		5.04	96.2	—	251	4.9	16.5	
3.25			—		5.04	96.2	—	259	4.9	16.6	
3.30	45		46.72	9	5.04	92.8	13	258	4.95	16.4	CLEAR

Lowflo.xls.xls
10/20/98

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M001348.0006 Task: 0002 Well ID: HN-24I
Date: 11Apr02 Sampled By: GW/CL
Sampling Time: 4.00 Recorded By: CL
Weather: 60° sunny Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow redi flow
Casing Diameter: 4" Purge Rate: 400
Total Depth: 158 Total Volume Purged:
Depth to Water: 62.12 Pump Intake Depth 153'
Water Column: Pump on: 4.15 Off: 5.09
Gallons/Foot: Parameters Sampled:
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

	Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
0	4.20	600		—	151	6.76	184	16.7	61.55	5.0	
	4.25	400		—	167	6.54	183	16.7	—	4.5	
	4.30			—	180	6.40	180	16.9	—	4.6	
15	4.35			—	182	6.35	266	16.9	61.65	4.7	
	4.38			—	190	6.24	269	16.7	—	4.6	
	4.45		4	—	193	6.18	265	16.8	61.75	4.75	
30	4.50			—	194	6.13	262	16.7	—	4.8	
	4.55			—	194	6.09	263	16.6	61.76	4.75	
	5.00			—	193	6.05	259	16.5	—	4.8	
45	5.05			51	194	6.03	259	16.5	61.78	4.8	

Well Secure:
Color: none odorless
Purge Water Disposal:
Turbidity(qualitative): —

G:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GW\smplfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00002 Well ID: HN-29D
Date: 11 Apr 02 Sampled By: GW/CL
Sampling Time: 11.20 Recorded By: CL
Weather: 60° sunny Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate:
Total Depth: 230 Total Volume Purged:
Depth to Water: 53.18 Pump Intake Depth 225'
Water Column: Pump on: 11.47 Off: 12.55
Gallons/Foot: Parameters Sampled:
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

	Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
	11.45			—	—	—	—	—	53.29		
0	11.50		~~0~~	-	-	-	-	-	-	~~7.~~	NO WATER yet
	11.55			-	128	7.09	165.1	15.8	~~53~~.33	7.1	
	12.00			-	96	8.66	168.7	16.2	—	7.0	
15	12.05		~~15~~	-	121	7.62	159.2	16.4	53.33	6.8	
	12.10			-	134	7.05	158.7	16.4	—	6.8	
	12.15			-	147	6.93	157.5	16.5	—	6.9	CLEAR
30	12.20		~~30~~	-	156	6.71	157.1	16.5	—	6.9	
	12.25		7	-	163	6.57	157.7	16.4	—	6.9	
	12.30			-	-	-	-	-	-	-	CLEAR
45	12.35		~~45~~	-	167	6.56	157.8	16.4	—	6.8	
	12.40			-	170	6.55	157.7	16.4	53.32	6.8	
	12.45			-	171	6.52	157.8	16.3	53.32	6.9	
60	12.50		~~60~~	1.5	172	6.49	157.2	16.5	53.32	6.9	

M scope not available

Well Secure: Purge Water Disposal:
Color: Turbidity(qualitative):

S:\G:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmpfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N001348.0006 Task: 00002 Well ID: HN-29I
Date: 11 Apr 02 Sampled By: GW/CL
Sampling Time: 1.00 pm Recorded By: CL
Weather: 60° sunny Coded Replicate No.: —

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow redi flow
Casing Diameter: 4" Purge Rate: See below
Total Depth: 140' Total Volume Purged:
Depth to Water: 52.85 Pump Intake Depth 135'
Water Column: ~87' Pump on: 1.20 pm Off: 3.07
Gallons/Foot: Parameters Sampled:
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1.30	400		—	24	10.01	399	16.5	54.64	6.35	
1.38			—	18	10.06	401	16.6	54.66	5.4	
1.41			—	17	10.08	400	16.7	—	5.8	
1.45		3	—	16	10.10	400	16.7	54.68	5.6	SHUT DOWN PUMP
1.50	—	—	—	—	—	—	—	—	—	
1.55	1GAL/MIN		—	—	10.06	—	—	—	—	BEGIN 55 GAL PURGE
2.05		10	—	—	9.94	—	—	—	—	
2:15	~2GPM	30	—	—	9.86	—	—	—	—	
2:25		40	—	—	9.71	—	—	—	—	
2:35		55	—	—	9.63	—	—	—	—	
			—	—		—	—	—	—	
2.45	500 ml/min	60	—	51	9.83	268	16.7	68.18	7.8	
2.50			—	47	9.74	240	16.9	66.81	7.9	
2.55			—	48	9.66	217	16.8	66.55	8.0	
3.00		65	2.1	50	9.59	209	16.7	65.61	8.0	

Well Secure: Purge Water Disposal:
Color: none Turbidity(qualitative): clear
odorless

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log GRUMMAN

Project Number: M001348.0006 Task: 00002 Well ID: HN-40I
Date: 25 Mar 02 Sampled By: GW, CL
Sampling Time: _____ Recorded By: CL
Weather: cloudy, 45° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow
Casing Diameter: 4" Purge Rate: 200 ml/min
Total Depth: 118' Total Volume Purged: _____
Depth to Water: ~~54.80~~ Pump Intake Depth _____
Water Column: ~~63.20'~~ Pump on: 3.08 Off: 3.55
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
3.05	0							54.80		
3.10	500		—	245	5.48	209	13.5	54.85	7.1	
3.15	"		—	259	5.46	208	14.9		6.5	
3.20	"		—	264	5.47	208	15.5	54.80	5.3	
3.25	"		—	266	5.46	210	15.3	"	5.4	
3.30	"		—	265	5.44	209	15.1	54.83	5.7	
3.35	"		—	263	5.41	209	15.2	"	5.3	
3.40	"		—	264	5.39	209	15.3	"	5.5	
3.45	"		—	264	5.35	207	15.5	54.83	5.4	

Well Secure: _____ Purge Water Disposal: _____
Color: colorless Turbidity(qualitative): clear

.5G:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmpfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

G Rumman

Project: M001348.0006 | Project No.: 00002 | Page: 1 of 1

Site Location: Bethpage NY | Date: 25 Mar 02

Site/Well No.: MW-40S | Replicate No.: — | Code No.: —

Weather: overcast, 45° | Sampling Time: Begin 14:30 2:30 pm End 2:45

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	59'
Depth to Water (ft bmp)	55'
Water-Level Elevation (ft)	
Water Column in Well (ft)	4'
Casing Diameter/Type	4" (0.65)
Gallons in Well	2.6
Gallons Pumped/Bailed Prior to Sampling	7.8 (~8)
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 2.30 end 2.40
Pumping Rate (gpm)	Q=1 T=8 V=3
Evacuation Method	

Field Parameters	I	1	2	3
Color				colorless
Odor				—
Appearance			slightly cloudy	
pH (s.u.)	6.11	5.62	5.56	5.53
Conductivity ~~(mS/cm)~~ eH				
(µmhos/cm)	169	148.3	140.5	139.1
Turbidity (NTU)				
Temperature (°C)	12.3	14.5	14.6	14.6
Dissolved Oxygen (mg/L)				
Salinity ~~(%)~~ ppm	2.30	2.33	2.16	2.39
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW, CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

HN

Project Number: M00139B.0006 Task: # 00002 Well ID: ~~GM~~-42I

Date: 26 MAR 02 Sampled By: GW, CL

Sampling Time: _____ Recorded By: CL

Weather: rainy, 40° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: LWV / low-flow

Casing Diameter: 4" Purge Rate: see below

Total Depth: 110 Total Volume Purged: 40 GAL + 10L

Depth to Water: 56.82 Pump Intake Depth _____

Water Column: 53.18 Pump on: 3.35 pm Off: 4.40 pm

Gallons/Foot: _____ Parameters Sampled: _____

Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
3.35pm	2 GAL/MIN				10.17	512	12.4			
~~3.40pm~~					10.08					
3.44pm					9.69	271	13.4			
3.48pm					9.59	175	13.7			
3.52		~~40 GAL~~			9.39	224	13.7	58.20		
~~3.56~~								~~59.1~~		
4.00	400ML/MIN			118	9.55	214	14.5	56.90	4.5	
4.05	"			112	9.52	208	13.7	56.90	4.4	
4.10	"			107	9.52	209	13.3		4.2	
4.15	"			105	9.58	212	12.9		4.3	
4.20	"			100	9.63	213	12.8	56.86	5.4	
4.25	"			96	9.69	222	12.7	56.85	5.4	
~~4.30~~										

Well Secure: _____ Purge Water Disposal: _____

Color: colorless Turbidity(qualitative): clear

odorless

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: NM001348.0006 | Project No.: 0002 | Page: 1 of ____

Site Location: Bethpage NY | Date: 25 Mar 02

Site/Well No.: ~~HN-40I~~ HN-42S | Replicate No.: ____ | Code No.: ____

Weather: cloudy, 45° | Sampling Time: Begin 4.10pm End 4.20

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	60
Depth to Water (ft bmp)	57.54
Water-Level Elevation (ft)	
Water Column in Well (ft)	2.46
Casing Diameter/Type	4" (0.65)
Gallons in Well	1.6
Gallons Pumped/Bailed Prior to Sampling	4.8 ~5
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 4.11 end 4.16
Pumping Rate (gpm)	Q=1 T=5 V=1.5
Evacuation Method	

Field Parameters	I	1	2	3
Color				slightly yellow
Odor				—
Appearance				slightly dark
pH (s.u.)	5.52	5.48	5.49	5.45
Conductivity (mS/cm)				
(µmhos/cm)	266	263	265	255
Turbidity (NTU)				
Temperature (°C)	13.4	13.4	14.2	14.1
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ Time	4.11.30	4.13.00	4.14.30	4.16.00
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW, CV

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: M001348.0006.00002 | Page: 1 of 1

Site Location: Bethpage NY | Date: 12Apr02

Site/Well No.: ~~GM~~ MW-16F | Replicate No.: | Code No.:

Weather: 60s cloudy | Sampling Time: Begin 10.50 End 11.45

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	58
Depth to Water (ft bmp)	51.87
Water-Level Elevation (ft)	
Water Column in Well (ft)	6.13
Casing Diameter/Type	4" PVC (0.65)
Gallons in Well	4
Gallons Pumped/Bailed Prior to Sampling	~~(5x)~~ ~~12~~ 20
Sample Pump Intake Setting (ft bmp)	54
Purge Time	begin 11.12 end 11.36
Pumping Rate (gpm)	Q=1.5 T=~~4~~ 14 1V=3
Evacuation Method	

Field Parameters

Field Parameters	I	1v	2v	3v
Color				
Odor				
Appearance				
pH (s.u.)	7.45	6.27	6.06	5.91
Conductivity ~~(mS/cm)~~ eH (µmhos/cm)	153.1	149.7	152.4	168.2
Turbidity (NTU)	>200	>200	181	140
Temperature (°C)	14.8	16.6	16.7	16.7
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ TIME	11.13	11.18	11.20	11.25
Sampling Method				

Remarks:

Constituents Sampled	4v (t= 11.28)	5v (t= 11.32)	Container Description	Number	Preservative
pH	~~6.06~~ 5.85	5.74			
COND	145.3	172.3			
T	~~16.8~~ 16.1	17.0			
TVMS	36.7	21.1			

Sampling Personnel: GW/CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: 6 RUM MAN | Project No.: M001348.0006.00002 | Page: 1 of 1

Site Location: Bethpage NY | Date: 12 Apr 02

Site/Well No.: MW-2-6F | Replicate No.: | Code No.:

Weather: 60° cloudy | Sampling Time: Begin 12.12pm End 12.52

Evacuation Data		Field Parameters	I	1v	2v	3v
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	59	pH (s.u.)	6.09	6.08	6.12	6.06
Depth to Water (ft bmp)		Conductivity ~~(mS/cm)~~ (µmhos/cm)	196	184	220	206
Water-Level Elevation (ft)	50.60	Turbidity (NTU)	>200	>200	157	38
Water Column in Well (ft)	8.4	Temperature (°C)	16.0	15.8	15.9	15.8
Casing Diameter/Type	4" (0.65)	Dissolved Oxygen (mg/L)				
Gallons in Well	5.5	~~Salinity (%)~~ TDS	12.24	12.28	12.32	12.36
Gallons Pumped/Bailed Prior to Sampling (3v)		Sampling Method				
Sample Pump Intake Setting (ft bmp)		Remarks				
Purge Time	begin 12.22pm end 12.45					
Pumping Rate (gpm)	Q=1.5 1v=4					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
4v (t= 12.40)			
pH 6.19			
COND 212			
T 15.5			
TDS 16.7			

Sampling Personnel: GW/CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Grumman | Project No. NY001348.0006.12 | Page 1 of ____

Site Location: Bethpage, NY | Date: 3/27/02

Site/Well No.: MW-38 | Replicate No. ____ | Code No. ____

Weather: Clear, Windy 45° | Sampling Time: Begin 1095 | End ____

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	55' (45-55)
Depth to Water (ft bmp)	40.18
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.82
Casing Diameter/Type	~~4" (.65)~~ 2" (.16)
Gallons in Well	2.4
Gallons Pumped/Bailed Prior to Sampling	7.2
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	Q = 1 GPM
Evacuation Method	I = 8 min IV = 3 min

Field Parameters	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	6.63	6.79	6.02	5.91
Conductivity (mS/cm)				
(µmhos/cm)	142.9	129.0	133.6	134.9
Turbidity (NTU)	>200	100	23	9.2
Temperature (°C)	15.6	15.9	16.5	16.6
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
~~Time~~ Remarks	1105	1108	1111	1114

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW/SH

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS G&M, Inc.

Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00003 Well ID: MW52D
Date: 15 Dec 2002 Sampled By: MS SH
Sampling Time: 1405 Recorded By: MS
Weather: 75° SUNNY Coded Replicate No.: —

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

Purging Information
Casing Material: Purge Method: LOW FLOW BLADDER
Casing Diameter: 2" Screen Interval (ft bmp): Top 386 Bottom 371
Sounded Depth (ft bmp): 381.8 Pump Intake Depth (ft bmp): 380
Depth to Water (ft bmp): 61.80 Purge time Start: 1305 Finish: 1405

Field Parameter Measurements Taken During Purging

Time	Minutes Elapsed	Rate (mL/min)	Volume Purged	Temp (°C)	pH (SI Units)	Conductivity (mS/cm)	REDOX (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)	Comments
1305	0	200	0	20.3	5.80	317	221	1.2	—	61.80	
1310	5	"	—	17.4	5.70	281	231	1.1	—	—	
1315	10	"	—	16.7	5.54	274	236	0.7	—	—	
1320	15	"	—	16.3	5.55	271	236	0.6	—	61.81	
1325	20	"	—	16.1	5.49	268	240	1.8	—	—	
1330	25	—	—	—	—	—	—	—	—	—	
1335	30	"	—	16.3	5.29	269	254	3.1	—	61.82	
1340	35	"	—	16.4	5.27	270	257	3.2	—	—	
1345	40	"	—	16.4	5.26	270	259	3.2	—	—	
1350	45	"	—	16.3	5.26	268	261	2.8	—	61.80	
1355	50	"	—	16.6	5.25	262	267	3.0	—	—	
1400	55	"	—	16.6	5.25	265	264	3.1	—	—	
1405	60	"	10	16.6	5.25	265	266	3.2	3338	61.80	

Sample Condition Color: colorless Odor: none Appearance: turbid
Sample Collection

Parameter	Container	No.	Preservative
VCM	40mL VOA	2	

PID Reading —

Comments

ARCADIS G&M, Inc.

Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00003 Well ID: MW-52I
Date: 15 APR 2002 Sampled By: MS
Sampling Time: 1700 Recorded By: MS
Weather: 75° SUNNY Coded Replicate No.: —

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

Purging Information
Casing Material: _____ Purge Method: LOW FLOW BLADDER
Casing Diameter: 2" Screen Interval (ft bmp): Top 220 Bottom 235
Sounded Depth (ft bmp): 235 Pump Intake Depth (ft bmp): 227
Depth to Water (ft bmp): 60.62 Purge time Start: 1535 Finish: 1700

Field Parameter Measurements Taken During Purging

Time	Minutes Elapsed	Rate (mL/min)	Volume Purged	Temp (°C)	pH (SI Units)	Conductivity (mS/cm)	REDOX (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)	Comments
1540	0	375	0	20.24	6.28	76.8	252	8.94	34.8	60.70	
1545	5	600	—	17.50	5.72	66.7	247	7.03	40.4	"	
1550	10	410	—	17.92	5.75	67.9	238	6.02	33.5	"	
1555	15	430	—	18.05	5.67	68.5	231	5.35	30.8	"	
1600	20	420	2.5	18.10	5.63	68.9	228	4.92	24.1	"	
1605	25	430	—	18.00	5.59	69.2	223	4.51	37.5	"	
1610	30	"	—	17.88	5.57	69.7	218	4.15	44.2	"	
1615	35	"	—	18.04	5.55	69.7	213	3.86	44.6	60.66	
1620	40	"	5	17.77	5.54	70.3	210	3.30	116.7	"	
1625	45	"	—	17.84	5.53	70.6	206	3.00	124.2	"	
1630	50	"	—	17.86	5.53	70.9	203	2.73	131.0	60.67	
1635	55	"	—	17.85	5.52	71.3	201	2.39	130.2	"	
1640	60	"	7.5	17.75	5.50	71.5	201	2.26	130.6	"	
1645	65	"	—	17.71	5.50	71.6	201	2.10	87.6	"	
1650	70	"	—	17.57	5.49	71.8	201	1.96	86.9	60.67	
1655	75	"	—	17.43	5.48	71.7	202	1.96	89.8	60.70	
1700	80	"	10.0	17.16	5.48	72.2	203	1.89	92.0	"	

Sample Condition Color: colorless Odor: slight Appearance: cloudy
Sample Collection

Parameter:	Container:	No.	Preservative:
VOA	40 mL VOA VIAL	2	—

PID Reading —
Comments SPLIT SAMPLE w/ RCA

ARCADIS G&M, Inc.

Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00003 Well ID: MW-35
Date: 16 APR 2002 Sampled By: MS
Sampling Time: 1516 Recorded By: MS
Weather: 75° SUNNY Coded Replicate No.: ——

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

Purging Information
Casing Material: —— Purge Method: LOW FLOW BLADDER
Casing Diameter: 2" Screen Interval (ft bmp): Top 128 Bottom 143
Sounded Depth (ft bmp): 143 Pump Intake Depth (ft bmp): 133
Depth to Water (ft bmp): 60.68 Purge time Start: 1446 Finish: 1516

Field Parameter Measurements Taken During Purging

Time	Minutes Elapsed	Rate (mL/min)	Volume Purged	Temp (°C)	pH (SI Units)	Conductivity (mS/cm)	REDOX (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)	Comments
1446	0	440	.5	19.29	6.68	111.3	242	10.47	47.2	60.90	
1451	5	"	1	16.82	6.46	88.2	247	17.45	21.5	60.87	
1456	10	460	1.5	16.43	6.47	89.4	246	13.60	45.7	60.80	
1501	15	"	2	16.38	6.44	87.1	247	12.93	99.3	60.80	
1506	20	"	3	16.6	6.43	85.5	246	13.29	35.5	60.76	
1511	25	450	4	16.27	6.41	85.8	247	14.58	31.3	60.81	
1516	30	"	5	16.42	6.44	85.8	246	13.71	17.3	60.80	

Sample Condition Color: colorless Odor: slight Appearance: clear
Sample Collection

Parameter:	Container:	No.	Preservative:
VCM	40 mL VOA VIAL	2	——

PID Reading ——
Comments SPLIT SAMPLE W/ CRA

1 of 2

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

* see below

Project Number: M001348.0006 Task: 00002 Well ID: N-10627 S

Date: 10 April 02 Sampled By: GW/CL

Sampling Time: 1055 pm Recorded By: CL

Weather: sunny 65 Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder

Casing Diameter: 4" Purge Rate:

Total Depth: 295' Total Volume Purged:

Depth to Water: 37.92' Pump Intake Depth 292-293'

Water Column: Pump on: 1.22 pm Off: 3:50 pm

Gallons/Foot: Parameters Sampled:

Gallons in Well:

FIELD PARAMETER MEASUREMENTS

	Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
0	1.25 pm			32.1	190	6.51	125.8	16.1	39.40	1.0	
	1.30			—	150	7.26	121.3	16.4	—	0.4	
	1.35			—	91	7.68	101.7	16.4	39.55	0.3	MED. GRAY TURBIDITY
15	1.40			>200	-31	8.19	91.6	16.2	40.17	4.3	FLOW CELL OVERFLOW
	1.45					PUMP TURNED DOWN					
	1.50	2.00 pm	5			STARTED PUMP AGAIN, PULLED PUMP					
30	1.55					REPAIRED KINKED GAS LINE					
	2.00										
	2.05										
45	2.10			*	NO	SAMPLE					
	2.15										
	2.20										
60	2.25										

Well Secure: Purge Water Disposal:

Color: Turbidity(qualitative):

2 of 2

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M001318.0006 Task: 00002 Well ID: N-10627
Date: 10 Apr 02 Sampled By: GW/CL
Sampling Time: 4.00 Recorded By: CL
Weather: Sunny, 65° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder (grey plastic pump) replaced previous pump
Casing Diameter: 4" Purge Rate:
Total Depth: 295' Total Volume Purged:
Depth to Water: 37.60 Pump Intake Depth 292'
Water Column: Pump on: 4.15 Off: 5.25
Gallons/Foot: Parameters Sampled:
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
4.20	0		—	-19	8.50	103.8	16.1	—	—	
4.25			51.7	-28	8.46	112.6	16.0	39.00	0.7	
4.30			—	-36	8.37	116.0	16.0	39.00	0.5	
4.35	15		—	-56	8.42	101.1	15.9	38.98	0.4	
4.40			—	-62	8.51	109.5	15.9	—	0.5	
4.45			—	-49	8.37	122.4	15.9	38.96	0.9	
4.50	30		—	-33	8.21	127.3	K.0	—	1.3	
4.55			—	-17	8.15	129.2	15.9	38.94	2.1	
5.00			—	-8	8.10	131.3	15.9	—	2.3	
5.05	45	5	—	-2	8.05	134.1	15.9	39.94	2.5	
5.10			~~58.3~~	7	8.00	133.9	15.8	—	2.7	
5.15			50.3	12	7.96	137.1	15.8	38.96	2.7	
~~5.20~~	~~60~~									
					SAMPLED					

Well Secure: Purge Water Disposal:
Color: Colorless Turbidity(qualitative): CLEAR
odorless

S:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmpfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: NY-001348-0006.0002 | Project No. | Page 1 of 1

Site Location: Bethpage | Date: 3-27-02

Site/Well No.: N-10631 | Replicate No. | Code No.

Weather: CLEAR, 60 | Sampling Time: Begin 1:00 End 2:40

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67
Depth to Water (ft bmp)	44.20
Water-Level Elevation (ft)	
Water Column in Well (ft)	22.8
Casing Diameter/Type	2" (0.16)
Gallons in Well	3.64
Gallons Pumped/Bailed Prior to Sampling	11.
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 2:05 end 2:30
Pumping Rate (gpm)	Q=1 T=12 V=4
Evacuation Method	

Field Parameters	I	1	2	3
Color				—
Odor				slight
Appearance				—
pH (s.u.)	6.59	6.49	6.37	6.31
Conductivity (mS/cm)	~~#1~~			
(µmhos/cm)	174	155.6	152.2	150.4
Turbidity (NTU)	>200	24	14	9.8
Temperature (°C)	15.5	15.7	15.9	16.0
Dissolved Oxygen (mg/L)				
Salinity (%) Time 2:07pm		2.11	2.15	2.19
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW, CL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: M00348.0006.00002 | Page: 1 of 1

Site Location: Bethpage NY | Date: 26 Mar 02

Site/Well No.: N10634 | Replicate No.: | Code No.:

Weather: rainy, 40° windy | Sampling Time: Begin 2:20 | End:

Evacuation Data		Field Parameters	I	1	2	3
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	67	pH (s.u.)	7.04	6.61	6.03	5.62
Depth to Water (ft bmp)	44.88	Conductivity (mS/cm)	185.4	178	170.2	175
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	22.12	Turbidity (NTU)				
Casing Diameter/Type	2" (0.16)	Temperature (°C)	11.0	13.1	13.3	13.9
Gallons in Well	(3x) 3.54	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	10.62 N/A	~~Salinity (%)~~ TIME	2.26	2.30	2.34	2.38
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 2.25 end	Remarks				
Pumping Rate (gpm)	Q=1 T=12 V=4					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW, JL

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

NYSDEC 053760

NYSDEC 053761

APPENDIX C

Appendix C

Chain Of Custody Records

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001348.0006.00002

Project Location OLEAN NY

Laboratory SEVERN TRENT - SKELTON

Project Manager D. STERN

Sampler(s)/Affiliation GW, CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA 250 mL ASP (UNP)	Remarks	Total
HN-405	L	25 MAR 02		2		2
HN-401	L	"		2		2
HN-425	L	"		2		2
FB021502	L	"		2		2
TB021502	L	"		2		2
					Total No. of Bottles/ Containers	10

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

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 25 MAR 02	Time 5pm		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 D. STERN

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

AG 05-0597

NYSDEC 053763

ARCADIS GERAGHTY&MILLER

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

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name NY003648.0006.00002

Project Location BETHPAGE NY

Laboratory SEVERN-TRENT SHARTON

Project Manager DAVE STERN

Sampler(s)/Affiliation E.W. CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA (UWD)						Remarks	Total
GM-16SR	L	3-26-02		2							2
N-10634				2							2
MW-42I				2							2
TB-3-26-02				2							2
FB-3-26-02				2							2
										* should read GM-16I CL 3/Mar/02	

Total No. of Bottles/ Containers 10

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

				Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS G&M	Date 3/27/02	Time 6:00	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 DAVE STERN

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

AG 05-0597

NYSDEC 053764

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001348.0006.000002

Project Location Bethpage NY

Laboratory SEVERN TRENT - Shelton CT

Project Manager D STERN

Sampler(s)/Affiliation GW, CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL vial 15-1 ASP (MP)	500mL plastic cool (HNO3)	500mL plastic pres cool (HNO3)				Remarks	Total
GM-16SR	L	27 Mar 02		2	1	1					4
MW-3R	L	"		2	1	1					4
MW-26S1	L	"		2	1	1					4
GM-18S	L	"		2	1	1					4
FB032702	L	"		2	1	—					3
TB032702	L	"		2	—	—					2

Total No. of Bottles/ Containers: 21

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

Relinquished by: GM Mpc	Organization: ARCADIS	Date 27 Mar 02	Time 5pm	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 DAVID STERN

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

AG 05-0597

NYSDEC 053765

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name: 30013458.0006.00002

Project Location: Bethpage, NY

Laboratory: STL

Project Manager: David Stern

Sampler(s)/Affiliation: STH/CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ML VOA VIAL (UNP) VOCs NYSDEC ASP Method 95-1	Remarks	Total
GM-15S	L	3/28/02		2		2
GM-15I				2		2
GM-15D				2		2
GM-15D2				2		2
FB 3/28/02				2		2
TB 3/28/02				2		2

Total No. of Bottles/Containers: 12

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

					Seal Intact?
Relinquished by: Shawn Hurley	Organization: Arcadis G&M	Date 3/28/02	Time 1630		
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 05-0597

NYSDEC 053766

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name NY001348.0006.00002

Project Location Bethpage, NY

Laboratory STL

Project Manager David Stasko

Sampler(s)/Affiliation SH/CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ML VOA VIAL (HNO3) VOC (NYSDEC 95-1)						Remarks	Total
GM-21S	L	3/29/02		2							2
GM-21I				2							2
GM-21D				2							2
TB 3/29/02				2							2
FB 3/29/02				2							2
										Total No. of Bottles/ Containers	10

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

Relinquished by: Steven Dentino	Organization: Arcadis G&M	Date 3/29/02	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 ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

NYSDEC 053767

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001348.0006.0002

Project Location Bethpage, NY

Laboratory STL

Project Manager David Stern

Sampler(s)/Affiliation SH/CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ML VOA VIAL (4 NP) VOCs	40 ML VOA VIAL (UNP) VCM					Remarks	Total
GM 17I	L	4/2/02		2	2						4
GM 17D				2	2						4
GM 18I				2	2						4
GM 18D				2	2						4
FB 4/2/02				2	2						4
TB 4/2/02				2							2

Total No. of Bottles/ Containers: 22

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

Relinquished by: Shawn Nealy	Organization: Arcadis G+M	Date 4/2/02	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 FED-EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

NYSDEC 053768

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name: NY001348.0006.00002

Project Location: Bethpage, NY

Laboratory: STL

Project Manager: David Stern

Sampler(s)/Affiliation: SH/CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ML VOA VIAL (UNP) VOC	Remarks	Total
GM 34D	L	4/3/02		2		2
GM 34DZ				2		2
GM 33DZ				6		6
FB 4/3/02				2		2
TB 4/3/02				2		2
REP-1				2		2
					Total No. of Bottles/ Containers	16

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

				Seal Intact?
Relinquished by: Shawn Kelly	Organization: Arcadis G&M	Date 4/3/02	Time 1700	
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:

+ Please use Sample GM 33DZ for a MS/MSD.

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

AG 05-0597

NYSDEC 053769

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name: 74001348.0006.00002

Project Location: Bethpage NY

Laboratory: STL

Project Manager: David Steen

Sampler(s)/Affiliation: SH/CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 8260 VOA VIAL (HCl)						Remarks	Total
GM 74T	L	4/4/02		2							2
GM 74D				2							2
GM 74DZ				2							2
GM 73DZ				2							2
EB 4/4/02				2							2
TB 4/4/02				2							2

Total No. of Bottles/ Containers: 12

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

					Seal Intact?
Relinquished by: [signature]	Organization: Arcadis G&M	Date 4/4/02	Time 1709		
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 05-0597

NYSDEC 053770

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001348-0006.0002

Project Location BETHPAGE NY

Laboratory SEVERN-TRENT SHELTON

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation G.W., C.L.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ML VOA	1L AMB (VOC)	500ML PLASTIC (METALS)				Remarks	Total
GM-78S	L	4-9-02		2	1						3
GM-78I				2	1						3
GM-79I				2							2
GM-79D				2							2
FB-4-9-02				2	1						3
TB 4-9-02				2							2

Total No. of Bottles/Containers 15

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

				Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 4/9/02	Time 5:30	
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: REPORT TO DAVE STERN

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

AG 05-0597

NYSDEC 053771

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY 001378.0006.00002

Project Location BETHPAGE NY

Laboratory SEVERN TRENT LABS

Project Manager CHRIS SCHLOSSMACHER

Sampler(s)/Affiliation G.W. CC

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1,4-Dioxane (8260)	VOC (8260)					Remarks	Total
GW-75D2	L	4/10-02		2							2
MW-10627				2							2
DUP-2				2							2
FB04-10-02				2							2
TB04-10-02				2							2

Total No. of Bottles/ Containers: 10

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

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 4/10/02	Time 6:00		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: 4/10-02 TO JOE STRAUB

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

AG 05-0597

NYSDEC 053772

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name N1001348.0006.00002

Project Location BETHPAGE NY

Laboratory SEVERN-TRENT SHELTON

Project Manager CARLO SANGUANINI

Sampler(s)/Affiliation G.W. CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VOC (UNP)						Remarks	Total
MW-29I	L	4-11-02		2							2
MW-29D				2							2
FW-03				2							2
MW-24I				6*							6
FB 4-11-02				2							2
TB 4-11-02				2							2

Total No. of Bottles/Containers: 16

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

Relinquished by: [signature]	Organization: ARCADIS	Date 4/11/02	Time 5:30	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:

* PLEASE USE THIS SAMPLE FOR ALL MS/MSD QA/QC SAMPLE

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

AG 05-0597

NYSDEC 053773

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 2

Project Number/Name: M00/348.0006.00002 BETHPAGE NY

Project Location: BETHPAGE NY

Laboratory: SEVERN TRENT STELTON

Project Manager: D. STERN

Sampler(s)/Affiliation: GW/CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40mL vial	95-LASP (unp)	500mL poly HNO3 TOTAL Cd/Cr (HNO3)	500mL poly HNO3 DISS Cd/Cr (HNO3)				Remarks	Total
MW-GF1	L	12 Apr 02		X CL	1	1						X2 CL
" GF2	L	12 Apr 02		X CL	1	1						X2 CL
GM-32S	L	12 Apr 02		2	1	1						4
FB-04-12-02	L	12 Apr 02		2	1							3
TB-04-12-02	L	12 Apr 02		2								2

Total No. of Bottles/Containers: X13 CL

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

Relinquished by: GM/MF	Organization: ARCADIS	Date 12/Apr/02	Time 5:30 pm	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 D. STERN

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

SPECIFY

AG 05-0597

NYSDEC 053774

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 2 of 2

Project Number/Name 30013148.0006.00003

Project Location BETHPAGE NY

Laboratory SEVERN TRENT - SHELTON

Project Manager D. STERN

Sampler(s)/Affiliation GW/CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL vial 8015-1 ASP (w/p)	Remarks	Total
GM-23I	L	4/12/02		X 2		2
					N/S	
					Total No. of Bottles/ Containers	2

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

					Seal Intact?
Relinquished by: GW/CL	Organization: ARCADIS	Date 12/April/02	Time 5:30 pm		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 D. STERN

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

AG 05-0597

NYSDEC 053775

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001348.0006.00003

Project Location Bethpage, NY

Laboratory STL

Project Manager David Stern

Sampler(s)/Affiliation SH/MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: WO ML VOA VIAL (UNP) + CAP						Remarks	Total
MW 52S	L	4/15/12		2							2
MW 52I				2							2
MW 52D				2							2
FB 4/15/12				2							2
										Total No. of Bottles/ Containers	8

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

					Seal Intact?
Relinquished by: Shawn Healy	Organization: Arcadis G&M	Date 4/15/12	Time 1500		
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 05-0597

NYSDEC 053776

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name N4001348.0006.00002

Project Location DE WITT PAGE NY

Laboratory SEVERN-TRENT SHELTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W. CL.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TO-14						Remarks	Total
DWT INFLUENT	L	4-16-02		1							1
DWT EFFLUENT				1							1
GP-1/3 INFLUENT				1							1
GP-1/3 EFFLUENT				1							1
FIELD BLK				1							1
										Total No. of Bottles/ Containers	5

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

				Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS G&M	Date 4/16/02	Time 5:00	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 DAVE STERN 631-391-5284

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

AG 05-0597

NYSDEC 053777

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name: NY001348.0006.00002

Project Location: Bethpage, NY

Laboratory: STL

Project Manager: David Stern

Sampler(s)/Affiliation: SH/MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 ML VOA VIAL VOC (UNPR)						Remarks	Total
ONCT EFF	L	4/15/02		2							2
ONCT INF				6							6
ONCT-3				2							2
ONCT-2				2							2
ONCT-1				2							2
GP-1				2							2
~~GP-2~~				1							1
GP-3				2							2
REP-3				2							2
GP 1/3 INF				2							2
GP 1/3 EFF				2							2
GM 13D				2							2
TB 4/15/02				2							2

Total No. of Bottles/ Containers: 28

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

Relinquished by: Shawn Healy	Organization: ARCADIS G&M	Date 4/15/02	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: _____

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

AG 05-0597

NYSDEC 053778

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name NY001348.0006.00002

Project Location Bethpage NY

Laboratory STL

Project Manager David Stern

Sampler(s)/Affiliation SH/CL

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 ML VOA VIAL (UNP) HCl	ANALYSIS / METHOD / SIZE					Remarks	Total
GM 20I	L	4/16/02		2							2
GM 20D	L	"		2							2
TB 4/16/02	L	"		2							2
										Total No. of Bottles/ Containers	6

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

					Seal Intact?
Relinquished by: Shawn Healey	Organization: Arcadis GTM	Date 4/16/02	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: _____

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

AG 05-0597

NYSDEC 053779

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name SWD/HZM

Project Location BETHPAGE, NY

Laboratory HZM

Project Manager DAVE STERN

Sampler(s)/Affiliation M SHUBORN / ARCADIS

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40ml VOA vials (HCl)						Remarks	Total
GM TOD2	L	11/00		2							2
										Total No. of Bottles/ Containers	2

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

Relinquished by: M. Shuborn	Organization: ARCADIS	Date 11/13/02	Time 1500	Seal Intact?	
Received by:	Organization: HZM	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 _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

NYSDEC 053780

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name: NY001321.0001.00002

Project Location: CARTHAGE NY

Laboratory: STL, CT

Project Manager: DAVE STERN

Sampler(s)/Affiliation: M SHUPERN (ARCADIS)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VIAL VOC	VOC	VOC	VOC	VOC	VOC	Remarks	Total
TRIP702	L	1410		2							2
GW 702	L	1410		2							2
										Total No. of Bottles/ Containers	4

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

Relinquished by: M Shupern	Organization: ARCADIS	Date 07/17/02	Time 1600	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: COPY TO DAVE STERN

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

AG 05-0597

NYSDEC 053781

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001348.0006.00002

Project Location Bethpage, NY

Laboratory STL

Project Manager David Stern

Sampler(s)/Affiliation SH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 8260 VOA TCL (UNPJ) VOC	Remarks	Total
GM 38D	L	4/18/02		2		2
GM 38D2	L	4/18/02		* 6 *		6
Rep-4	L	4/18/02		2		2
TB 4/18/02	L	4/18/02		2		2
					Total No. of Bottles/ Containers	12

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

					Seal Intact?
Relinquished by: Shawn Healey	Organization: Arcadis G+M	Date 4/18/02	Time 1500		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:

* Please use Sample GM 38D2 for a MS/MSD

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

AG 05-0597

NYSDEC 053782

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name Bethpage WD/N. Grumman/NY001348.0006

Project Location Bethpage, NY

Laboratory HZM Labs

Project Manager David Stern

Sampler(s)/Affiliation SH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ML VOA VIAL (As per WIC) VOC						Remarks	Total
GM-38D	L	4/18/02		2							2
GM-38D2	L	↓		2							2
										Total No. of Bottles/ Containers	4

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

Relinquished by: Shawn Delaney	Organization: Arcadis G&M	Date 4/18/02	Time 1420	Seal Intact?	
Received by:	Organization: HZM	Date 4/18/02	Time 1420	Yes No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

David Stern: 631-391-5284

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

AG 05-0597

NYSDEC 053783

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of ____

Project Number/Name NY003118.0004.00002 / NYC

Project Location FETHDALE, NY

Laboratory STL, CT

Project Manager DAVID STEIN

Sampler(s)/Affiliation MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VIAL (HNO3)	ANALYSIS / METHOD / SIZE: 1 LIC	Remarks	Total
FDM123Z	L	01/23/02		2			2
GM-36D	L			2			2
GM-36D2	L			2			2
						Total No. of Bottles/ Containers	6

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

Relinquished by: [signature]	Organization: ARCADIS	Date 01/23/02	Time 1600	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 DAVE STEIN

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

AG 05-0597

NYSDEC 053784

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of _____

Project Number/Name BETHPAGE NY/NYC/NY000348.6.2

Project Location BETHPAGE NY

Laboratory H2M

Project Manager DAVE STERN

Sampler(s)/Affiliation MS (ARCADIS)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1 L VIAL VOC (ACROLEIN)						Remarks	Total
GM-36D	L	1130		2							2
GM-36D2	L	1400		2							2
										Total No. of Bottles/ Containers	4

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

Relinquished by: Melanie Swinton	Organization: ARCADIS	Date 04/23/02	Time 1500	Seal Intact?	
Received by: _____	Organization: H2M	Date 4/23/02	Time _____	Yes No N/A	
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A	

Special Instructions/Remarks:

DAVE STERN: (631) 391-5284

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

AG 05-0597

NYSDEC 053785

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name BETHPAGE WATER DIST / NHOCFVK6.Z

Project Location BETHPAGE NY

Laboratory STL, CT

Project Manager DAVE STERN

Sampler(s)/Affiliation MS (ARCADIS)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ML VOA VIAL / VOC (8260B)						Remarks	Total
GM-37D	L	1200		2							2
GM-71D2	L	1500		2							2
										Total No. of Bottles/ Containers	4

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

					Seal Intact?
Relinquished by: M. Sullivan	Organization: ARCADIS	Date 04/25/02	Time 1112		
Received by: B Hall	Organization: H2M	Date 4/25/02	Time 1622		Yes No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____		Seal Intact?
Received by: _____	Organization: _____	Date / /	Time _____		Yes No N/A

Special Instructions/Remarks:

DAVE STERN: 631 391 5284

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

AG 05-0597

NYSDEC 053786

ARCADIS GERAGHTY & MILLER Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name NY000348.6.2 / GRUMMAN

Project Location BETHPAGE NY

Laboratory STL CT

Project Manager DAVE STERN

Sampler(s)/Affiliation MS (ARCADIS)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1 Liter Glass Vial (Unpres)						Remarks	Total
TRIP2502	L	04/25/02		2							2
GM-37D	L			2							2
GM-71D2	L			2							2
										Total No. of Bottles/ Containers	

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

					Seal Intact?
Relinquished by: M. Sauerborn	Organization: ARCADIS	Date 04/25/02	Time 1700		
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 05-0597

NYSDEC 053787

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of _____

Project Number/Name BETHPAGE LANDFILL/MW35D2

Project Location BETHPAGE NY

Laboratory H2M

Project Manager DAVE STEEN

Sampler(s)/Affiliation M.S. (ARCADIS)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: LIQUID LOW LEVEL VOA 8260 LCC (BENZENE)					Remarks	Total
GM-37D2	L	1230		2						2
GM-35D2	L	1300		2						2
									Total No. of Bottles/ Containers	4

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

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 04/26/02	Time 1420		Yes No N/A
Received by: _____	Organization: H2M	Date / /	Time _____		
Relinquished by: _____	Organization: _____	Date / /	Time _____		Seal Intact?
Received by: _____	Organization: _____	Date / /	Time _____		Yes No N/A

Special Instructions/Remarks:

DAVE STEEN: 631 391 5284

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

AG 05-0597

NYSDEC 053788

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY000818.62 / GRUMMAN

Project Location BETHPAGE

Laboratory STL CT

Project Manager DAVE STERN

Sampler(s)/Affiliation MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VIAL (HCL)						Remarks	Total
TRIP BLK 062	L	12/6/12		2							2
GM-37D2	L	1		2							2
GM-35D2	L	1		2							2

Total No. of Bottles/ Containers: 6

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

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 12/6/12	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: _____

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

AG 05-0597

NYSDEC 053789

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 2

Project Number/Name NY001348.0006.00002

Project Location BETHPAGE NY

Laboratory STL SHELTON CT

Project Manager DAVID STERN

Sampler(s)/Affiliation GW/CL, Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA	95-1 ASP (unp)	500 mL plast TOT. calcr (HNO3)	500 mL plastic DISS calcr (HNO3)				Remarks	Total
GM-175R	L	3May02		2	1	1						4
FB-05-03-02	L	3May02		2	1	—						3
TB-05-03-02	L	3May02		2	—	—						2
											Total No. of Bottles/ Containers	9

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

					Seal Intact?
Relinquished by: GW/CL	Organization: ARCADIS	Date 3 May 02	Time 3pm		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 DAVID STERN

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

AG 05-0597

NYSDEC 053790

APPENDIX D

ARCADIS

Appendix D

Data Validation Memoranda

MEMO

ARCADIS G & M, Inc.
88 Duryea Road
Melville
New York 11747
Tel 631 249-7600
Fax 631 249-7610

ENVIRONMENTAL

To:
David Stern

Copies:

From:
Donna Brown and Danielle Petkus

Date:
May 17, 2002

Subject:
Data Validation of Volatile Organic Compound Groundwater Samples Collected for the First Quarter 2002 Monitoring Program, Northrop Grumman, Bethpage, New York (Project No. NY001321.00001.00004).

DATA VALIDATION

Water samples, field replicates, field blanks, and trip blanks were collected March 2001 through April 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York. The samples were sent to Severn Trent Laboratories (STL) in Shelton, Connecticut for the analysis of volatile organic compounds (VOCs) following purge and trap GC/MS using New York State Department of Environmental Conservation (NYSDEC) CLP Protocols.

Validation of the data was performed following the quality assurance/quality control (QA/QC) criteria set forth in the method, and the document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" dated October 1999. Sample identification, collection dates, and laboratory-received dates are listed in Table 1. The quality of the data was acceptable with the appropriate qualifications described in this memorandum. Metals data were discussed in a separate memo.

The analytical data for samples were provided by the laboratory in six sample delivery groups (SDG) 200780, 200803, 200837, 200885, 200903, 200975 and 201013. The data validation results for these SDGs are discussed separately below.

SDG 200780

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on April 1, 2002. The compound relative response factors (RRFs) found to be >0.05. The following compound percent relative standard deviation (RSD) values were found to be >30%:

Calibration Date: 4/1/02

Compound	RSD
Acetone	55.6
2-Butanone	30.9

Associated samples: All samples.

Acetone and 2-butanone were qualified as estimated (J) if detected in the associated samples.

IV. CONTINUING CALIBRATION

Two continuing calibrations were performed with the samples. The compound relative response factors (RRFs) found to be >0.05 and percent difference (%D) values were found to be <25.

V. BLANKS

Two method blanks were analyzed with this SDG. The following compounds were detected in the method blanks:

Method Blank 04/02/02

Compound	Concentration in micrograms per liter (ug/L)
Chloromethane	1.10 J
Acetone	7.07 J
2-Butanone	3.60 J

Associated samples: HN-40S, HN-40I, HN-42S, N-10634, HW-42I, GM-16SR, MW-3R, N-10631, GM-18S and GM-16I.

Method Blank 04/03/02

Compound	Concentration in ug/L
Acetone	6.44 J

Associated samples: GM-15D and GM-15D2.

Three trip blanks were analyzed with this SDG. Target compounds were not detected in the trip blanks.

Three field blanks were collected and analyzed with the samples. Target compounds were not detected in the field blanks.

Based on the blank results, qualification of the data was not necessary.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES/MARTIX SPIKE BLANKS

Sample GM-16SR was used for the matrix spike/matrix spike duplicate (MS/MSD) analyses. The MS/MSD/MSB LCS results were within QC limits.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

Toluene was detected in sample GM-15D at a concentration of 0.6 ug/L however, it was not reported on the Form I. The Form I was corrected to reflect the detection of toluene in GM-15D.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

Methyl acetate was detected in the method blanks (04/02/02 and 04/03/02) and trichlorofluoromethane was detected in sample HW-42I. Methyl acetate and trichlorofluoromethane were not target compounds and they were not reported on the TIC pages. The TIC pages were corrected to report methyl acetate and trichlorofluoromethane.

XII. OVERALL ASSESSMENT OF DATA

Sample HN-42I was mislabeled as HW-42I. The laboratory id was corrected to HN-42I. The quality of the data presented in this SDG package is acceptable with the appropriate qualifications described above.

SDG 200803

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on April 1, 2002. All compound RRFs were found to be >0.05. The following compound RSDs were found to be <30%:

Calibration Date: 4/1/02

Compound	RSD
Acetone	55.6
2-Butanone	30.9

Associated samples: All samples.

The above compounds were qualified as estimated (J) if detected in the associated samples.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed in this SDG. The compounds had RRFs >0.05. The following %Ds were >25%:

Calibration date: 4/4/02

Compound	%D
Chloroethane	33.7

Associated samples: TB 4/2/02, GM-17I, GM-17D, GM-18I, GM-18D, and FB 4/2/02.

Calibration date: 4/11/02

Compound	%D
4-Methyl-2-pentanone	30.1

Associated samples: TB 4/4/02, FB 4/4/02, GM-74I, GM-74D, GM-73D2 and GM-74D2.

The above compounds were qualified as estimated (J) if detected and estimated (UJ) if not detected in the associated samples.

V. BLANKS

Three method blanks were analyzed with the samples in this SDG. The following compounds and TICs were detected in the method blanks:

Method Blank 04/03/2002

Compound	Concentration in ug/L
Acetone	6.44 J

TIC	RT
Unknown	5.670
Unknown	7.428

Associated samples: GM-15S, GM-15I, GM-21S, GM-21I, and GM-21D.

Method Blank 04/04/2002

Compound	Concentration in ug/L
Acetone	7.10 J

Associated samples: GM-17I, GM-17D, GM-18I and GM18D.

Method Blank 04/11/2002

Compound	Concentration in ug/L
Methylene chloride	0.51 J
Acetone	4.88 J

Associated samples: GM-74I, GM-74D, GM-73D2, and GM-74D2.

Three trip blanks were analyzed with this SDG. The following target compounds were detected in the trip blanks:

Trip Blank TB 4/4/02

Compound	Concentration in ug/L
Methylene chloride	1 JB
Acetone	4 JB
2-Butanone	2 J
Chloromethane	0.8 J
Toluene	0.3 J

Associated sample: GM-74I, GM74D, GM-74D2 and GM-73D2.

Three field blanks were analyzed with this SDG. Target compounds were not detected in the field blanks.

Based on the blank results, the following sample results were qualified as non-detect (U) at the method detection limits or non-detect (U), if above the detection limits:

Compound	Samples
Methylene chloride	GM-74I, GM-74D, GM-74D2 and GM-73D2.
Acetone	GM-74I, GM-74D and GM-73D2.
Toluene	GM-74D2.
Chloromethane	GM-74I, GM-74D, and GM-73D2.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES

The MS/MSD results were within QC limits.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The following compounds were not target compounds but were detected in the samples and have been added to the TIC pages.

TIC	RT	Conc. (ug/L)	Sample
Methyl acetate	7.445	12.415	MB 04/03/2002
Methyl acetate	7.412	11.518	MB 04/04/2002

XII. OVERALL ASSESSMENT OF DATA

The quality of the data presented in this SDG package is acceptable with the appropriate qualifications described above.

SDG 200837

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

Two initial calibrations were performed on April 1 and April 16, 2002. All compound RRFs were found to be >0.05. The following RSD values were >30%.

Calibration Date: 4/1/02

Compound	RRF
Acetone	55.6
2-Butanone	30.9

Associated samples: FB 4/3/02, TB 4/3/02, GM-34D, GM-34D2, GM-33D2, and REP-1.

The compounds were qualified as estimated (J) in the associated samples.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed with the samples. The RRFs were >0.05. The following %D was >25%:

Calibration Date: 4/11/02

Compound	%D
4-Methyl-2-pentanone	30.1

Associated samples: GM-34D2, GM-33D2, and REP-1.

4-Methyl-2-pentanone was qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples.

V. BLANKS

Three method blanks were analyzed with the samples in this SDG. The following compounds and TICs were detected in the method blanks:

Method Blank 4497-001	04/09/2002
Compound	Concentration in ug/L
Acetone	3.90 J
2-Butanone	3.33 J

TIC	RT
Unknown	21.613

Associated sample: GM-34D.

Method Blank 4561-001	04/11/02
Compound	Concentration in ug/L
Methylene chloride	0.51 J
Acetone	4.88 J

Associated samples: GM-34D2, GM-33D2 and REP-1.

Method Blank 4695-001	04/16/02
Compound	Concentration in ug/L
Acetone	5.05 J
2-Butanone	3.38 J

TIC	RT
Chloromethyl-2-chloropropanoate	5.652
1,2-propanediol,3-chloro-	7.271
Unknown	17.400

Associated samples: GM-78S, GM-78I, GM-79D, GM-79I, GM-75D2, REP-2 and N-10627.

Three trip blanks were analyzed with the samples. The following target compounds and TICS were detected in the trip blanks:

Trip Blank TB 4/3/02	
Compound	Concentration in ug/L
2-Butanone	2 J

Associated samples: GM-34D, GM-34D2, GM-33D2, and REP-1.

Trip Blank TB 4/9/02	
Compound	Concentration in ug/L
Methylene chloride	0.7 J

TIC	RT
Unknown	21.966
Unknown	24.020

Associated samples: GM-78S, GM-78I, GM-79I, and GM-79D.

Trip Blank TB 04/10/02	
Compound	Concentration in ug/L
2-Butanone	4 J

Associated samples: GM-75D2, N-10627 and REP-2.

Three field blanks were collected and analyzed with the samples. Compounds were not detected in the field blanks. The following TICs were detected in the field blanks:

Field Blank FB 4/9/02

TIC	RT
Unknown	5.518
Unknown	5.675
Unknown	18.972

Associated samples: GM-78S, GM-78I, GM-79I, and GM-79D.

Based on the blank results, the following compounds were qualified as non-detect (U):

Compound	Sample ID
Methylene chloride	GM-34D2, GM-33D2 and REP-1
Acetone	GM-34D2, GM-33D2 and REP-1

Based on the blank results, the following TICs were qualified as not usable (R):

TIC	RT	Sample ID
Unknown	5.587	GM-78I
Unknown	18.972	GM-78I
Unknown	21.341	GM-79D
Unknown	21.426	GM-78I

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES

The results were within QC limits.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

TICs were detected in this sample set and were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

GM-33D2 was duplicated and labeled REP-1 and GM-75D2 was duplicated and labeled REP-2. The duplicate results were acceptable. The quality of the data presented in this SDG package is acceptable with the appropriate qualifications described above.

SDG 200885

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

Two initial calibrations were performed on April 16, and April 17, 2002. All compound RRFs found to be >0.05. The following compound RSD was found to be >30%:

Calibration Date: 4/17/02

Compound	%D
Vinyl acetate	30.5

Associated samples: TB4-11-02, FB4-11-02, TB4-12-02, FB4-12-02, GM-32S, GM-23I, HN-24I, ONCTEFF, and ONCT-2.

Vinyl acetate was qualified as estimated (J) if detected in the associated samples.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed with in this SDG. The compounds had RRFs >0.05 and %Ds <25% except for the following:

Calibration Date: 4/19/02

Compound	%D
Bromomethane	35.4
Acetone	63.2
2-Butanone	43.4
2-Hexanone	34.2

Associated Samples: REP-3, ONCT-1, GP-1, ONCTINF, ONCT-3, GP-3, and ONCTINF.

The above compounds were qualified as estimated (J) if detected and estimated (UJ) if not detected in the associated samples.

V. BLANKS

Three method blanks were analyzed with this SDG. The following compounds and TICs were detected in the method blanks:

Method Blank 4695-001	4/16/02
Compound	Conc. ug/L
Acetone	5.05 J
2-Butanone	3.38 J

TIC	RT
Unknown	5.652
Unknown	7.271
Unknown	17.400

Associated samples: HN-29D, FW-03, and HN-29I.

Method Blank 4803-001	4/19/02
Compound	Conc. ug/L
Acetone	7.97 J

TIC	RT
Unknown	5.640

Associated samples: GM-32S, GM-23I, HN-24I, ONCTEFF and ONCT-2.

Two trip blanks were collected along with this sample set. The following compounds were detected in the trip blanks:

Trip Blank: TB 4-11-02

Compound	Concentration in ug/L
Methylene chloride	2 J
Acetone	19 J
Tetrachloroethene	0.6 J

Associated Samples: HN-29I, HN-29D, FW-03, and HN-24I.

Trip Blank: TB 4-12-02

Compound	Concentration in ug/L
Methylene chloride	0.7 J
Acetone	12

Associated Samples: MW-1GF, MW-2GF, GM-32S, and GM-23I.

Two field blanks were collected with this sample set. The following compounds were detected in the field blanks:

Field Blank: FB 4-11-02

Compound	Concentration in ug/L
Methylene Chloride	0.7 J
Acetone	6 J

Associated Samples: HN-29I, HN-29D, FW-03 and HN-24I.

The acetone results were qualified as non-detect (U) in sample ONCTEFF. Tetrachloroethene was qualified as non-detect (U) in sample HN-29I.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES

One MSD %R was outside QC limits. Qualifications of the data were not necessary.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

All target compounds detected were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The TICs were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Sample ONCTINF was replicated and labeled REP-3. All detected compounds were qualified as estimated (J) in both samples ONCTINF and REP-3 based on the replicate results.

The data is acceptable with the qualifications listed above.

SDG 200903

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on April 16, 2002. The compound RRFs found to be >0.05 and the compound RSDs were found to be <30%.

IV. CONTINUING CALIBRATION

Five continuing calibrations were performed with the samples. The compounds had RRFs >0.05 and %Ds <25% except for the following:

Calibration Date: 4/18/02

Compound	%D
Bromomethane	28.1
Chloroethane	29.2
Acetone	57.2
2-Butanone	32.5

Associated Samples: GP 1/3EFF, MW-52S and MW-52D.

Calibration Date: 4/19/02

Compound	%D
Bromomethane	35.4
Chloroethane	28.3
Acetone	63.2
2-Butanone	43.4
2-Hexanone	34.2

Associated samples: TB04-15-02, FB 04-15-02, GP 1/3INF, GM-13D and MW-52I.

Calibration Date: 4/23/02

Compound	%D
Trichlorotrifluoroethane	30.6
Acetone	36.4

Associated samples: TB041602, TB041702, TB041802, GM-38D, REP-4, and GM-20D.

Calibration Date: 4/24/02

Compound	%D
Bromomethane	32.7
Acetone	43.4
2-Butanone	26.6
Vinyl Acetate	99.4

Associated samples: GM-20I, GM-70D2, and GM-38D2.

Calibration Date: 4/25/02

Compound	%D
Vinyl chloride	30.2
Chloroethane	34.9
Acetone	52.6
2-Butanone	32.4
Vinyl Acetate	85.2

2-Hexanone	34.5

Associated samples: TB042302, GM-36D and GM-36D2.

The above compounds were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples.

V. BLANKS

Five method blanks were analyzed with this SDG. The following compounds and TICs were detected in the method blanks:

Method Blank: 4737-001	Date: 4/18/02
Compound	Concentration in ug/L
Acetone	6.37 J
Methylene chloride	0.84 J

TIC	RT
Unknown	5.637

Associated Samples: GP 1/3EFF, MW-52S and MW-52D.

Method Blank: 4803-001	Date: 4/19/02
Compound	Concentration in ug/L
Acetone	7.97 J

TIC	RT
Unknown	5.640

Associated Sample: GP 1/3INF, GM-13D and MW-52I.

Method Blank: 4858-001	Date: 4/23/02
Compound	Concentration in ug/L
Acetone	5.27 J

TIC	RT
Unknown	5.653

Associated Sample: GM-38D, REP-4 and GM-20D.

Method Blank: 4926-001	Date: 4/24/02
Compound	Concentration in ug/L
Methylene chloride	0.79 J
Acetone	6.15 J

Associated Samples: GM-20I, GM-70D2, and GM-38D2

Method Blank: 4933-001	Date: 4/25/02
Compound	Concentration in ug/L
Methylene chloride	1.29 J
Acetone	22.19
TIC	RT
Unknown	5.620

Associated Sample: GM-36D and GM-36D2.

Five trip blanks and one field blank were analyzed with the samples. Compounds were not detected in the blanks. One TIC, methyl tert-butyl ether, was detected in the field blank at retention time 7.520.

Qualification of the data was not necessary based on the blank results.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Two spike recoveries were above QC limits in the MSD. No qualification of the data was necessary.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

All compounds were identified correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The TICs were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Sample GM-38D was replicated and labeled REP-4. The results were acceptable.

The data is acceptable with the qualifications listed above.

SDG 200975

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on April 16, 2002. All compound RRFs found to be >0.05 and all RSD values were found to be <30%.

IV. CONTINUING CALIBRATION

Two continuing calibrations were performed with the samples. The compounds had RRFs > 0.05 and %Ds <25% except for the following:

Calibration Date: 4/29/02

Compound	%D
Bromomethane	30.2
Acetone	31.4
Vinyl acetate	85.7

Associated samples: TB042502, TB042602, GM-37D and GM-71D2.

Calibration Date: 4/30/02

Compound	%D
Bromomethane	28.5
Vinyl acetate	90.6

Associated samples: GM-37D2 and GM-35D2.

The associated sample compound results were qualified as estimated (J) if detected, and estimated (UJ) if not detected.

V. BLANKS

Two method blanks were analyzed with this SDG. The following compounds were detected in the method blanks:

Method Blank: 5010-001	Date: 4/29/02
Compound	Concentration in ug/L
Methylene chloride	0.53 J

Associated samples: All samples except ONCT-EFFLUENT.

TIC	RT
Unknown	5.704

Associated Sample: GM-37D and GM-71D2.

Method Blank: 5035-001	Date: 4/30/02
Compound	Concentration in ug/L
Methylene chloride	1.02 J
Acetone	8.42 J

TIC	RT
Unknown	5.676

Associated samples: GM-37D2 and GM-35D2.

Two trip blanks were collected with the samples and analyzed in this SDG. The following TIC was detected in the trip blank:

Trip Blank: TB042602	
TIC	RT
Unknown	21.478

Associated samples: GM-37D2 and GM-35D2.

Qualification of the data was not necessary based on the blank results.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES

MS/MSD/MSB analyses were not performed in this SDG.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

All compounds were identified correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

TICs were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

The data is acceptable with the qualifications listed above.

SDG 201013

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on April 16, 2002. All compound RRFs found to be >0.05 and all RSD values were found to be <30%.

IV. CONTINUING CALIBRATION

One continuing calibration was performed with the samples. The compounds had RRFs > 0.05 and %Ds <25% except for the following:

Calibration Date: 5/6/02

Compound	%D
Vinyl acetate	25.2

Associated samples: All samples.

The associated sample compound results were qualified as estimated (J) if detected, and estimated (UJ) if not detected.

V. BLANKS

One method blank was analyzed with this SDG. Compounds were not detected in the method blank. The following TICs were detected:

Method Blank: 5196-001 Date: 5/6/02

TIC	RT
Unknown	5.621
Hexadecane	19.232

Associated Samples: All samples.

One trip blank and one field blank were collected with the sample and analyzed in this SDG. Compounds were not detected in the trip or field blanks.

Qualification of the data was not necessary based on the blank results.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES

MS/MSD/MSB analyses were not performed in this SDG.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

All compounds were identified correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

TICs were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

The data is acceptable with the qualifications listed above.

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the First Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 200780			
HN-40S	200780-1	03/25/2002	03/26/2002
HN-40I	200780-2	03/25/2002	03/26/2002
HN-42S	200780-3	03/25/2002	03/26/2002
FB032502	200780-4	03/25/2002	03/26/2002
TB032502	200780-5	03/25/2002	03/26/2002
GM-16I	200780-6	03/26/2002	03/27/2002
N-10634	200780-7	03/26/2002	03/27/2002
HW-42I	200780-8	03/26/2002	03/27/2002
TB032602	200780-9	03/26/2002	03/27/2002
FB032602	200780-10	03/26/2002	03/27/2002
GM-16SR	200780-11	03/27/2002	03/28/2002
MW-3R	200780-12	03/27/2002	03/28/2002
N-10631	200780-13	03/27/2002	03/28/2002
GM-18S	200780-14	03/27/2002	03/28/2002
FB032702	200780-15	03/27/2002	03/28/2002
TB032702	200780-16	03/27/2002	03/28/2002
GM-15D	200780-17	03/28/2002	03/292002
GM-15D2	200780-18	03/28/2002	03/292002
FB032802	200780-19	03/28/2002	03/292002
TB032802	200780-20	03/28/2002	03/292002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the First Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 200803			
GM-15S	200803-1	03/28/2002	03/29/2002
GM-15I	200803-2	03/28/2002	03/29/2002
GM-21S	200803-3	03/29/2002	03/30/2002
GM-21I	200803-4	03/29/2002	03/30/2002
GM-21D	200803-5	03/29/2002	03/30/2002
TB 3/29/02	200803-6	03/29/2002	03/30/2002
FB 3/29/02	200803-7	03/29/2002	03/30/2002
GM-17I	200803-8	04/02/2002	04/03/2002
GM-17D	200803-9	04/02/2002	04/03/2002
GM-18I	200803-10	04/02/2002	04/03/2002
GM-18D	200803-11	04/02/2002	04/03/2002
FB 4/2/02	200803-12	04/02/2002	04/03/2002
TB 4/2/02	200803-13	04/02/2002	04/03/2002
GM-74I	200803-14	04/04/2002	04/05/2002
GM-74D	200803-15	04/04/2002	04/05/2002
GM-74D2	200803-16	04/04/2002	04/05/2002
GM-73D2	200803-17	04/04/2002	04/05/2002
FB 4/4/02	200803-18	04/04/2002	04/05/2002
TB 4/4/02	200803-19	04/04/2002	04/05/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the First Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 200837			
GM-34D	200837-1	04/03/2002	04/04/2002
GM-34D2	200837-2	04/03/2002	04/04/2002
GM-33D2	200837-3	04/03/2002	04/04/2002
FB 4/3/02	200837-4	04/03/2002	04/04/2002
TB 4/3/02	200837-5	04/03/2002	04/04/2002
REP-1	2008375-6	04/03/2002	04/04/2002
GM-78S	200837-7	04/09/2002	04/10/2002
GM-78I	200837-8	04/09/2002	04/10/2002
GM-79I	200837-9	04/09/2002	04/10/2002
GM-79D	200837-10	04/09/2002	04/10/2002
FB 4/9/02	200837-11	04/09/2002	04/10/2002
TB 4/9/02	200837-12	04/09/2002	04/10/2002
GM-75D2	200837-13	04/10/2002	04/11/2002
N-10627	200837-14	04/10/2002	04/11/2002
REP-2	200837-15	04/10/2002	04/11/2002
FB 04/10/02	200837-16	04/10/2002	04/11/2002
TB 04/10/02	200837-17	04/10/2002	04/11/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the First Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 200885			
HN-29I	200885-1	04/11/2002	04/12/2002
HN-29D	200885-2	04/11/2002	04/12/2002
FW-03	200885-3	04/11/2002	04/12/2002
HN-24I	200885-4	04/11/2002	04/12/2002
FB 4-11-02	200885-5	04/11/2002	04/12/2002
TB 4-11-02	200885-6	04/11/2002	04/12/2002
MW-1GF	200885-7	04/12/2002	04/13/2002
MW-2GF	200885-8	04/12/2002	04/13/2002
GM-32S	200885-9	04/12/2002	04/13/2002
FB 4-12-02	200885-10	04/12/2002	04/13/2002
TB 4-12-02	200885-11	04/12/2002	04/13/2002
GM-23I	200885-12	04/12/2002	04/13/2002
ONCTEFF	200885-13	04/15/2002	04/16/2002
ONCTINF	200885-14	04/15/2002	04/16/2002
ONCT-3	200885-15	04/15/2002	04/16/2002
ONCT-2	200885-16	04/15/2002	04/16/2002
ONCT-1	200885-17	04/15/2002	04/16/2002
GP-1	200885-18	04/15/2002	04/16/2002
GP-3	200885-19	04/15/2002	04/16/2002
REP-3	200885-20	04/15/2002	04/16/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the First Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 200903			
GP 1/3 INF	200903-1	04/15/2002	04/16/2002
GP 1/3 EFF	200903-2	04/15/2002	04/16/2002
GM-13D	200903-3	04/15/2002	04/16/2002
TB041502	200903-4	04/15/2002	04/16/2002
MW-52S	200903-5	04/15/2002	04/16/2002
MW-52I	200903-6	04/15/2002	04/16/2002
MW-52D	200903-7	04/15/2002	04/16/2002
FB041502	200903-8	04/15/2002	04/16/2002
GM-20I	200903-9	04/16/2002	04/17/2002
GM-20D	200903-10	04/16/2002	04/17/2002
TB041602	200903-11	04/16/2002	04/17/2002
TB041702	200903-12	04/17/2002	04/18/2002
GM-70D2	200903-13	04/17/2002	04/18/2002
GM-38D	200903-14	04/18/2002	04/19/2002
GM-38D2	200903-15	04/18/2002	04/19/2002
REP-4	200903-16	04/18/2002	04/19/2002
TB041802	200903-17	04/18/2002	04/19/2002
TB042302	200903-18	04/23/2002	04/24/2002
GM-36D	200903-19	04/23/2002	04/24/2002
GM-36D2	200903-20	04/23/2002	04/24/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the First Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 200975			
TB042502	200975-1	04/25/2002	4/26/2002
GM-37D	200975-2	04/25/2002	4/26/2002
GM-71D2	200975-3	04/25/2002	4/26/2002
TB042602	200975-4	04/26/2002	4/27/2002
GM-37D2	200975-5	04/26/2002	4/27/2002
GM-35D2	200975-6	04/26/2002	4/27/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the First Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 201013			
GM-17SR	201013-1	05/03/2002	5/04/2002
FB050302	201013-2	05/03/2002	5/04/2002
TB050302	201013-3	05/03/2002	5/04/2002