2002 Annual Groundwater Monitoring Report

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

ARCADIS

Infrastructure, buildings, environment, communications

ARCADIS

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Table of Contents

Tables

Figures

Appendices

1. Introduction

This groundwater monitoring report was prepared to document 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 referred to as the ONCT system and the GP-1 system. The monitoring activities described in this report include three programs, as follows: (1) the on-site portion of the OU2 groundwater remedy operational performance monitoring program, (2) the hydraulic monitoring program (i.e., groundwater elevation measurements) and (3) the groundwater quality monitoring program. 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 (1) evaluate the effectiveness of the on-site portion of the OU2 groundwater remedy at achieving the remedial goal of preventing the off-site migration of volatile organic compound (VOC)-impacted groundwater, (2) determine changes and trends in on- and off-site groundwater quality, and (3) document the operational performance of the on-site portion of the OU2 groundwater remedy.

This report describes the operation of the OU2 groundwater remedy and the resulting effect on local groundwater flow conditions and groundwater quality for the Fourth Quarter of 2002. Furthermore, this report compares the current data to the previous round and, as applicable, to longer-term system operation and groundwater quality trends. This report also includes findings and conclusions, which 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 Programs

Monitoring activities conducted as part of the Fourth Quarter 2002 monitoring round and the results obtained include the following: OU2 Groundwater Remedy Operational Performance Program (see Section 3 for results), Hydraulic Monitoring Program (see Section 4 for results), and Groundwater Quality Monitoring Program (see Section 5 for results).

Except as described below, the procedures, methodologies, and monitoring network utilized for the Fourth Quarter 2002 monitoring round are consistent with procedures/methodologies described in previous reports (i.e., 2000 and 2001 Annual Groundwater Monitoring Reports [ARCADIS Geraghty & Miller, 2001c and ARCADIS G&M 2002, respectively] and the monitoring network described in the NYSDEC-approved OU2 Groundwater Monitoring Plan ARCADIS G&M, 2001a). The hydrogeologic zones monitored as part of these programs 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 in Appendix B of the Groundwater Feasibility Study (ARCADIS Geraghty & Miller, Inc. 2000).

The locations of the NGC site, the OU2 groundwater remedy, the neighboring properties (i.e., the NWIRP and Occidental Chemical Corporation [OCC]/RUCO Polymer Corporation sites), and existing wells utilized in the monitoring programs 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); and Appendix D (data validation memoranda).

Modifications to the Fourth Quarter 2002 monitoring round are described below.

The number of wells where water levels were measured and groundwater samples were collected was modified this round, as follows:

- Well FW-03 was dry this round, therefore a water-level measurement and groundwater sample could not be collected this round.

- Due to silt in the well screen, a water-level measurement and groundwater sample cannot currently be obtained from Well N-10624.

- A water-level measurement cannot currently be made in Industrial 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.

- Wells MW-4, MW-5, and MW-6 were added to the quarterly monitoring program. These wells were installed at Plant 1 and were sampled for total chromium. Additionally, total chromium was added to the list of compounds monitored quarterly for Well GM-15S.

- The water-level measurement made in Wells GM-19I and GM-39D2 were inconsistent with historical trend and with hydraulic data collected from nearby wells; therefore the measurements were considered anomalous and were not used in mapping groundwater flow directions in the intermediate and D2 Zones, respectively, this round.

3. OU2 Operational Performance

During the Fourth Quarter 2002, the on-site portion of the OU2 groundwater remedy operational performance monitoring activities conducted included: (1) hydraulic measurements (depth to groundwater in remedial wells and treatment system pumpage), (2) remedial well sampling/analysis, and (3) remedial system influent/effluent water sampling/analysis.

During the Fourth Quarter 2002, NGC monitored total pumpage for the OU2 remedial wells (i.e., Wells GP-1, ONCT-1, ONCT-2, and ONCT-3) and Industrial Well GP-3 on a weekly basis. Additionally, NGC collected water samples from the OU2 remedial wells, Industrial Well GP-3, and from the influent and effluent streams from the OU2 treatment 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 and Industrial Well GP-3 and the OU2 treatment 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 data for the OU2 remedial wells and Industrial Well GP-3 are provided in Table 3 and are discussed in Section 3.1 of this report.

As part of the Fourth Quarter 2002 performance monitoring activities, ARCADIS collected water samples 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 Target Compound List (TCL) for VOCs (see Section 5 [Groundwater Quality] of this report). ARCADIS collected instantaneous pumping rates (Table 4) from the OU2 remedial wells and hydraulic measurements (Table 5). These data are discussed in Section 3.1 of this report.

3.1 Pumpage

Table 3 summarizes the percent of the reporting period that the remedial wells were operating, as well as the total pumpage and average pumping rates for the OU2

remedial wells, during the Fourth Quarter 2002. In addition, Table 3 summarizes the design pumping rates (i.e., the remedial well pumping rates determined by groundwater modeling that would prevent the off-site migration of VOC-impacted groundwater) for the OU2 remedial wells. If the OU2 remedial wells were pumped continuously at the design rates over the full 85-day Fourth Quarter 2002 period (i.e., September 24 to December 17, 2002) the result would be a total of 413.1 million gallons (MG) pumped, versus an actual total of approximately 363.2 MG pumped by the OU2 remedial wells, or approximately 88 percent of the total design pumpage. Reasons why the total reported pumpage is less than the design total pumpage for the Fourth Quarter 2002 include the low (87%) operational time for Well ONCT-3 (see Table 3) as well as ongoing problems with the flow meters used to monitor system performance. During the Fourth Quarter 2002, NGC had to repair Well ONCT-3 due to a faulty pressure switch and is in the process of calibrating/repairing the system flow meters. However, although the total Fourth Quarter 2002 reported pumpage was below design rates, this did not adversely affect the ability of the system to achieve the remedial goal of preventing the off-site migration of VOC-impacted groundwater (see Section 4 of this report for additional details).

As described in previous reports, pumpage from Well GP-3 supplements the total gallons pumped by the on-site portion of the OU2 groundwater remedy. Well GP-3 was operational for all of the Fourth Quarter 2002 and pumped at an average rate of 424 gpm. This equates to approximately 51.9 MG pumped in addition to the quantity pumped by the OU2 remedial wells. Table 4 summarizes the performance data collected from the OU2 remedial wells for the Third and Fourth Quarters of 2002. Based on instantaneous pumping rates and drawdown measurements made during the Fourth Quarter 2002, the specific capacities of the OU2 Wells GP-1 and ONCT-1 are similar to results from the Third Quarter 2002, while the specific capacities for Wells ONCT-2 and ONCT-3 were slightly lower than the previous round. Based on comparison of specific capacity values obtained in First Quarter of 1999 to the current data, specific capacities have decreased in Wells ONCT-1, ONCT-2 and ONCT-3, but have remained essentially the same in Well GP-1. A depth to groundwater cannot be obtained for Industrial Well GP-3 because the depth of the airline in Well GP-3 is not known; therefore, the specific capacity could not be calculated. Specific capacities calculated for Remedial Wells GP-1, ONCT-1, ONCT-2 and ONCT-3, for the Fourth Quarter 2002, were more than sufficient to allow the wells to yield enough water to contain the VOC-impacted groundwater on site.

3.2 Remedial System Performance Data

The following subsections of this report discuss the on-site portion of the OU2 groundwater remedy treatment system performance data, which includes the ONCT and GP-1 systems air stripper performance data and the VOC mass removed by the OU2 remedial system.

3.2.1 Air Stripper Efficiency

Based on the average-influent and effluent water TCE concentration data collected by NGC for the ONCT and GP-1 systems (Table 2), the TCE removal efficiencies for both of the OU2 groundwater treatment systems are greater than 99.9 percent. Based on the results of the influent and effluent water TVOC samples (Table 10) collected by ARCADIS, TVOC removal efficiencies for the ONCT and GP-1 systems are both greater than 99.8 percent. Based on both data sets, the two treatment systems removal efficiencies are essentially identical and remain high, and are consistent with the percentages calculated for the first three quarters of 2002.

3.2.2 Contaminant Mass Removal

As summarized in Table 3, based on the VOC concentrations and pumping totals for the OU2 remedial wells and Industrial Well GP-3, approximately 1,917 pounds (lbs) of VOCs were removed from groundwater and treated by the OU2 groundwater remedy treatment systems in the Fourth Quarter 2002. For Year 2002, approximately 8,908 lbs of VOCs were removed from groundwater and treated by the OU2 remedial systems. Since full-time system startup in November 1998, approximately 57,905 lbs of VOCs have been removed from the subsurface and treated.

4. Groundwater Flow

This report section describes the results of the Fourth Quarter 2002 Hydraulic Monitoring program (i.e., the depth to groundwater measurements, groundwater level and contour mapping), and evaluates the effectiveness of the on-site portion 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 Fourth Quarter 2002 depth to groundwater measurement round was conducted on January 29, 2003 while the on-site portion of the OU2 groundwater remedy was

operating close to its design total pumping rate (3,077 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 on-site portion of the OU2 groundwater remedy has on horizontal groundwater flow patterns. To evaluate the effect the on-site portion of the OU2 groundwater remedy has on vertical groundwater flow, vertical hydraulic gradients were calculated for select well pairs, and these data are summarized in Table 6. The following subsections of this report describe the groundwater flow conditions (horizontal and vertical) in each of the aquifer horizons.

4.1 Shallow Zone

Figure 2 shows the water-table configuration and horizontal groundwater flow directions in the shallow zone during the Fourth Quarter 2002. As shown on Figure 2, the most prevalent effect of the on-site portion 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, horizontal groundwater flow during this quarter is on the groundwater beneath and around the South Recharge Basins. The maximum elevation of the mound beneath and around the South Recharge Basins is greater than 64 ft msl, and the mound extends across the width of the southern boundary of the site. The treated water discharge to the Plant 5 Recharge Basins results in a water-table elevation beneath and around the Plant 5 Basins of greater than 60 feet relative to mean sea level (ft msl). Upgradient of the South Recharge Basins, which includes areas on the NGC and NWIRP sites, the horizontal direction of shallow groundwater flow is generally consistent with the regional groundwater flow and is to the southeast. However, the regional southeast shallow groundwater flow direction is locally modified by the mounding at the South Recharge Basins, 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 (i.e., Wells 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 (i.e., GM-21S/GM-21I) nearest the basins. A similar effect on vertical gradients is seen for well pairs located in the vicinity of the Plant 5 Recharge Basins, where Monitoring Wells GM-16SR/GM-16I and GM-17SR/GM-17I exhibited a downward vertical gradient.

Vertical gradients, calculated from groundwater elevation data from clustered monitoring wells, that are close to or greater than groundwater flow model predictions are a key indication that the OU2 groundwater remedy 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 immediate vicinity and also further from the basins (i.e., Wells GM-16SR/GM-16I; GM17SR/GM17I; GM-21S/GM-21I; and GM-79S/GM-79I; and GM-78S/GM-78I)) are oriented downward and are close to or greater than gradients predicted by the groundwater flow model. These data indicate that in the vicinity of the Plant 5 and 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 groundwater flow components near the South Recharge Basins coupled with the downward vertical gradients near the Plant 5 and South Basins collectively create a hydraulic barrier that achieves the remedial goal of the on-site portion of the OU2 groundwater remedy in that it prevents on-site, VOC-impacted groundwater from migrating off-site in the shallow zone.

4.2 Intermediate Zone

As shown on Figure 3, the configuration of the potentiometric surface in the intermediate zone, during the Fourth Quarter 2002, 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 62 ft msi). This indicates that the on-site portion of 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. Additionally, the resultant vertical gradients in monitoring well clusters located near the basins (i.e., Wells GM-15I/GM-15D, GM-17I/GM-17D, 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 (see Table 6).

Collectively, the above data indicate that the hydraulic barrier to groundwater flow described above for the shallow zone extends vertically downward to the intermediate zone, is similar in extent, to that observed in the shallow zone, and achieves the remedial goal of the on-site portion of the OU2 groundwater remedy in that it prevents 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 and the Plant 5 and South Recharge Basins, the analysis of the effectiveness of the on-site portion of the OU2 groundwater remedy at achieving the on-site plume containment goal in this zone is conducted using vertical gradient calculations for deep and D2 monitoring well pairs. Table 6 summarizes the vertical hydraulic gradients calculated from data collected from well clusters in the deep/D2 zones during the Fourth 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-39D/GM-39D2, GM-73D/GM-73D2 and 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 Fourth 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 achieves the remedial goal of the on-site portion of the OU2 groundwater in that it prevents the off-site migration of VOC-impacted groundwater in the deep zone.

4.4 D2 Zone

On January 29, 2003, 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 on-site portion of 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.

In summary, the data from the D2 zone indicate that the pumpage of the OU2 remedial wells has created a hydraulic barrier in this zone and achieves the remedial goals of the on-site portion of the OU2 groundwater remedy in that it prevents the off-site migration of VOC-impacted groundwater in the D2 zone.

4.5 Summary of Groundwater Flow Conditions Observed in Year 2002

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 vertical hydraulic gradients generally greater than model predictions. The area of capture in the D2 zone produced by the pumpage of the on-site portion of the OU2 remedial wells has not substantially changed in Year 2002 and extends across the entire southern boundary and downgradient of the NGC site. Overall, the hydraulic

data presented in Year 2002 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 the analytical results of the various groundwater quality monitoring activities specified in and required under the NYSDEC-approved Groundwater Quality Monitoring Plan (ARCADIS G&M, Inc. 2001a). The main emphasis of this report section is the description of the distribution of the VOC plume in the various aquifer horizons monitored and how the operation of the on-site portion of the OU2 groundwater remedy has affected the plume distribution in the Fourth Quarter 2002 and since startup (full time) of the on-site portion of the OU2 groundwater remedy in November 1998. In addition, the analytical results and distribution of VCM, SVOCs and Cd/Cr are also discussed in this report.

The Fourth Quarter 2002 groundwater quality sampling round was conducted between December 10, 2002 and February 4, 2003. Analytical results for the Fourth Quarter 2002 round are summarized in Tables 7 through 14 and are discussed in the subsequent subsections of this report.

5.1 Volatile Organic Compounds

In general, the goal of the on-site portion of the 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. Operation of the on-site portion of the OU2 groundwater remedy is expected to and has caused the VOC 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 portion of the OU2 groundwater remedy.

Furthermore, based on the above considerations, the following groundwater quality trends are expected to (and as described below have) occur: (1) 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 long-term decreasing trend in VOC concentrations over time); (2) monitoring wells located further downgradient will also show improved groundwater quality over time, but will take a longer time to show an improvement, as compared to wells immediately south of the OU2 remedial wells, due to the relatively slow groundwater velocity and greater distance from the remedial well. Depending on VOC concentrations and heterogeneity of the off-site groundwater, monitored water quality in these further off-site wells may show several trend changes before long-term trends associated with the operation of the on-site portion of the OU2 groundwater remedy are revealed, and; (4) depending on the 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.

Based on the discussions above, the analysis of TVOC concentrations and trends over time is presented herein in consideration of the following factors: (1) proximity to the hydraulic barrier formed by the OU2 groundwater remedy (i.e., along the NGC site southern boundary), (2) hydrogeologic zone (i.e., shallow, intermediate, deep, and D2 zones); and (3) long-term versus short-term trends. This approach results in the most representative interpretation of current trends within the TVOC plume while also correlating changes in trends in key wells with the long-term effectiveness of the on-site portion of the OU2 groundwater remedy. The following subsections of this report describe the distribution of VOCs in groundwater during the Fourth Quarter 2002 and where applicable, compare the current data to the previous round, describe the trends observed since December 2001, and for the complete period of record. Figures 5 through 11 depict VOC concentrations in key wells for the period of record.

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 complete period of record of TVOC concentrations in selected intermediate wells is shown on Figure 5. The water quality data from the shallow and intermediate wells sampled this quarter and for Year 2002 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.

Of the 13 shallow wells sampled this quarter, only two (Wells GM-32S and GM-78S) had an SCG exceedance (both for TCE) (Table 7). Well GM-32S, which exhibited the highest TVOC concentration this round, is located approximately 1,900 ft north and upgradient of the OU2 remedial wells (Figure 1), and had a TVOC concentration lower than last round. Well GM-78S had a TCE level of 6 ug/L, only slightly above the SCG of 5 ug/L with TVOCs essentially the same as compared to last round. TVOC concentrations for other shallow wells have remained essentially the same in comparison to last round. Furthermore, Wells N-10631, N-10634, GM-17SR, GM-18S, GM-21S, and MW-3R, which exhibited no detections or trace concentrations of VOCs (below SCGs), 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 13 intermediate wells sampled this quarter, four wells (Wells GM-15I, GM-16I, HN-24I, and HN-40I) exhibited exceedences of the SCGs, (with TCE exceeding the SCG in all four wells, see Table 8). Of these four wells, Well HN-24I had the highest TVOC concentration. Well HN-24I is located approximately 4,400 feet, north and upgradient of the ONCT remedial wells. For the nine wells with no SCG exceedences, TVOC concentrations ranged from non-detect to 4 ug/L with wells in the South Recharge Basins/southern NGC property boundary area (i.e., Wells GM-20I, GM-21I, GM-74I, GM-78I, and GM-79I) exhibiting TVOC concentrations of 4 ug/L or less, which attests to the effectiveness of the hydraulic barrier in preventing VOC-impacted groundwater from migrating off-site in the intermediate zone.

A total of 11 of the 13 intermediate wells sampled this quarter exhibited similar TVOC concentrations in comparison to the last round. Wells GM-18I, and HN-24I showed decreased TVOC concentrations in comparison to last round.

The complete period of record for key on-site intermediate wells is shown in Figure 5. Overall, the data shows a stable to decreasing trend in TVOC concentrations, with Well MW-52S showing the steepest decrease in TVOC concentrations over time.

5.1.2 Deep Zone

Of the 16 deep monitoring wells sampled this round, six wells exhibited no exceedences of SCGs while all the other ten wells each exhibited at least one constituent that exceeded SCGs (Table 9). Well GM-13D exhibited the highest TVOC concentration (1,505 ug/L) and the most SCG exceedences and is located approximately 2,850 feet upgradient of the ONCT remedial wells. Wells GM-15D,

GM-39D, GM- 73D, and GM-74D, exhibited TVOC concentrations ranging from 11.5 ug/L to 682 ug/L, and are located slightly upgradient and near the ONCT remedial wells (Figure 1). 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 10.7 ug/L (Well GM-18D exhibited a TCE concentration [8 ug/L] above the SCG this round) and attest to the effectiveness of the on-site portion 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 as last round, except for Well GM-38D, which showed an increase in TVOC concentrations. Overall, TCE was the predominant compound detected in the deep zone wells except for Well GM-13D, where PCE was the predominant compound detected.

The complete record of TVOC concentrations in selected deep wells is shown on Figures 5, 6, 8, 10, and 11. On-site Well GM-13D exhibits a long-term increasing TVOC trend however, the trend appears flat since December 2000 (Figure 5). Along the NGC site southern/southeastern boundary, Wells GM-15D and GM-74D exhibit low TVOC concentrations and flat and decreasing trends, respectively, for the period of record (Figure 6). Southeast of the NGC site southern boundary, Well GM-36D has exhibited a decreasing trend for the period of record with the trend since December 2000 being flat. The trend in Well GM-37D appears flat for the period of record while Well GM-79D exhibits an increasing trend (Figure 8). Well GM-38D exhibits a decreasing trend for the period of record although an increasing trend is apparent since December 2000 (Figure 11). Southwest 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 10 and include groundwater samples collected from the OU2 remedial wells and Well GP-3, the influent/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 terms are described in the following report subsections.

5.1.3.1 OU2 Remedial Wells and Well GP-3

Table 1 summarizes weekly TCE concentrations for the OU2 remedial wells and Well GP-3 and the average of those results. Compared with the previous round, average TCE concentrations have remained essentially the same.

A review of long-term trends for the OU2 remedial wells and Well GP-3 shows Well ONCT-2 to have an increasing TCE trend while Well ONCT-3 continues to exhibit no discernable trend in TCE concentrations for the period of record (Figure 6). Well ONCT-1 exhibits a decreasing trend, while Well GP-3 exhibits an increasing trend in TCE concentrations for the period of record (Figure 7). Well GP-1 exhibits a decreasing trend over the period of record, however the trend appears flat since December 2000 (Figure 7). 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; therefore, the TCE concentration trends in the OU2 remedial wells and Well GP-3 is likely indicative of the trends in TVOC concentrations over the same period.

5.1.3.2 Deep2 Monitoring Wells

TVOC concentrations beneath the southeastern portion of the NGC site (at and east of Well ONCT-2) were comparatively lower than beneath the southwestern portion of the NGC site with current values ranging from 13 ug/L (in Well GM-74D2) to190 ug/L (in Well ONCT-2) (Table 10). On the southwestern portion of the NGC site, TVOC concentrations ranged from 111 ug/L (in Well GM-39D2) to 3,996 ug/L (in Well GP-3). All monitoring wells in these areas exhibited one or more exceedences of SCGs, although TCE continues to be the predominate compound detected in all D2 monitoring wells.

The decline in TVOC concentrations over time in well GM-33D2 from approximately 7,900 ug/L in March 1999 to 188 ug/L in the Fourth Quarter 2002 round (Figure 7) confirms the hydraulic information discussed in Section 4.4 of this report, which indicates that operation of the on-site portion of the OU2 groundwater remedy is preventing the off-site migration of VOC-impacted groundwater in the D2 zone. This represents more than a 98 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 operation [full time] since November 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. Near the NGC site southeast boundary, Wells GM-15D2 and GM-74D2 exhibit

low VOC concentrations with no discernable trends for the period of record (Figure 6). Well GM-73D2 exhibits an increasing trend for the period of record (Figure 7). Well GM-39D2 (installed in October 2002) exhibits an average TVOC concentration of 110.5 ug/L but currently has insufficient data to determine a long-term trend. Collectively, these data indicate stable to decreasing TVOC concentrations along the NGC site southern boundary, within the capture zone of the OU2 remedial wells and supports the conclusion that the on-site portion of the OU2 groundwater remedy is effective in preventing the off-site migration of VOCs in the D2 zone.

TVOC concentrations in the eight off-site wells ranged from 1 ug/L (in Well GM-36D2) to 1,416 ug/L (in 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 or the same this round in comparison to the previous round. Southeast of the NGC site, 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 an increasing trend for the period of record, however the trend appears flat since December 2000 (Figure 9). Well GM-70D2 exhibits a decreasing trend for the period of record. Southwest of the NGC site, Wells GM-34D2 and GM-35D2 have exhibited increasing trends since December 2000, which represents a significant deviation from the flat trends that were evident prior to 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 average TVOC concentration of 1,320 µg/L with no discernable trend since December 2000. As stated above, 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.

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 (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 (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 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, intermediate zone, or deep zone (Tables 7, 8, and 9, respectively) this round. In the D2 zone, VCM was detected in Well GP-3 above the SCG at an average concentration of 24.7 µg/L (concentrations ranged from 21.2 µg/L to 31.1 µg/L) based on the weekly sampling performed by NGC and at 60 µg/L in the quarterly sample collected by ARCADIS. Since Well GP-3 is located substantially further south (downgradient) than monitoring wells that historically have exhibited detections of VCM above the 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 round of data from the outpost monitoring wells (i.e., Well Clusters GM-17, GM-18, and GM-23) no substantial changes in the position of the VCM plume were evident in Year 2002. However, ARCADIS is aware that OCC is planning near-term groundwater data collection efforts south of the RUCO 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 (Figures 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 TICs exist in the groundwater samples. TICs detected in groundwater samples collected during the Fourth 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 Fourth Quarter 2002 round, low levels of VOCs (e.g., TCE, Freon 113, acetone, bromomethane, 4-methyl-2-pentanone,

carbon disulfide, 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)

Well GM-14, located downgradient of the NGC Plant 1 Fuel Depot, is monitored on a quarterly basis for SVOCs. As shown on Table 13, 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 2002 and the previous round for cadmium (Cd) and chromium (Cr) are provided in Table 14. The complete record of Cd and Cr concentrations in select wells are shown on Figures 12 and 13. Beginning with the Fourth Quarter 2002, Wells MW-4, MW-5, MW-6 and GM-15S were added to the list of wells monitored for Cr (total). Based on the current round of data, Well MW-3R exhibited Cd and Cr (total and dissolved) concentrations exceeding SCGs and Well GM-32S exhibited Cr (total and dissolved) concentrations exceeding the SCG. In addition Wells GM-15S, MW-5, and Well MW-6 exhibited Cr (total) concentrations exceeding the SCG. The remaining wells exhibited no exceedences of SCGs. For the period of record, the wells on Figure 12 exhibit stable to decreasing trends with no off-site wells exhibiting Cd 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 only a single off-site exceedence of the SCG since late 1999 (50.5 ug/L in Well 10631). 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, with only a single off-site SCG exceedence detected since late 1999.

5.7 Quality Control Samples - Cadmium/Chromium

Cadmium/chromium were not detected in the equipment blank samples collected this quarter (Table 14).

2. For the Fourth Quarter and all of 2002, 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 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.

3. The configuration of the potentiometric surface in the D2 zone in the Fourth Quarter and all 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 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 and in reducing VOC concentrations in the D2 zone in this area. Off-site and in areas upgradient of the on-site portion 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 Fourth Quarter and in Year 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 Fourth Quarter and in Year 2002; these data indicate that the extent of the VCM subplume (horizontal and vertical) is greater than previously defined by RUCO.

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. Wells monitored for Cr exhibited only a single off-site exceedence of the SCG since late 1999. The results this round 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. Recommendation

ARCADIS makes no recommendation for modification to the groundwater monitoring program at this time.

8. References

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Table 1. Select VOC Concentrations in Water Samples Collected from OU2 Remedial Wells and Industrial Well GP-3, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York. [1]

		OU2 REMEDIAL WELLS				INDUSTRIAL WELL	
Sample Collection Date	Well ID:	GP-1		ONCT-1	ONCT-2	ONCT-3	GP-3	
	Units:	(ug/L)		(ug/L)	(ug/L)	(ug/L)	(ug/L)	
	Constituent:	VCM	TCE	TCE	TCE	TCE	VCM	TCE
10/21/2002		<0.5	312	610	102	16	22.2	1,898
10/28/2002		<0.5	362	660	120	16	23.2	1,790
11/4/2002		<0.5	398	632	123	15	21.2	1,710
11/11/2002		<0.5	355	650	113	15	24.2	1,746
11/18/2002		<0.5	387	616	134	14	23.8	1,709
11/25/2002		<0.5	410	590	135	12	26.8	1,767
12/2/2002		<0.5	461	588	125	12	26.3	1,709
12/9/2002		<0.5	412	576	117	13	22.6	1,755
12/16/2002		<0.5	299	560	137	17	31.1	1,726
12/23/2002		<0.5	314	645	123	14	25.6	1,754
Average Concentration: [2]		**<0.5**	**371**	**613**	**123**	**14**	**24.7**	**1,756**

Note:

(1) Water samples were collected and analyzed for TCE and VCM by Northrop Grumman; 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

ug/L Micrograms per liter

TCE Trichloroethene

VCM Vinyl Chloride Monomer

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Table 2. Select VOC Concentrations in Water Samples Collected from the OU2 Treatment Systems Influent and Effluent, Fourth 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
10/21/2002		280	<0.5	2.0	554	NA	<0.5
10/28/2002		301	<0.5	2.4	502	NA	<0.5
11/4/2002		287	<0.5	1.9	456	NA	<0.5
11/11/2002		301	<0.5	11.7	422	NA	<0.5
11/18/2002		256	<0.5	14.7	454	NA	<0.5
11/25/2002		206	<0.5	23.8	422	NA	<0.5
12/2/2002		201	<0.5	21.8	398	NA	<0.5
12/9/2002		199	<0.5	17.9	413	NA	<0.5
12/16/2002		485	0.8	26.2	844	NA	1.5
12/23/2002		412	0.5	18.4	723	NA	1.1
Average Concentration:[2]		**293**	**0.1**	**14.1**	**519**	**NA**	**0.3**

GP-1 system average TCE removal efficiency:	**>99.9%**
ONCT system average TCE removal efficiency:	**>99.9%**

Notes:

(1) Water samples were collected and analyzed by Northrop Grumman; 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

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Table 3. Operational Summary of the OU2 Remedial Wells and Industrial Well GP-3, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Design Pumping Rate (gpm)	Actual Average Pumping Rate [a] (gpm)	Design Total Pumpage (MG)	Actual Total Pumpage [a] (MG)	Percent of Design Pumpage	Average TCE Concentration (ug/L)	Average TVOC Concentration [b] (ug/L)	Estimated TVOC Mass Removed [c] (lbs)
OU2 Wells								
GP-1	1,075	1,058	131.6	129.5	98%	371	458	494
ONCT-1	1,000	835	122.4	100.2	82%	613	632	527
ONCT-2	600	608	73.4	72.2	98%	123	138	83
ONCT-3	700	576	85.7	61.3	72%	14	28	14
Industrial Well								
GP-3	--	424	--	51.9	--	1,756	1,848	799
OU2 WELLS ROUNDED TOTALS: [d]	**3,375**	**3,077**	**413.1**	**363.2**	**88%**	**--**	**--**	**1,917**

[a] - Average pumping rates were calculated based on Northrop Grumman records of total pumpage and hours of operation from September 24, 2002 to December 17, 2002.
- OU2 wells ONCT-1 (98%), ONCT-2 (97%), ONCT-3 (87%), and GP-1 (100%) were operational at the percentage noted during the 85 day operation period from September 24, 2002 to December 17, 2002. GP-3 was 100 percent operational.
- 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 calculated based on Fourth Quarter 2002 average TCE concentration per well and Fourth Quarter 2002 groundwater monitoring data per well which indicated that TCE concentrations were a percentage of the TVOC concentration, as follows: GP-1 (81 percent), ONCT-1 (97 percent), ONCT-2 (89 percent), ONCT-3 (52 percent), and GP-3 (95 percent).

[c] - TVOC mass removed during the Fourth 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.

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

Table 4. OU2 Remedial Well Performance Data, Third and Fourth Quarters of 2002, Northrop Grumman Corporation Bethpage, New York.

Well Identification	Static Depth to Water[1] (ft bmp)	Specific Capacity [3] (gpm/ft)	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	44.9	November 22, 2002	75.35	870	31.23	27.9
			January 29,2003	72.30	900	28.18	31.9
ONCT-2	50.15	38.3	November 22, 2002	69.36	725	19.21	37.7
			January 29,2003	71.11	650	20.96	31.0
ONCT-3	49.13	41.2	November 22, 2002	71.12	569	21.99	25.9
			January 29,2003	71.20	450	22.07	20.4
GP-1	55.75	28.6	November 22, 2002	97.00	1100	41.25	26.7
			January 29,2003	96.00	1100	40.25	27.3

(1) Static depth to groundwater in Wells ONCT-1, ONCT-2, and ONCT-3 was measured on May 9, 1997. 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.

(3) Specific capacity for ONCT-1, ONCT-2,and ONCT-3 was calculated from the First Quarter 1999 Hydraulic Monitoring Round. Specific capacity for GP-1 was calculated from the Second Quarter 2001 Hydraulic Monitoring Round.

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

Table 5. Water-Level Measurement Data, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water January 29, 2003 (ft bmp)	Water-Level Elevation January 29, 2003 (ft msl)
Shallow Wells			
FW-03	124.30	NM[1]	NM[1]
N-9921	94.23	37.94	56.29
N-10597	109.85	45.59	64.26
N-10600	102.41	45.20	57.21
N-10631	103.47	44.53	58.94
N-10633	103.80	43.70	60.10
N-10634	101.20	44.94	56.26
N-10821	91.58	39.60	51.98
GM-15S	109.44	50.74	58.70
GM-16SR	115.86	54.90	60.96
GM-17SR	115.79	55.19	60.60
GM-18S	107.60	47.58	60.02
GM-19S	109.86	48.38	61.48
GM-21S	105.81	40.11	65.70
GM-78S	104.94	47.05	57.89
GM-79S (N-10628)	100.88	45.12	55.76
HN-40S	116.35	55.54	60.81
HN-42S	120.32	58.27	62.05
MW-3R	101.45	40.36	61.09
Intermediate Wells			
N-10624	93.61	NM[2]	NM[2]
GM-15I	109.25	50.29	58.96
GM-16I	115.81	55.02	60.79
GM-17I	115.83	55.36	60.47
GM-18I	109.03	48.97	60.06
GM-19I	109.86	AM	–
GM-20I	103.88	41.34	62.54
GM-21I	105.72	42.55	63.17
GM-74I	107.42	44.22	63.20
GM-78I	105.06	47.33	57.73
GM-79I	100.88	45.49	55.39
HN-24I	125.80	62.98	62.82
HN-29I	116.42	53.88	62.54
HN-40I	115.91	55.33	60.58
HN-42I	119.61	57.56	62.05

See notes on last page

Table 5. Water-Level Measurement Data, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water January 29, 2003 (ft bmp)	Water-Level Elevation January 29, 2003 (ft msl)
Deep Wells			
N-10627	93.70	37.87	55.83
GM-13D	113.97	53.17	60.80
GM-15D	109.84	52.84	57.00
GM-17D	115.68	56.84	58.84
GM-18D	108.88	51.77	57.11
GM-20D	103.92	43.50	60.42
GM-21D	105.66	48.33	57.33
GM-34D	71.19	19.58	51.61
GM-36D	91.63	39.85	51.78
GM-37D	97.26	44.25	53.01
GM-38D	91.75	42.60	49.15
GM-39D	102.23	44.69	57.54
GM-73D	104.87	49.90	54.97
GM-74D	107.43	50.58	56.85
GM-79D	101.25	46.83	54.42
Deep2 Wells			
GM-15D2	109.78	55.50	54.28
GM-33D2	106.85	55.78	51.07
GM-34D2	71.19	21.05	50.14
GM-35D2	96.28	44.50	51.78
GM-36D2	91.60	41.80	49.80
GM-37D2	97.17	44.84	52.33
GM-38D2	91.56	44.84	46.72
GM-39D2	102.08	47.80	54.28
GM-70D2	99.58	45.98	53.60
GM-71D2	98.45	46.36	52.09
GM-73D2	104.62	52.13	52.49
GM-74D2	107.36	57.28	50.08
GM-75D2	93.63	40.95	52.68
GP-1 [3]	116.78	96.00	20.78
ONCT-1	104.10	72.30	31.80
ONCT-2	110.00	71.11	38.89
ONCT-3	108.70	71.20	37.50

(1) Well FW-03 was dry this round.

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

(3) 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 feet below measuring point

NM Not Measured

AM Anomalous Measurement.

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Table 6. Comparison of Fourth Quarter 2002 Vertical Hydraulic Gradients to Model Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well Pairing ID	Measuring Point Elevation (ft msl)	Well Screen Midpoint Elevation (ft msl)	1/29/2003 Water-Level Elevation (ft msl)	1/29/2003 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	58.61			
GM-15I	109.13	9.29	58.84	-9.11	4.20	-13.31
GM-16SR	115.77	66.77	60.96			
GM-16I	115.81	-24.19	60.79	1.87	1.11	0.76
GM-17SR	115.79	50.79	60.60			
GM-17I	115.83	5.83	60.47	2.89	4.50	-1.61
GM-18S	107.60	42.60	60.02			
GM-18I	109.03	9.03	60.06	-1.19	1.78	-2.97
GM-21S	105.81	40.81	65.70			
GM-21I	105.72	-29.28	63.17	36.10	18.44	17.65
GM-78S	104.94	39.94	57.89			
GM-78I	105.06	5.56	57.73	4.65	8.73	-4.07
GM-79S	100.88	35.88	55.76			
GM-79I	101.09	-73.91	55.60	1.46	0.91	0.55
Intermediate-Deep Wells						
GM-15I	109.29	9.29	58.84			
GM-15D	109.66	-227.34	56.82	8.54	6.52	2.01
GM-17I	115.83	5.83	60.47			
GM-17D	115.68	-172.32	58.84	9.15	7.86	1.29
GM-18I	109.03	9.03	60.06			
GM-18D	108.88	-186.12	57.11	15.12	7.74	7.38
GM-20I	103.88	3.88	62.54			
GM-20D	103.92	-117.08	60.42	17.53	18.22	-0.70
GM-21I	105.72	-29.28	63.17			
GM-21D	105.66	-177.34	57.33	39.44	43.97	-4.53
GM-74I	107.42	8.42	63.20			
GM-74D	107.43	-192.57	56.85	31.59	20.17	11.42
GM-79I	101.09	-73.91	55.60			
GM-79D	101.25	-183.75	54.42	10.74	15.48	-4.73

See last page for footnotes

Table 6. Comparison of Fourth Quarter 2002 Vertical Hydraulic Gradients to Model Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well Pairing ID	Measuring Point Elevation (ft msl)	Well Screen Midpoint Elevation (ft msl)	1/29/2003 Water-Level Elevation (ft msl)	1/29/2003 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	109.66	-227.34	56.82			
GM-15D2	109.59	-436.41	54.09	13.06	14.19	-1.13
GM-18D	108.88	-186.12	57.11			
GM-33D2	106.85	-403.15	51.07	27.83	12.30	15.53
GM-34D	71.19	-242.81	51.61			
GM-34D2	71.19	-443.81	50.14	7.31	2.33	4.98
GM-36D	91.63	-117.37	51.78			
GM-36D2	91.60	-443.40	49.80	6.07	2.75	3.32
GM-37D	97.26	-154.74	53.01			
GM-37D2	97.17	-282.83	52.33	5.31	3.88	1.43
GM-38D	91.75	-238.25	49.15			
GM-38D2	91.56	-393.44	46.72	15.66	6.08	9.57
GM-39D	102.23	-169.77	57.54			
GM-39D2 [3]	102.08	-312.92	54.28	22.77	13.46	9.31
GM-73D	104.87	-301.13	54.97			
GM-73D2	104.62	-437.38	52.49	18.20	18.78	-0.58
GM-74D	107.43	-192.57	56.85			
GM-74D2	107.36	-444.64	50.08	26.86	28.26	-1.40
N-10627	93.70	-198.80	55.83			
GM-75D2	93.63	-421.37	52.68	14.15	2.25	11.91

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.

[3] Water level appears anomously high and therefore, 1/29/2003 actual gradient maybe greater than calculated gradient.
ft msl feet relative to mean sea level
ft feet

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Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Third and Fourth Quarters of 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 10/17/02	10631 N-10631 12/17/02	10634 N-10634 10/09/02	10634 N-10634 12/18/02	GM-14 GM-14 10/18/02	GM-14 GM-14 01/16/03
Chloromethane	5		<5	<5	<5	<5	<10	<10
Bromomethane	5		<5	<5	<5	<5	<10	<10 J
Vinyl Chloride	2		<2	<2	<2	<2	<10	<10
Chloroethane	5		<5	<5	<5	<5	<10	<10
Methylene chloride	5		<5	<5	<5	**2 J**	<5	<5
Acetone	50		<10	<10	<10	<10	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<10	<10
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		**2 J**	**5 J**	<5	**2 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	**2**	<5	<5
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	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	**2 J**	<5	<5
Chlorobenzene	5		<5	<5	<5	**2 J**	<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
Vinyl Acetate	NE		<5 J	<5	<5	<5	<10	<10 J
Freon-113 *	5		<5	<5	<5	<5	--	--
Total VOCs			**2**	**5**	0	**10**	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 (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 Shallow Wells, Third and Fourth Quarters of 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 10/02/02	GM-15S GM-15S 01/10/03	GM-16SR GM-16SR 10/11/02	GM-16SR GM-16SR 12/17/02	GM-17SR GM-17SR 10/07/02	GM-17SR GM-17SR 12/17/02
Chloromethane	5		<5 J	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5 J	<5	<5	<5	<5
Vinyl Chloride	2		<2 J	<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 J	<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	**0.6 J**	<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 J	<5
2-Butanone	50		<10	<10 J	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5 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		**3 J**	**3 J**	<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	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10 J	<10	<10	<10	<10
Tetrachloroethene	5		<5	**0.7 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
Vinyl Acetate	NE		<5	<5 J	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**3**	**4.3**	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 (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 Shallow Wells, Third and Fourth Quarters of 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 10/07/02	GM-18S GM-18S 12/17/02	GM-21S GM-21S 10/10/02	GM-21S GM-21S 12/18/02	GM-32S GM-32S 10/17/02	GM-32S GM-32S 12/19/02
Chloromethane	5		<5	<5	<5	<5	<5	<5 J
Bromomethane	5		<5 J	<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 J
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	**1 J**	**1 J**
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 J
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		**0.5 J**	**1 J**	<5	<5	**110**	**94**
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	<10	<10 J	<10
2-Hexanone	50		<10 J	<10	<10	<10	<10 J	<10 J
Tetrachloroethene	5		<5	<5	<5	<5	**1 J**	**1 J**
1,1,2,2-Tetrachloroethane	5		<5 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
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**0.5**	1	0	0	**112**	**96**

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 Shallow Wells, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-78S	GM-78S	HN-40S	HN-40S	HN-42S	HN-42S
		SAMPLE ID:	GM-78S	GM-78S	HN-40S	HN-40S	HN-42S	HN-42S
		DATE:	10/10/02	12/19/02	10/14/02	12/18/02	10/14/02	12/18/02
Chloromethane	5		<5	<5 J	<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 J	<10	<10	<10	**49**
Carbon disulfide	50		<5	**0.3 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		<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 J	<10	<10	<10	**5 J**
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		**6**	**5 J**	<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	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10 J	<10	<10	<10	<10
Tetrachloroethene	5		<5	**0.6 J**	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	**0.3 J**	<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
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**6**	**6.2**	0	0	0	**54**

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 Shallow Wells, Third and Fourth Quarters of 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 10/11/02	MW-03R MW-3R 12/17/02
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		<5	<5
1,1-Dichloroethane	5		<5	<5
cis-1,2-Dichloroethene	5		<5	<5
trans-1,2-Dichloroethene	5		<5	<5
Chloroform	7		<5	<5
1,2-Dichloroethane	5		<5	<5
2-Butanone	50		<10	<10
1,1,1-Trichloroethane	5		<5	<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		**1 J**	**5 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		<5	**0.7 J**
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		<5	<5
Total VOCs			1	**5.7**

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 Intermediate Wells, Third and Fourth Quarters of 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 GM-15I 10/08/02	GM-15I GM-15I 01/10/03	GM-16I GM-16I 10/08/02	GM-16I GM-16I 01/09/03	GM-17I GM-17I 10/07/02	GM-17I GM-17I 12/27/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5 J	<5	<5	<5 J	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2 J
Chloroethane	5		<5	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	**2 J**
Acetone	50		<10 J	<10 J	<10	<10	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	**0.5 J**	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	**1 J**	**1 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 J	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10 J	<10	<10	<10	<10 J
1,1,1-Trichloroethane	5		<5 J	<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		**8**	**7**	**13**	**10**	<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 J	<10
2-Hexanone	50		<10	<10 J	<10	<10	<10 J	<10
Tetrachloroethene	5		<5	<5	**2 J**	**2 J**	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5 J	<5
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
Vinyl Acetate	NE		<5	<5 J	<5	<5	<5	<5
Freon-113 *	5		<5	<5	**1 J**	**0.6 J**	<5	<5 J
Total VOCs			**8**	**7**	**17**	**14.1**	0	**2**

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 Intermediate Wells, Third and Fourth Quarters of 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 GM-18I 10/07/02	GM-18I GM-18I 01/07/03	GM-20I GM-20I 10/01/02	GM-20I GM-20I 01/03/03	GM-21I GM-21I 10/03/02	GM-21I GM-21I 01/08/03
Chloromethane	5		<5	<5	<5 J	<5	<5 J	<5
Bromomethane	5		<5 J	<5	<5	<5	<5	**0.8 J**
Vinyl Chloride	2		<2	<2	<2 J	<2	<2 J	<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	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		**1 J**	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		**2 J**	<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		**3 J**	**1 J**	<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		**7**	<5	**0.7 J**	<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	<10	<10	<10
2-Hexanone	50		<10 J	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5 J	<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
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**13**	**1**	**0.7**	0	0	**0.8**

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 Intermediate Wells, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-74I GM-74I 10/09/02	GM-74I GM-74I 01/13/03	GM-78I GM-78I 10/10/02	GM-78I GM-78I 12/19/02	GM-79I GM-79I 10/04/02	GM-79I GM 79I 01/14/03
Chloromethane	5		<5	<5	<5	<5 J	<5 J	<5
Bromomethane	5		<5	<5 J	<5	<5	<5 J	<5 J
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 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 J	<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	<5	<5	<5
Trichloroethene	5		<5	<5	**5 J**	**4 J**	**1 J**	**3 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	<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 J	<10 J
Tetrachloroethene	5		<5	<5	<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
Vinyl Acetate	NE		<5	<5 J	<5	<5	<5 J	<5 J
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			0	0	**5**	**4**	**1**	**3**

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 Intermediate Wells, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	HN-24I HN-24I 10/15/02	HN-24I HN-24I 12/20/02	HN-24I REP122002 12/20/02	HN-29I HN-29I 10/15/02	HN-29I HN-29I 12/20/02	HN-40I HN-40I 10/14/02
Chloromethane	5		<10	<5 J	<5 J	<5	<5 J	<5
Bromomethane	5		<10	<5	<5	<5	<5	<5
Vinyl Chloride	2		<4	<2	<2	<2	<2 J	<2
Chloroethane	5		<10	<5	<5	<5	<5	<5
Methylene chloride	5		<10	<5	<5	<5	<5	<5
Acetone	50		<20	<10 J	<10 J	<10	<10 J	<10
Carbon disulfide	50		<10	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		**15**	**8**	**9**	<5	<5	<5
1,1-Dichloroethane	5		<10	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<10	**0.6 J**	**0.8 J**	<5	<5	<5
trans-1,2-Dichloroethene	5		<10	<5	<5	<5	<5	<5
Chloroform	7		<10	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<10	<5	<5	<5	<5	<5
2-Butanone	50		<20	<10 J	<10 J	<10	<10 J	<10
1,1,1-Trichloroethane	5		**13**	**7**	**8**	<5	<5	<5
Carbon tetrachloride	5		<10	<5	<5	<5	<5	<5
Bromodichloromethane	50		<10	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<10	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<10	<5	<5	<5	<5	<5
Trichloroethene	5		**290**	**190**	**200**	<5	<5	7
Dibromochloromethane	5		<10	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<10	<5	<5	<5	<5	<5
Benzene	0.7		<1	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<10	<5	<5	<5	<5	<5
Bromoform	50		<10	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<20	<10	<10	<10	<10	<10
2-Hexanone	50		<20	<10 J	<10 J	<10 J	<10 J	<10
Tetrachloroethene	5		**5 J**	**4 J**	**4 J**	<5	**0.6 J**	**2 J**
1,1,2,2-Tetrachloroethane	5		<10	<5	<5	<5	<5	<5
Toluene	5		<10	<5	<5	<5	<5	<5
Chlorobenzene	5		<10	<5	<5	<5	<5	<5
Ethylbenzene	5		<10	<5	<5	<5	<5	<5
Styrene	5		<10	<5	<5	<5	<5	<5
Xylene (total)	5		<10	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<10 J	<5	<5	<5 J	<5	<5
Freon-113 *	5		**51**	**29**	**30**	<5	<5	<5
Total VOCs			**374**	**238.6**	**251.8**	0	**0.6**	**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 (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 Intermediate Wells, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: HN-40I SAMPLE ID: HN-40I DATE: 12/18/02	HN-42I HN-42I 10/14/02	HN-42I HN-42I 12/18/02
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	<5
Chloroform	7	<5	<5	<5
1,2-Dichloroethane	5	<5	<5	<5
2-Butanone	50	<10	<10	<10
1,1,1-Trichloroethane	5	**1 J**	<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	**8**	<5	**0.4 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	**2 J**	<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	NE	<5	<5	<5
Freon-113 *	5	<5	<5	<5
Total VOCs		**11**	0	**0.4**

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 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Third and Fourth Quarters 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 10/10/02	10627 N-10627 01/09/03	GM-13D GM-13D 10/09/02	GM-13D GM-13D 01/16/03	GM-15D GM-15D 10/08/02
Chloromethane	5		<5	<5	<25	<50	<5
Bromomethane	5		<5	<5	<25	<50 J	<5
Vinyl Chloride	2		<2	<2	<10	<20	<2
Chloroethane	5		<5	<5	<25	<50	<5
Methylene chloride	5		<5	<5	<25	<50	<5
Acetone	50		<10	<10	<50	<100 J	<10 J
Carbon disulfide	50		<5	<5	**31 J**	<50	<5
1,1-Dichloroethene	5		<5	<5	**100**	**99**	**4 J**
1,1-Dichloroethane	5		<5	<5	**54**	**56**	**8**
cis-1,2-Dichloroethene	5		<5	<5	**170**	**200**	<5
trans-1,2-Dichloroethene	5		<5	<5	<25	<50	<5
Chloroform	7		<5	<5	<25	<50	**0.5 J**
1,2-Dichloroethane	5		<5	<5	<25	<50	<5 J
2-Butanone	50		<10	<10	<50	<100 J	<10
1,1,1-Trichloroethane	5		<5	<5	**98**	**100**	**3 J**
Carbon tetrachloride	5		<5	<5	<25	<50	<5
Bromodichloromethane	50		<5	<5	<25	<50	<5
1,2-Dichloropropane	5		<5	<5	<25	<50	<5
cis-1,3-Dichloropropene	5		<5	<5	<25	<50	<5
Trichloroethene	5		**2 J**	**0.7 J**	**250**	**290**	**9**
Dibromochloromethane	5		<5	<5	<25	<50	<5
1,1,2-Trichloroethane	5		<5	<5	<25	<50	<5
Benzene	0.7		<0.7	<0.7	<4	<7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<25	<50	<5
Bromoform	50		<5	<5	<25	<50	<5
4-Methyl-2-pentanone	50		<10	<10	<50	<100	<10
2-Hexanone	50		<10	<10	<50	<100 J	<10
Tetrachloroethene	5		<5	<5	**720**	**760**	**8**
1,1,2,2-Tetrachloroethane	5		<5	<5	<25	<50	<5
Toluene	5		<5	<5	<25	<50	<5
Chlorobenzene	5		<5	<5	<25	<50	<5
Ethylbenzene	5		<5	<5	<25	<50	<5
Styrene	5		<5	<5	<25	<50	<5
Xylene (total)	5		<5	<5	<25	<50	<5
Vinyl Acetate	NE		<5	<5	<25	<50	<5
Freon-113 *	5		<5	<5	**18 J**	<50	<5
Total VOCs			**2**	**0.7**	**1,441**	**1,505**	**32.5**

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 (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 Deep Wells, Third and Fourth Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-15D GM-15D 01/06/03	GM-17D GM-17D 10/07/02	GM-17D GM-17D 12/27/02	GM-18D GM-18D 10/03/02	GM-18D GM-18D 12/27/02	GM-20D GM-20D 10/01/02
Chloromethane	5		<5	<5	<5	<5 J	<5	<5 J
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2 J	<2 J	<2 J	<2 J
Chloroethane	5		<5	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	**2 J**	<5	**2 J**	<5
Acetone	50		<10	<10 J	<10	<10 J	<10	<10
Carbon disulfide	50		<5	<5	**1 J**	<5	<5	<5
1,1-Dichloroethene	5		**4 J**	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		**7**	<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	<5
Chloroform	7		**0.5 J**	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5 J	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10 J	<10 J	<10 J	<10
1,1,1-Trichloroethane	5		**3 J**	<5 J	<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		**8**	<5	<5	**6**	**8**	<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 J	<10	<10
Tetrachloroethene	5		**8**	<5	<5	<5	**0.7 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5 J	<5	<5 J	<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
Vinyl Acetate	NE		<5	<5	<5	<5 J	<5	<5
Freon-113 *	5		<5	<5	**1 J**	<5	<5 J	<5
Total VOCs			**31.2**	0	**4**	**6**	**10.7**	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 (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 Deep Wells, Third and Fourth Quarters 2002, 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 01/03/03	GM-21D GM-21D 10/08/02	GM-21D GM-21D 01/08/03	GM-34D GM-34D 06/20/02	GM-34D GM-34D 01/16/03	GM-36D GM-36D 10/02/02
Chloromethane	5		<5	<5	<5	<10	<10	<5 J
Bromomethane	5		<5	<5	**1 J**	<10	<10	<5
Vinyl Chloride	2		<2	<2	<2	<4	<4	<2 J
Chloroethane	5		<5	<5	<5	<10	<10	<5
Methylene chloride	5		<5	<5	<5	<10	<10	<5
Acetone	50		<10	<10 J	<10	<20 J	<20	<10
Carbon disulfide	50		<5	<5	**3 J**	<10	<10	<5
1,1-Dichloroethene	5		<5	<5	<5	**5 J**	**4 J**	<5
1,1-Dichloroethane	5		<5	<5	<5	**3 J**	**2 J**	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	**4 J**	**5 J**	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<10	<10	<5
Chloroform	7		<5	<5	<5	<10	<10	<5
1,2-Dichloroethane	5		<5	<5 J	<5	<10	<10	<5
2-Butanone	50		<10	<10	<10	<20	<20	<10
1,1,1-Trichloroethane	5		<5	<5 J	<5	<10	<10	<5
Carbon tetrachloride	5		<5	<5	<5	<10	<10	<5
Bromodichloromethane	50		<5	<5	<5	<10	<10	<5
1,2-Dichloropropane	5		<5	<5	<5	<10	<10	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<10	<10	<5
Trichloroethene	5		<5	**3 J**	**2 J**	**210**	**230**	**24**
Dibromochloromethane	5		<5	<5	<5	<10	<10	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<10	<10	<5
Benzene	0.7		<0.7	<0.7	<0.7	<1	<1	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<10	<10	<5
Bromoform	50		<5	<5	<5	<10	<10	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<20	<20	<10
2-Hexanone	50		<10	<10	<10	<20	<20	<10
Tetrachloroethene	5		<5	<5	<5	**8 J**	**8 J**	**1 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<10	<10	<5
Toluene	5		<5	<5	<5	<10	<10	<5
Chlorobenzene	5		<5	<5	<5	<10	<10	<5
Ethylbenzene	5		<5	<5	<5	<10	<10	<5
Styrene	5		<5	<5	<5	<10	<10	<5
Xylene (total)	5		<5	<5	<5	<10	<10	<5
Vinyl Acetate	NE		<5	<5	<5	<10	<10	<5
Freon-113 *	5		<5	<5	<5	**40**	**22**	<5
Total VOCs			0	**3**	**6**	**270**	**271**	**25**

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
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Third and Fourth Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-36D GM-36D 12/16/02	GM-37D GM-37D 10/07/02	GM-37D GM-37D 02/04/03	GM-38D GM-38D 10/04/02	GM-38D GM 38D 01/21/03	GM-38D GM 38REP 01/21/03
Chloromethane	5		<5	<5	<5	<25 J	<50	<50
Bromomethane	5		<5	<5 J	<5 J	<25 J	<50	<50
Vinyl Chloride	2		<2	<2	<2	<10	<20	<20
Chloroethane	5		<5	<5	<5	<25	<50	<50
Methylene chloride	5		<5	<5	<5	<25	<50	<50
Acetone	50		<10	<10	<10	<50 J	<100	<100
Carbon disulfide	50		<5	<5	<5	<25	<50	<50
1,1-Dichloroethene	5		<5	**3 J**	**2 J**	<25	**6 J**	**5 J**
1,1-Dichloroethane	5		<5	**4 J**	**4 J**	<25	<50	<50
cis-1,2-Dichloroethene	5		<5	<5	<5	<25	<50	<50
trans-1,2-Dichloroethene	5		<5	<5	<5	<25	<50	<50
Chloroform	7		<5	<5	**1 J**	<25	<50	<50
1,2-Dichloroethane	5		<5	<5	<5	<25	<50	<50
2-Butanone	50		<10	<10	<10	<50 J	<100	<100
1,1,1-Trichloroethane	5		<5	<5	**3 J**	<25	**4 J**	<50
Carbon tetrachloride	5		<5	<5	**0.3 J**	<25	<50	<50
Bromodichloromethane	50		<5	<5	<5	<25	<50	<50
1,2-Dichloropropane	5		<5	<5	<5	<25	<50	<50
cis-1,3-Dichloropropene	5		<5	<5	<5	<25	<50	<50
Trichloroethene	5		**19**	**0.5 J**	<5	**830**	**1100**	**980**
Dibromochloromethane	5		<5	<5	<5	<25	<50	<50
1,1,2-Trichloroethane	5		<5	<5	<5	<25	<50	<50
Benzene	0.7		<0.7	<0.7	<0.7	<4	<7	<7
trans-1,3-Dichloropropene	5		<5	<5	<5	<25	<50	<50
Bromoform	50		<5	<5	<5	<25	<50	<50
4-Methyl-2-pentanone	50		<10	<10 J	<10 J	<50	<100	<100
2-Hexanone	50		<10	<10 J	<10	<50 J	<100	<100
Tetrachloroethene	5		**1 J**	<5	**1 J**	<25	<50	<50
1,1,2,2-Tetrachloroethane	5		<5	<5 J	<5	<25	<50	<50
Toluene	5		<5	<5	<5	<25	<50	<50
Chlorobenzene	5		<5	<5	<5	<25	<50	<50
Ethylbenzene	5		<5	<5	<5	<25	<50	<50
Styrene	5		<5	<5	<5	<25	<50	<50
Xylene (total)	5		<5	<5	<5	<25	<50	<50
Vinyl Acetate	NE		<5	<5	<5 J	<25 J	<50	<50
Freon-113 *	5		<5	<5	<5	<25	<50	<50
Total VOCs			**20**	**7.5**	**11.3**	**830**	**1,110**	**985**

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
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Third and Fourth Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-39D GM-39D 11/26/02	GM-39D GM-39D 01/07/03	GM-73D GM-73D 10/18/02	GM-73D GM-73D 11/25/02	GM-73D 73D 01/15/03
Chloromethane	5		<5 J	<5	<25	<25 J	<25
Bromomethane	5		<5 J	<5	<25	<25 J	<25 J
Vinyl Chloride	2		<2 J	<2	<10	<10 J	<10
Chloroethane	5		<5 J	<5	<25	<25 J	<25
Methylene chloride	5		<5 J	<5	<25	<25 J	<25
Acetone	50		<10 J	<10	<50	<50 J	<50 J
Carbon disulfide	50		<5 J	<5	<25	<25 J	<25
1,1-Dichloroethene	5		<5 J	<5	<25	<25 J	<25
1,1-Dichloroethane	5		<5 J	<5	<25	<25 J	<25
cis-1,2-Dichloroethene	5		<5 J	<5	<25	<25 J	<25
trans-1,2-Dichloroethene	5		<5 J	<5	<25	<25 J	<25
Chloroform	7		<5 J	<5	<25	<25 J	<25
1,2-Dichloroethane	5		<5 J	<5	<25	<25 J	<25
2-Butanone	50		<10 J	<10	<50	<50 J	<50 J
1,1,1-Trichloroethane	5		<5 J	<5	<25	<25 J	<25
Carbon tetrachloride	5		<5 J	<5	<25	<25 J	<25
Bromodichloromethane	50		<5 J	<5	<25	<25 J	<25
1,2-Dichloropropane	5		<5 J	<5	<25	<25 J	<25
cis-1,3-Dichloropropene	5		<5 J	<5	<25	<25 J	<25
Trichloroethene	5		**23 J**	**21**	**780**	**510 J**	**680**
Dibromochloromethane	5		<5 J	<5	<25	<25 J	<25
1,1,2-Trichloroethane	5		<5 J	<5	<25	<25 J	<25
Benzene	0.7		<0.7 J	<0.7	<4	<4 J	<4
trans-1,3-Dichloropropene	5		<5 J	<5	<25	<25 J	<25
Bromoform	50		<5 J	<5	<25	<25 J	<25
4-Methyl-2-pentanone	50		<10 J	<10	<50	<50 J	<50
2-Hexanone	50		<10 J	<10	<50	<50 J	<50 J
Tetrachloroethene	5		<5 J	<5	<25	<25 J	**2 J**
1,1,2,2-Tetrachloroethane	5		<5 J	<5	<25	<25 J	<25
Toluene	5		<5 J	<5	<25	<25 J	<25
Chlorobenzene	5		<5 J	<5	<25	<25 J	<25
Ethylbenzene	5		<5 J	<5	<25	<25 J	<25
Styrene	5		<5 J	<5	<25	<25 J	<25
Xylene (total)	5		<5 J	<5	<25	<25 J	<25
Vinyl Acetate	NE		<5 J	<5	<25 J	<25 J	<25
Freon-113 *	5		<5 J	<5	<25	<25 J	<25
Total VOCs			**23**	**21**	**780**	**510**	**682**

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
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Third and Fourth Quarters 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 10/09/02	GM-74D GM-74D 01/13/03	GM-79D GM-79D 10/04/02	GM-79D GM 79D 01/14/03	HN-29D HN-29D 10/15/02	HN-29D HN-29D 12/20/02
Chloromethane	5		<5	<5	<5 J	<5	<5	<5 J
Bromomethane	5		<5	<5 J	<5 J	<5 J	<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 J
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	**1 J**	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	**1 J**	**1 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 J	<10 J	<10	<10	<10 J
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		**10**	**9**	**96**	**110**	**1 J**	**2 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	<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 J	<10 J	<10 J	<10 J
Tetrachloroethene	5		**2 J**	**2 J**	**1 J**	**1 J**	<5	**0.4 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	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5 J	<5 J	<5 J	<5 J	<5
Freon-113 *	5		<5	**0.5 J**	<5	**2 J**	<5	<5
Total VOCs			**12**	**11.5**	**98**	**115**	**1**	**2.4**

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
Bold value indicates a detection.

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Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 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-15D-2 10/02/02	GM-15D2 GM-15D-2 01/06/03	GM-33D2 GM-33D2 10/09/02	GM-33D2 GM-33D-2 01/16/03	GM-34D2 GM-34D2 06/20/02	GM-34D2 GM-34D2 01/15/03
Chloromethane	5		<5 J	<5	<10	<10	<10	<5
Bromomethane	5		<5	<5	<10	<10 J	<10	<5 J
Vinyl Chloride	2		<2 J	<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 J	<20 J	<20 J	<10
Carbon disulfide	50		<5	<5	<10	<10	<10	<5
1,1-Dichloroethene	5		<5	**1 J**	<10	<10	**9 J**	**4 J**
1,1-Dichloroethane	5		<5	<5	<10	<10	<10	<5
cis-1,2-Dichloroethene	5		<5	<5	**2 J**	**2 J**	**3 J**	**5 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 J	<10	<10	<5
2-Butanone	50		<10	<10	<20	<20 J	<20	<10
1,1,1-Trichloroethane	5		<5	**0.5 J**	<10 J	<10	<10	**0.8 J**
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	<10	<10	<5
Trichloroethene	5		**16**	**13**	**240**	**170**	**230**	**130**
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	<1	<1	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<10	<10	<10	<5
Bromoform	50		<5	<5	<10	<10	<10	<5
4-Methyl-2-pentanone	50		<10	<10	<20	<20	<20	<10 J
2-Hexanone	50		<10	<10	<20	<20 J	<20	<10
Tetrachloroethene	5		**20**	**20**	**10 J**	**11**	**10 J**	**11**
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
Vinyl Acetate	NE		<5	<5	<10	<10	<10	<5 J
Freon-113 *	5		<5	<5	<10	**5 J**	**19**	**11**
Total VOCs			**36**	**34.5**	**252**	**188**	**271**	**161.8**

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.
OU2 Operable Unit 2

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-35D2 GM-35D-2 10/03/02	GM-35D2 GM-35D-2 01/28/03	GM-36D2 GM-36D2 10/02/02	GM-36D2 GM-36D2 12/16/02	GM-37D2 GM-37D2 10/07/02	GM-37D2 GM 37D2 01/22/03
Chloromethane	5		<5 J	<20	<5 J	<5	<5 J	<5 J
Bromomethane	5		<5	<20	<5	<5	<5 J	<5 J
Vinyl Chloride	2		<2 J	<8	<2 J	<2	<2	<2 J
Chloroethane	5		<5	<20	<5	<5	<5	<5 J
Methylene chloride	5		<5	<20	<5	<5	<5	<5 J
Acetone	50		<10	<40	<10	<10	<10 J	<10 J
Carbon disulfide	50		<5	<20	**5 J**	**1 J**	<5	<5 J
1,1-Dichloroethene	5		**1 J**	**2 J**	<5	<5	**2 J**	**3 J**
1,1-Dichloroethane	5		<5	<20	<5	<5	**9**	**9 J**
cis-1,2-Dichloroethene	5		**4 J**	**4 J**	<5	<5	<5	<5 J
trans-1,2-Dichloroethene	5		<5	<20	<5	<5	<5	<5 J
Chloroform	7		**0.5 J**	<20	<5	<5	**1 J**	**1 J**
1,2-Dichloroethane	5		<5	<20	<5	<5	<5	<5 J
2-Butanone	50		<10	<40	<10	<10	<10 J	<10 J
1,1,1-Trichloroethane	5		**0.7 J**	<20	<5	<5	<5	**3 J**
Carbon tetrachloride	5		**0.4 J**	<20	<5	<5	<5	<5 J
Bromodichloromethane	50		<5	<20	<5	<5	<5	<5 J
1,2-Dichloropropane	5		<5	<20	<5	<5	<5	<5 J
cis-1,3-Dichloropropene	5		<5	<20	<5	<5	<5	<5 J
Trichloroethene	5		**430 D**	**340**	<5	<5	**4 J**	**4 J**
Dibromochloromethane	5		<5	<20	<5	<5	<5	<5 J
1,1,2-Trichloroethane	5		<5	<20	<5	<5	<5	<5 J
Benzene	0.7		<0.7	<3	<0.7	<0.7	<0.7	<0.7 J
trans-1,3-Dichloropropene	5		<5	<20	<5	<5	<5	<5 J
Bromoform	50		<5	<20	<5	<5	<5	<5 J
4-Methyl-2-pentanone	50		<10	<40	<10	<10	<10	<10 J
2-Hexanone	50		<10	<40	<10	<10	<10 J	<10 J
Tetrachloroethene	5		**6**	**6 J**	<5	<5	<5	<5 J
1,1,2,2-Tetrachloroethane	5		<5	<20	<5	<5	<5	<5 J
Toluene	5		<5	<20	<5	<5	<5	<5 J
Chlorobenzene	5		<5	<20	<5	<5	<5	<5 J
Ethylbenzene	5		<5	<20	<5	<5	<5	<5 J
Styrene	5		<5	<20	<5	<5	<5	<5 J
Xylene (total)	5		<5	<20	<5	<5	<5	<5 J
Vinyl Acetate	NE		<5	<20 J	<5	<5	<5 J	<5 J
Freon-113 *	5		**12**	**11 J**	<5	<5	<5	<5 J
Total VOCs			**454.6**	**363**	**5**	**1**	**16**	**20**

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.
OU2 Operable Unit 2

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-38D2 GM-38D2 10/04/02	GM-38D2 GM38D2 12/10/02	GM-39D2 GM-39D2 11/25/02	GM-39D2 GM-39D-2 01/07/03	GM-70D2 GM-70D2 10/08/02	GM-70D2 GM 70D2 01/20/03
Chloromethane	5		<100	<50	<5 J	<5	<5	<5 J
Bromomethane	5		<100 J	<50	<5 J	<5	<5	<5 J
Vinyl Chloride	2		<40	<20	<2 J	<2	<2	<2 J
Chloroethane	5		<100	<50	<5 J	<5	<5	<5 J
Methylene chloride	5		<100	**10 J**	<5 J	<5	<5	<5 J
Acetone	50		<200	<180	<10 J	<10	<10 J	<10 J
Carbon disulfide	50		<100	<50	<5 J	<5	<5	<5 J
1,1-Dichloroethene	5		<100	<50	<5 J	<5	<5	<5 J
1,1-Dichloroethane	5		<100	<50	<5 J	<5	<5	<5 J
cis-1,2-Dichloroethene	5		<100	**6 J**	<5 J	**0.6 J**	**1 J**	**1 J**
trans-1,2-Dichloroethene	5		<100	<50	<5 J	<5	<5	<5 J
Chloroform	7		<100	<50	<5 J	<5	<5	<5 J
1,2-Dichloroethane	5		<100	<50	<5 J	<5	<5 J	<5 J
2-Butanone	50		<200	<100	<10 J	<10	<10	<10 J
1,1,1-Trichloroethane	5		<100	<50	<5 J	<5	<5 J	<5 J
Carbon tetrachloride	5		<100	<50	<5 J	<5	<5	<5 J
Bromodichloromethane	50		<100	<50	<5 J	<5	<5	<5 J
1,2-Dichloropropane	5		<100	<50	<5 J	<5	<5	<5 J
cis-1,3-Dichloropropene	5		<100	<50	<5 J	<5	<5	<5 J
Trichloroethene	5		**1500**	**1400**	**110 J**	**110**	**63**	**94 J**
Dibromochloromethane	5		<100	<50	<5 J	<5	<5	<5 J
1,1,2-Trichloroethane	5		<100	<50	<5 J	<5	<5	<5 J
Benzene	0.7		<14	<7	<0.7 J	<0.7	<0.7	<0.7 J
trans-1,3-Dichloropropene	5		<100	<50	<5 J	<5	<5	<5 J
Bromoform	50		<100	<50	<5 J	<5	<5	<5 J
4-Methyl-2-pentanone	50		<200 J	<100	<10 J	<10	<10	<10 J
2-Hexanone	50		<200 J	<100	<10 J	<10	<10	<10 J
Tetrachloroethene	5		<100	<50	<5 J	**0.4 J**	**2 J**	**5 J**
1,1,2,2-Tetrachloroethane	5		<100 J	<50	<5 J	<5	<5	<5 J
Toluene	5		<100	<50	<5 J	<5	<5	<5 J
Chlorobenzene	5		<100	<50	<5 J	<5	<5	<5 J
Ethylbenzene	5		<100	<50	<5 J	<5	<5	<5 J
Styrene	5		<100	<50	<5 J	<5	<5	<5 J
Xylene (total)	5		<100	<50	<5 J	<5	<5	<5 J
Vinyl Acetate	NE		<100	<50	<5 J	<5	<5	<5 J
Freon-113 *	5		<100	<50	<5 J	<5	<5	**2 J**
Total VOCs			**1,500**	**1,416**	**110**	**111**	**66**	**102**

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.
OU2 Operable Unit 2

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 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 10/08/02	GM-71D2 GM-71D-2 02/04/03	GM-73D2 GM-73D2 11/22/02	GM-73D2 GM-73D-2 01/13/03	GM-74D2 GM-74D2 10/09/02	GM-74D2 GM-74D-2 01/13/03
Chloromethane	5		<5	<5	<50 J	<50	<5	<5
Bromomethane	5		<5	<5 J	<50 J	<50 J	<5	<5 J
Vinyl Chloride	2		<2	<2	<20 J	<20	<2	<2
Chloroethane	5		<5	<5	<50 J	<50	<5	<5
Methylene chloride	5		<5	<5	<50 J	<50	<5	<5
Acetone	50		<10 J	<10	<100 J	<100	<10	<10
Carbon disulfide	50		<5	<5	<50 J	<50	<5	<5
1,1-Dichloroethene	5		<5	**0.8 J**	<50 J	<50	<5	<5
1,1-Dichloroethane	5		<5	**2 J**	<50 J	<50	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<50 J	<50	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<50 J	<50	<5	<5
Chloroform	7		**1 J**	**2 J**	<50 J	<50	<5	<5
1,2-Dichloroethane	5		<5 J	<5	<50 J	<50	<5	<5
2-Butanone	50		<10	<10	<100 J	<100	<10	<10 J
1,1,1-Trichloroethane	5		**0.4 J**	**0.7 J**	<50 J	<50	<5	<5
Carbon tetrachloride	5		**2 J**	**2 J**	<50 J	<50	<5	<5
Bromodichloromethane	50		<5	<5	<50 J	<50	<5	<5
1,2-Dichloropropane	5		<5	<5	<50 J	<50	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<50 J	<50	<5	<5
Trichloroethene	5		**4 J**	**5 J**	**1200 J**	**1100**	**8**	**8**
Dibromochloromethane	5		<5	<5	<50 J	<50	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<50 J	<50	<5	<5
Benzene	0.7		<0.7	<0.7	<7 J	<7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<50 J	<50	<5	<5
Bromoform	50		<5	<5	<50 J	<50	<5	<5
4-Methyl-2-pentanone	50		<10	<10 J	<100 J	<100 J	<10	<10
2-Hexanone	50		<10	<10	<100 J	<100	<10	<10
Tetrachloroethene	5		<5	<5	**4 J**	**5 J**	**5 J**	**5 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<50 J	<50	<5	<5
Toluene	5		<5	<5	<50 J	<50	<5	<5
Chlorobenzene	5		<5	<5	<50 J	<50	<5	<5
Ethylbenzene	5		<5	<5	<50 J	<50	<5	<5
Styrene	5		<5	<5	<50 J	<50	<5	<5
Xylene (total)	5		<5	<5	<50 J	<50	<5	<5
Vinyl Acetate	NE		<5	<5 J	<50 J	<50 J	<5	<5 J
Freon-113 *	5		<5	<5	<50 J	<50	<5	<5
Total VOCs			**7.4**	**12.5**	**1,204**	**1,105**	**13**	**13**

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.
OU2 Operable Unit 2

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 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-75D-2 10/03/02	GM-75D2 GM-75D-2 01/09/03	GP-1 GP-1 10/14/02	GP-1 GP-1 01/13/03	GP-3 GP-3 10/14/02	GP-3 GP-3 01/13/03
Chloromethane	5		<5 J	<50	<5	<5 J	<5	<5 J
Bromomethane	5		<5	<50	<5	<5 J	<5	<5 J
Vinyl Chloride	2		<2 J	<20	<2	<2 J	**47 J**	**60 J**
Chloroethane	5		<5	<50	<5	<5 J	<5	<5 J
Methylene chloride	5		<5	<50	<5	<5 J	<5	<5 J
Acetone	50		<10	<100	<10	<10 J	<10	<10 J
Carbon disulfide	50		<5	<50	<5	<5 J	<5	<5 J
1,1-Dichloroethene	5		**36**	**29 J**	**6 J**	**7 J**	**15 J**	**17 J**
1,1-Dichloroethane	5		**5**	<50	<5	**2 J**	**4 J**	**4 J**
cis-1,2-Dichloroethene	5		**3 J**	<50	**11 J**	**13 J**	**10 J**	**10 J**
trans-1,2-Dichloroethene	5		<5	<50	<5	<5 J	<5	<5 J
Chloroform	7		**0.4 J**	<50	<5	<5 J	<5	**0.5 J**
1,2-Dichloroethane	5		<5	<50	<5	<5 J	<5	<5 J
2-Butanone	50		<10	<100	<10	<10 J	<10	<10 J
1,1,1-Trichloroethane	5		**11**	**8 J**	<5	**2 J**	**5 J**	**5 J**
Carbon tetrachloride	5		<5	<50	<5	<5 J	<5	<5 J
Bromodichloromethane	50		<5	<50	<5	<5 J	<5	<5 J
1,2-Dichloropropane	5		<5	<50	<5	<5 J	<5	<5 J
cis-1,3-Dichloropropene	5		<5	<50	<5	<5 J	<5	<5 J
Trichloroethene	5		**1500 D**	**980**	**560 DJ**	**570 D**	**2500 DJ**	**3800 D**
Dibromochloromethane	5		<5	<50	<5	<5 J	<5	<5 J
1,1,2-Trichloroethane	5		<5	<50	<5	<5 J	<5	<5 J
Benzene	0.7		<0.7	<7	<0.7	<0.7 J	<0.7	<0.7 J
trans-1,3-Dichloropropene	5		<5	<50	<5	<5 J	<5	<5 J
Bromoform	50		<5	<50	<5	<5 J	<5	<5 J
4-Methyl-2-pentanone	50		<10	<100	<10	<10 J	<10	<10 J
2-Hexanone	50		<10	<100	<10	<10 J	<10	<10 J
Tetrachloroethene	5		**11**	**9 J**	**85 J**	**100 J**	**60 J**	**71 J**
1,1,2,2-Tetrachloroethane	5		<5	<50	<5	<5 J	<5	<5 J
Toluene	5		<5	<50	<5	<5 J	<5	<5 J
Chlorobenzene	5		<5	<50	<5	<5 J	<5	<5 J
Ethylbenzene	5		<5	<50	<5	<5 J	<5	<5 J
Styrene	5		<5	<50	<5	<5 J	<5	<5 J
Xylene (total)	5		<5	<50	<5	<5 J	<5	<5 J
Vinyl Acetate	NE		<5	<50	<5 J	<5 J	<5 J	<5 J
Freon-113 *	5		<5	**12 J**	**11 J**	**14 J**	**28 J**	**29 J**
Total VOCs			**1,566**	**1,038**	**673**	**708**	**2,669**	**3996.5**

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.
OU2 Operable Unit 2

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 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 GP1/3 INF 10/14/02	GP-1/3 INFLUENT GP-1/3 INFLUENT 01/13/03	GP-1/3 EFFLUENT GP1/3 EFF 10/14/02	GP-1/3 EFFLUENT GP-1/3 EFFLUENT 01/13/03
Chloromethane	5		<50	<5 J	<5	<5
Bromomethane	5		<50	<5 J	<5	<5 J
Vinyl Chloride	2		<20	**16 J**	<2	<2
Chloroethane	5		<50	<5 J	<5	<5
Methylene chloride	5		**5 J**	<5 J	<5	<5
Acetone	50		<100	<10 J	<10	<10
Carbon disulfide	50		<50	<5 J	<5	<5
1,1-Dichloroethene	5		<50	**10 J**	<5	<5
1,1-Dichloroethane	5		<50	**3 J**	<5	<5
cis-1,2-Dichloroethene	5		**11 J**	**12 J**	<5	<5
trans-1,2-Dichloroethene	5		<50	<5 J	<5	<5
Chloroform	7		<50	<5 J	<5	<5
1,2-Dichloroethane	5		<50	<5 J	<5	<5
2-Butanone	50		<100	<10 J	<10	<10
1,1,1-Trichloroethane	5		<50	**3 J**	<5	<5
Carbon tetrachloride	5		<50	<5 J	<5	<5
Bromodichloromethane	50		<50	<5 J	<5	<5
1,2-Dichloropropane	5		<50	<5 J	<5	<5
cis-1,3-Dichloropropene	5		<50	<5 J	<5	<5
Trichloroethene	5		**1400**	**1500 D**	<5	**3 J**
Dibromochloromethane	5		<50	<5 J	<5	<5
1,1,2-Trichloroethane	5		<50	<5 J	<5	<5
Benzene	0.7		<7	<0.7 J	<0.7	<0.7
trans-1,3-Dichloropropene	5		<50	<5 J	<5	<5
Bromoform	50		<50	<5 J	<5	<5
4-Methyl-2-pentanone	50		<100	<10 J	<10	<10 J
2-Hexanone	50		<100 J	<10 J	<10	<10
Tetrachloroethene	5		**80**	**97 J**	<5	<5
1,1,2,2-Tetrachloroethane	5		<50	<5 J	<5	<5
Toluene	5		<50	<5 J	<5	<5
Chlorobenzene	5		<50	<5 J	<5	<5
Ethylbenzene	5		<50	<5 J	<5	<5
Styrene	5		<50	<5 J	<5	<5
Xylene (total)	5		<50	<5 J	<5	<5
Vinyl Acetate	NE		<50 J	<5 J	<5 J	<5 J
Freon-113 *	5		**12 J**	**17 J**	<5	<5
Total VOCs			**1,508**	**1658**	0	**3**

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.
OU2 Operable Unit 2

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 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 10/14/02	ONCT-1 ONCT-1 01/13/03	ONCT-2 ONCT2 10/14/02	ONCT-2 ONCT-2 01/13/03	ONCT-3 ONCT3 10/14/02	ONCT-3 ONCT-3 01/13/03
Chloromethane	5		<5	<5 J	<10	<5	<5	<5
Bromomethane	5		<5	<5 J	<10	<5 J	<5	<5 J
Vinyl Chloride	2		<2	<2 J	<4	<2	<2	<2
Chloroethane	5		<5	<5 J	<10	<5	<5	<5
Methylene chloride	5		<5	<5 J	**1 J**	<5	<5	<5
Acetone	50		<10	<10 J	<20	<10	<10	<10
Carbon disulfide	50		<5	<5 J	<10	<5	<5	<5
1,1-Dichloroethene	5		**3 J**	**3 J**	**3 J**	**4 J**	<5	**1 J**
1,1-Dichloroethane	5		<5	<5 J	<10	**2 J**	<5	**1 J**
cis-1,2-Dichloroethene	5		**4 J**	**4 J**	<10	**2 J**	**8**	**10**
trans-1,2-Dichloroethene	5		<5	<5 J	<10	<5	<5	<5
Chloroform	7		<5	<5 J	<10	<5	**1 J**	**1 J**
1,2-Dichloroethane	5		<5	<5 J	<10	<5	<5	<5
2-Butanone	50		<10	<10 J	<20	<10	<10	<10 J
1,1,1-Trichloroethane	5		<5	<5 J	<10	**2 J**	<5	<5
Carbon tetrachloride	5		<5	<5 J	<10	<5	<5	<5
Bromodichloromethane	50		<5	<5 J	<10	<5	<5	<5
1,2-Dichloropropane	5		<5	<5 J	<10	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5 J	<10	<5	<5	<5
Trichloroethene	5		**1200 DJ**	**1200 D**	**200**	**170**	**26**	**26**
Dibromochloromethane	5		<5	<5 J	<10	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5 J	<10	<5	<5	<5
Benzene	0.7		<0.7	<0.7 J	<1	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5 J	<10	<5	<5	<5
Bromoform	50		<5	<5 J	<10	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10 J	<20	<10 J	<10	<10
2-Hexanone	50		<10	<10 J	<20 J	<10	<10 J	<10
Tetrachloroethene	5		**11 J**	**18 J**	**8 J**	**9**	**10**	**10**
1,1,2,2-Tetrachloroethane	5		<5	<5 J	<10	<5	<5	<5
Toluene	5		<5	<5 J	<10	<5	<5	<5
Chlorobenzene	5		<5	<5 J	<10	<5	<5	<5
Ethylbenzene	5		<5	<5 J	<10	<5	<5	<5
Styrene	5		<5	<5 J	<10	<5	<5	<5
Xylene (total)	5		<5	<5 J	<10	<5	<5	<5
Vinyl Acetate	NE		<5 J	<5 J	<10 J	<5 J	<5 J	<5 J
Freon-113 *	5		**7 J**	**8 J**	<10	**1 J**	<5	**0.8 J**
Total VOCs			**1,225**	**1233**	**212**	**190**	**45**	**49.8**

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.
OU2 Operable Unit 2

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	ONCT INFLUENT ONCT INF 10/14/02	ONCT INFLUENT ONCT INFLUENT 01/13/03	ONCT EFFLUENT ONCT EFF 10/14/02	ONCT EFFLUENT ONCT EFFLUENT 01/13/03
Chloromethane	5		<25	<25	<5	<5
Bromomethane	5		<25	<25 J	<5	<5 J
Vinyl Chloride	2		<10	<10	<2	<2
Chloroethane	5		<25	<25	<5	<5
Methylene chloride	5		**5 J**	<25	<5	<5
Acetone	50		<50	<50	<10	<10
Carbon disulfide	50		<25	<25	<5	<5
1,1-Dichloroethene	5		<25	**3 J**	<5	<5
1,1-Dichloroethane	5		<25	<25	<5	<5
cis-1,2-Dichloroethene	5		<25	**7 J**	<5	<5
trans-1,2-Dichloroethene	5		<25	<25	<5	<5
Chloroform	7		<25	<25	<5	<5
1,2-Dichloroethane	5		<25	<25	<5	<5
2-Butanone	50		<50	<50	<10	<10 J
1,1,1-Trichloroethane	5		<25	<25	<5	<5
Carbon tetrachloride	5		<25	<25	<5	<5
Bromodichloromethane	50		<25	<25	<5	<5
1,2-Dichloropropane	5		<25	<25	<5	<5
cis-1,3-Dichloropropene	5		<25	<25	<5	<5
Trichloroethene	5		**600**	**490**	<5	**0.5 J**
Dibromochloromethane	5		<25	<25	<5	<5
1,1,2-Trichloroethane	5		<25	<25	<5	<5
Benzene	0.7		<4	<4	<0.7	<0.7
trans-1,3-Dichloropropene	5		<25	<25	<5	<5
Bromoform	50		<25	<25	<5	<5
4-Methyl-2-pentanone	50		<50	<50 J	<10	<10
2-Hexanone	50		<50 J	<50	<10	<10
Tetrachloroethene	5		**9 J**	**13 J**	<5	<5
1,1,2,2-Tetrachloroethane	5		<25	<25	<5	<5
Toluene	5		<25	<25	<5	<5
Chlorobenzene	5		<25	<25	<5	<5
Ethylbenzene	5		<25	<25	<5	<5
Styrene	5		<25	<25	<5	<5
Xylene (total)	5		<25	<25	<5	<5
Vinyl Acetate	NE		<25 J	<25 J	<5 J	<5 J
Freon-113 *	5		<25	**4 J**	<5	<5
Total VOCs			**614**	**517**	0	**0.5**

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.
OU2 Operable Unit 2

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells and OU2 Groundwater Remedial Treatment Systems, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	ONCT INFLUENT REP011303 01/13/03
Chloromethane	5		<25
Bromomethane	5		<25 J
Vinyl Chloride	2		<10
Chloroethane	5		<25
Methylene chloride	5		<25
Acetone	50		<50
Carbon disulfide	50		<25
1,1-Dichloroethene	5		**3 J**
1,1-Dichloroethane	5		<25
cis-1,2-Dichloroethene	5		**7 J**
trans-1,2-Dichloroethene	5		<25
Chloroform	7		<25
1,2-Dichloroethane	5		<25
2-Butanone	50		<50
1,1,1-Trichloroethane	5		<25
Carbon tetrachloride	5		<25
Bromodichloromethane	50		<25
1,2-Dichloropropane	5		<25
cis-1,3-Dichloropropene	5		<25
Trichloroethene	5		**530**
Dibromochloromethane	5		<25
1,1,2-Trichloroethane	5		<25
Benzene	0.7		<4
trans-1,3-Dichloropropene	5		<25
Bromoform	50		<25
4-Methyl-2-pentanone	50		<50 J
2-Hexanone	50		<50
Tetrachloroethene	5		**13 J**
1,1,2,2-Tetrachloroethane	5		<25
Toluene	5		<25
Chlorobenzene	5		<25
Ethylbenzene	5		<25
Styrene	5		<25
Xylene (total)	5		<25
Vinyl Acetate	NE		<25 J
Freon-113 *	5		**5 J**
Total VOCs			**558**

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.
OU2 Operable Unit 2

ARCADIS

Table 11. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater and Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

WELL/BLANK SAMPLE IDENTIFICATION	SAMPLE ID	DATE	Tentatively Identified Compounds (Units in ug/L)					
			1,2,4-Trichlorobenzene	Acetic Acid, Methyl Ester	Cyclotetrasiloxane, octameth	Methylacetate	Unknown Alkane	Unknown Siloxane
GM-13D	GM-13D	01/16/03	--	--	--	--	--	54 J
GM-15I	GM-15I	01/10/03	--	--	25 JN	--	--	15 J
GM-20D	GM-20D	01/03/03	--	--	--	--	--	100 J
GM-21D	GM-21D	01/08/03	--	--	--	--	--	120 J
GM-21I	GM-21I	01/08/03	--	--	--	--	--	120 J
GM-33D2	GM-33D-2	01/16/03	--	--	--	--	--	19 J
GM-36D2	36D2	12/16/02	--	11 JN	--	--	--	--
GM-37D	GM-37D	02/04/03	--	--	8 JN	2 JN	--	82 J
GM-38D	GM 38D	01/21/03	--	--	54 JN	--	--	--
GM-38D2	GM38D2	12/10/02	--	--	130 JN	--	--	64 J
GM-73D2	GM-73D-2	01/13/03	--	--	--	--	--	640 J
GP-1	GP-1	01/13/03	--	--	9 JN	--	--	100 J
GP-1/3 INFLUENT	GP-1/3 INFLUENT	01/13/03	--	--	5 JN	--	--	--
GP-3	GP-3	01/13/03	--	--	--	--	--	130 J
ONCT-1	ONCT-1	01/13/03	--	--	44 JN	--	--	21.31
ONCT-3	ONCT-3	01/13/03	--	--	8 JN	--	--	65 J
TRIP BLANK	TB010603	01/06/03	--	--	6 JN	--	--	93 J
TRIP BLANK	TB010703	01/07/03	--	--	5 JN	--	--	100 J
TRIP BLANK	TB011003	01/10/03	--	--	--	--	--	58 J
TRIP BLANK	TB011303	01/13/03	--	--	9 JN	--	--	3 J
TRIP BLANK	TB011403	01/14/03	--	--	12 JN	--	--	4 J
TRIP BLANK	TB011503	01/15/03	--	--	8 JN	--	5 J	6 J & 2 J
TRIP BLANK	TB011603	01/16/03	--	--	--	--	4 J	--
TRIP BLANK	TB012003	01/20/03	--	--	10 JN	--	--	6 J
TRIP BLANK	TB012103	01/21/03	--	--	--	--	--	4 J
TRIP BLANK	TB012203	01/22/03	--	--	--	--	--	2 J
TRIP BLANK	TB012803	01/28/03	--	--	--	--	--	94 J
TRIP BLANK	TB020403	02/04/03	0.1 JN	--	--	--	--	--
WATER EQ.BLANK	FB010903	01/09/03	--	--	--	--	--	120 J
WATER EQ.BLANK	FB011503	01/15/03	--	--	--	--	--	5 J

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

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.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB121002 12/10/02	TRIP BLANK TB121602 12/16/02	TRIP BLANK TB121702 12/17/02	TRIP BLANK TB121802 12/18/02	TRIP BLANK TB121902 12/19/02	TRIP BLANK TB122002 12/20/02
Chloromethane		<5	<5	<5	<5	<5 J	<5 J
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	**2 J**	<5
Acetone		**13**	<10	<10	<10	<10	<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	<10	<10	<10	<10	<10 J
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 J
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		**13**	0	0	0	**2**	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 value indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB122702 12/27/02	TRIP BLANK TB010303 01/03/03	TRIP BLANK TB010603 01/06/03	TRIP BLANK TB010703 01/07/03	TRIP BLANK TB010803 01/08/03	TRIP BLANK TB010903 01/09/03
Chloromethane		<5	<5	<5	<5	<5	<5
Bromomethane		<5	<5	**1 J**	**1 J**	<5	<5
Vinyl Chloride		<2 J	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		<5	<5	<5	<5	**0.5 J**	**0.4 J**
Acetone		<10	**5 J**	<10	**8 J**	<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 J	<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 J	<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 J	<5	**0.6 J**	**0.8 J**	<5	<5
Total VOCs		0	**5**	**1.6**	**9.8**	**0.5**	**0.4**

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 value indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB011003 01/10/03	TRIP BLANK TB011303 01/13/03	TRIP BLANK TB011303 (S) 01/13/03	TRIP BLANK TB011403 01/14/03	TRIP BLANK TB011503 01/15/03	TRIP BLANK TB011603 01/16/03
Chloromethane		<5	<5	<5	<5	<5	<5
Bromomethane		<5 J	<5 J	<5 J	<5 J	<5 J	<5 J
Vinyl Chloride		<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		**0.5 JB**	**0.5 J**	<5	**1 J**	**0.5 J**	<5
Acetone		<10 J	<10	<10	<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 J	<10	<10 J	<10 J	<10 J
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 J	<10	<10	<10
2-Hexanone		<10 J	<10	<10	<10 J	<10 J	<10 J
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 J	<5 J	<5 J	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		**0.5**	**0.5**	0	**1**	**0.5**	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 value indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB012003 01/20/03	TRIP BLANK TB012103 01/21/03	TRIP BLANK TB012203 01/22/03	TRIP BLANK TB012803 01/28/03	TRIP BLANK TB020403 02/04/03
Chloromethane		<5 J	<5	<5 J	<5	<5
Bromomethane		<5 J	<5	<5 J	<5	<5 J
Vinyl Chloride		<2 J	<2	<2 J	<2	<2
Chloroethane		<5 J	<5	<5 J	<5	<5
Methylene chloride		<5 J	**0.3 J**	<5 J	<5	<5
Acetone		<10 J	<10	<10 J	<10	<10
Carbon disulfide		<5 J	<5	<5 J	<5	<5
1,1-Dichloroethene		<5 J	<5	<5 J	<5	<5
1,1-Dichloroethane		<5 J	<5	<5 J	<5	<5
cis-1,2-Dichloroethene		<5 J	<5	<5 J	<5	<5
trans-1,2-Dichloroethene		<5 J	<5	<5 J	<5	<5
Chloroform		<5 J	<5	<5 J	<5	<5
1,2-Dichloroethane		<5 J	<5	<5 J	<5	<5
2-Butanone		<10 J	<10	<10 J	<10	<10
1,1,1-Trichloroethane		<5 J	<5	<5 J	<5	<5
Carbon tetrachloride		<5 J	<5	<5 J	<5	<5
Bromodichloromethane		<5 J	<5	<5 J	<5	<5
1,2-Dichloropropane		<5 J	<5	<5 J	<5	<5
cis-1,3-Dichloropropene		<5 J	<5	<5 J	<5	<5
Trichloroethene		<5 J	**0.6 J**	<5 J	<5	<5
Dibromochloromethane		<5 J	<5	<5 J	<5	<5
1,1,2-Trichloroethane		<5 J	<5	<5 J	<5	<5
Benzene		<0.7 J	<0.7	<0.7 J	<0.7	<0.7
trans-1,3-Dichloropropene		<5 J	<5	<5 J	<5	<5
Bromoform		<5 J	<5	<5 J	<5	<5
4-Methyl-2-pentanone		<10 J	<10	<10 J	<10	**1 J**
2-Hexanone		<10 J	<10	<10 J	<10	<10
Tetrachloroethene		<5 J	<5	<5 J	<5	<5
1,1,2,2-Tetrachloroethane		<5 J	<5	<5 J	<5	<5
Toluene		<5 J	<5	<5 J	<5	<5
Chlorobenzene		<5 J	<5	<5 J	<5	<5
Ethylbenzene		<5 J	<5	<5 J	<5	<5
Styrene		<5 J	<5	<5 J	<5	<5
Xylene (total)		<5 J	<5	<5 J	<5	<5
Vinyl Acetate		<5 J	<5	<5 J	<5 J	<5 J
Freon-113 *		<5 J	<5	<5 J	<5	<5
Total VOCs		0	**0.9**	0	0	**1**

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 value indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB121702 12/17/02	WATER EQ.BLANK FB121802 12/18/02	WATER EQ.BLANK FB121902 12/19/02	WATER EQ.BLANK FB122002 12/20/02
Chloromethane		<5	<5	<5	<5 J
Bromomethane		<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5
Methylene chloride		**0.5 JB**	<5	**3 J**	<5
Acetone		<10	<10	<10 J	<10 J
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 J	<10 J
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 J
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		**0.5**	0	**3**	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 value indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB010703 01/07/03	WATER EQ.BLANK FB010903 01/09/03	WATER EQ.BLANK FB011003 01/10/03	WATER EQ.BLANK FB011503 01/15/03
Chloromethane		<5	<5	<5	<5
Bromomethane		**0.9 J**	<5	<5 J	<5 J
Vinyl Chloride		<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5
Methylene chloride		<5	**0.6 J**	**0.4 JB**	**0.5 J**
Acetone		**5 J**	<10	<10 J	<10 J
Carbon disulfide		<5	**0.7 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 J	<10 J
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		**4 J**	<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 J	<10 J
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 J	<5
Freon-113 *		<5	<5	<5	<5
Total VOCs		**9.9**	**1.3**	**0.4**	**0.5**

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 value indicates a detection.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: WATER EQ.BLANK SAMPLE ID: FB011603 DATE: 01/16/03
Chloromethane	<10
Bromomethane	<10 J
Vinyl Chloride	<10
Chloroethane	<10
Methylene chloride	<5
Acetone	<10
Carbon disulfide	<10
1,1-Dichloroethene	<5
1,1-Dichloroethane	<5
cis-1,2-Dichloroethene	<5
trans-1,2-Dichloroethene	<5
Chloroform	<5
1,2-Dichloroethane	<5
2-Butanone	<10
1,1,1-Trichloroethane	<5
Carbon tetrachloride	<5
Bromodichloromethane	<5
1,2-Dichloropropane	<5
cis-1,3-Dichloropropene	<5
Trichloroethene	<5
Dibromochloromethane	<5
1,1,2-Trichloroethane	<5
Benzene	<5
trans-1,3-Dichloropropene	<5
Bromoform	<5
4-Methyl-2-pentanone	<10
2-Hexanone	<10
Tetrachloroethene	<5
1,1,2,2-Tetrachloroethane	<5
Toluene	<5
Chlorobenzene	<5
Ethylbenzene	<5
Styrene	<5
Xylene (total)	<5
Vinyl Acetate	<10 J
Freon-113 *	--
Total VOCs	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 value indicates a detection.

ARCADIS

Table 13. Concentrations of Semi-Volatile Organic Compounds in Groundwater and Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	GM-14 / GM-14 / 01/16/03	WATER EQ.BLANK / FB011603 / 01/16/03
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 13. Concentrations of Semi-Volatile Organic Compounds in Groundwater and Blank Samples, Fourth Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	GM-14 / GM-14 / 01/16/03	WATER EQ.BLANK / FB011603 / 01/16/03
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

ug/L Micrograms per liter.

ARCADIS

Table 14. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater and Blank Samples, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	10631 N-10631 10/17/02	10631 N-10631 12/17/02	GM-15S GM-15S 01/10/03	GM-16SR GM-16SR 10/11/02	GM-16S GM-16SR 12/17/02	GM-17SR GM-17SR 10/07/02	GM-17S GM-17SR 12/17/02	GM-18S GM-18S 10/07/02	GM-18S GM-18S 12/17/02	GM-32S GM-32S 10/17/02	GM-32S GM-32S 12/19/02	GM-78S GM-78S 10/10/02
Cadmium, Total	5		**1.8 B**	**3.4 B**	--	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Cadmium, Dissolved	5		**1.4 B**	**3 B**	--	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	--
Chromium, Total	50		**4.6 B**	**31.4**	**517**	<1.5	<1.5	<1.5	<1.5	**4.9 B**	**2.4 B**	**134**	**160**	<1.5
Chromium, Dissolved	50		**2 B**	**19.7**	--	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**130**	**74.5**	--

(1) Standards, Criteria, and Guidance (SCGs) 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 14. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater and Blank Samples, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	GM-78S GM-78S 12/19/02	GM-78I GM-78I 10/10/02	GM-78I GM-78I 12/19/02	MW-01GF MW-1GF 10/17/02	MW-01GF MW-1GF 12/19/02	MW-02GF MW-2GF 10/17/02	MW-02GF MW-2GF 12/19/02	MW-03R MW-3R 10/11/02	MW-03R MW-3R 12/17/02	MW-04 PLT1 MW-04 01/10/03	MW-05 PLT1 MW-05 01/10/03
Cadmium, Total	5		<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	**26.7**	**33.2**	--	--
Cadmium, Dissolved	5		--	--	--	<1.3	<1.3	<1.3	<1.3	**29.1**	**32.3**	--	--
Chromium, Total	50		<1.5	<1.5	**2.2 B**	<1.5	<1.5	**36.3**	**36.2**	**37.8**	**60.7**	<1.5	**539**
Chromium, Dissolved	50		--	--	--	<1.5	<1.5	**36.4**	**36.9**	**40.1**	**57.6**	--	--

(1) Standards, Criteria, and Guidance (SCGs) 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.

ARCADIS

Table 14. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater and Blank Samples, Third and Fourth Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	MW-06 PLT1 MW-06 01/10/03	WATER EQ.BLANK FB121702 12/17/02	WATER EQ.BLANK FB121902 12/19/02	WATER EQ.BLANK FB011003 01/10/03
Cadmium, Total	5		--	<1.3	<1.3	--
Cadmium, Dissolved	5		--	--	--	--
Chromium, Total	50		**281**	<1.5	<1.5	<1.5
Chromium, Dissolved	50		--	--	--	--

(1) Standards, Criteria, and Guidance (SCGs) 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

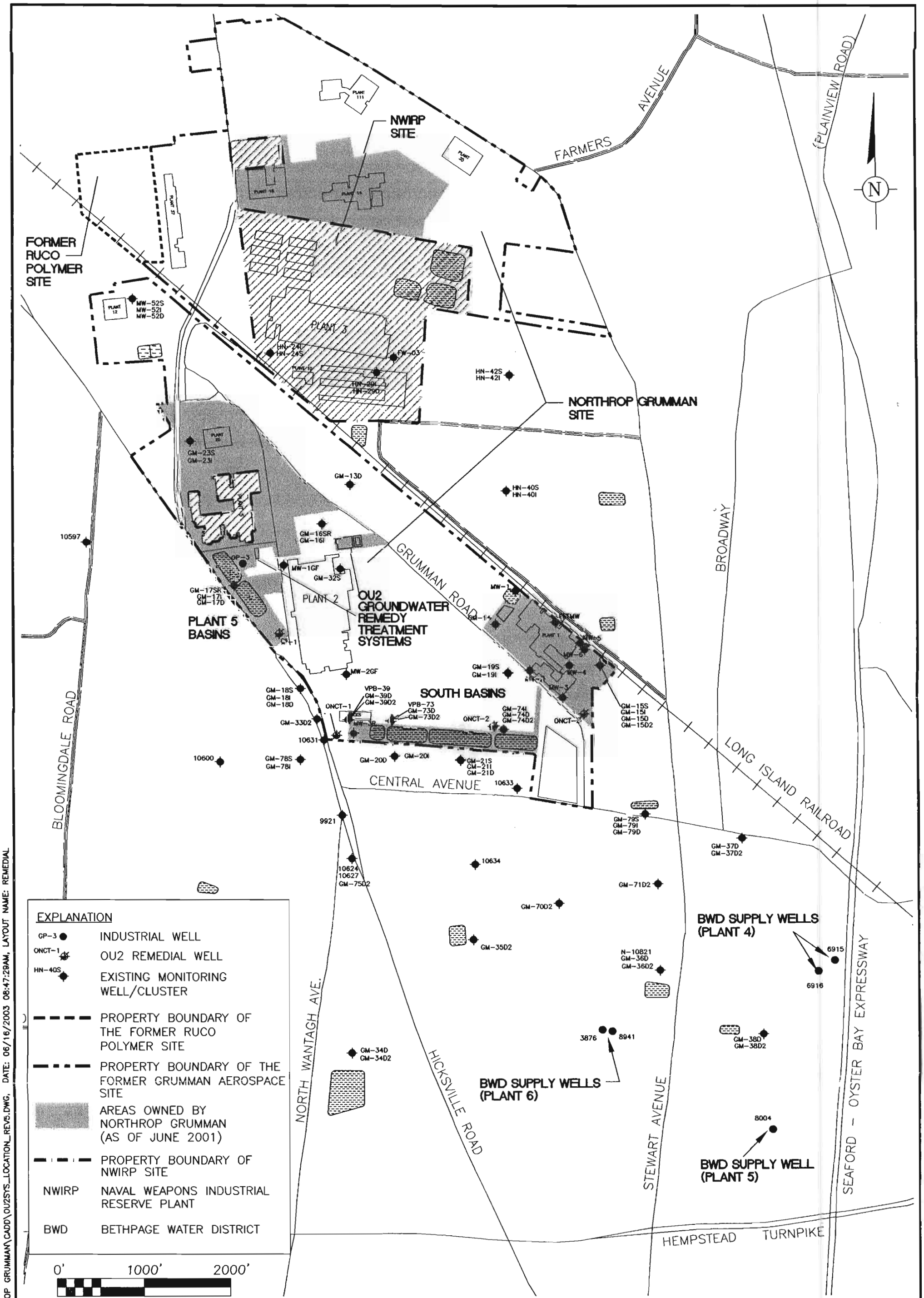
NYSDEC New York State Department of Environmental Conservation

EQ Equipment

[ ] Value exceeds associated SCG value.

Bold Constituent detected above IDL.

-- Not analyzed.



FILE: G:\APROJECT\NORTHROP GRUMMAN\CADD\OU2SYS_LOCATION_REV5.DWG, DATE: 06/16/2003 08:47:29AM, LAYOUT NAME: REMEDIAL

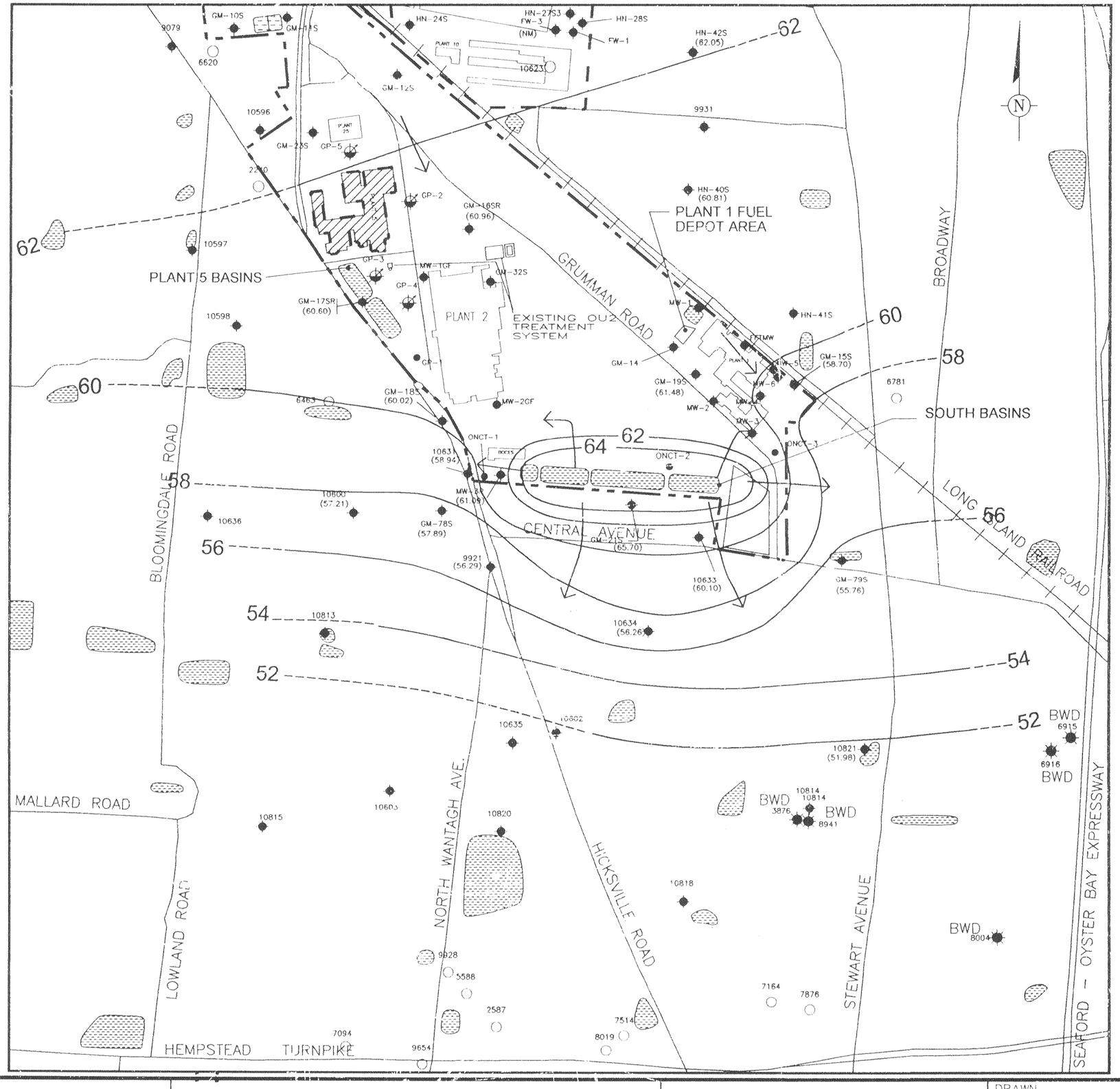
ARCADIS G&M
60 DUPLEX ROAD
MELVILLE, NEW YORK 11747
TEL: 516/249-7600 FAX: 516/249-7610

NORTHROP GRUMMAN CORPORATION

BETHPAGE, NEW YORK

LOCATION OF OU2 GROUNDWATER REMEDY AND WELLS

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
A.G.	10/23/02	CSG	
		LEAD DESIGN PROF.	CHECKED
			D.S.
		PROJECT NUMBER	DRAWING NUMBER
		NY001348.001	1



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-19S (61.48) — 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)
- 3554 — 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)
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- 60 — LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)
- OU2 — OPERABLE UNIT 2
- 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 AND INDUSTRIAL SUPPLY WELL GP-3 IS ALSO 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, HUNTINGTION, AND FREEPORT QUADRANGLES), AND INFORMATION PROVIDED BY NORTHROP GRUMMAN.

0 800 FT

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

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	3/27/03	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			SH

WATER-TABLE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE SHALLOW ZONE
JANUARY 29, 2003

PROJECT NUMBER	DRAWING NUMBER
NY001348.0013	2

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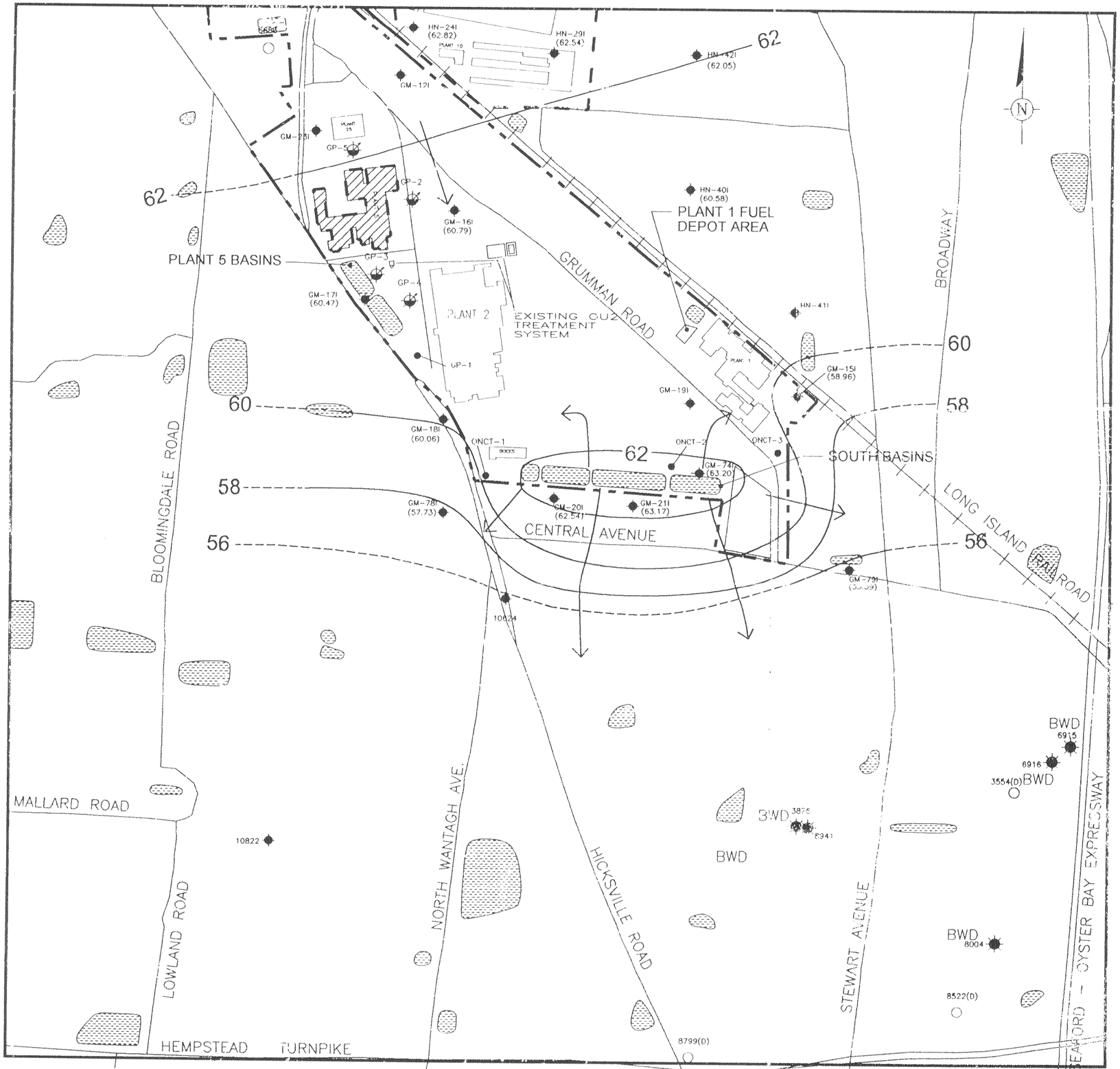

EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-15I (58.96) — 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)
- 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

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 AND INDUSTRIAL SUPPLY WELL GP-3 IS ALSO 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

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NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE ELEVATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE INTERMEDIATE ZONE
JANUARY 29, 2003

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	3/27/03	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001348.006	3

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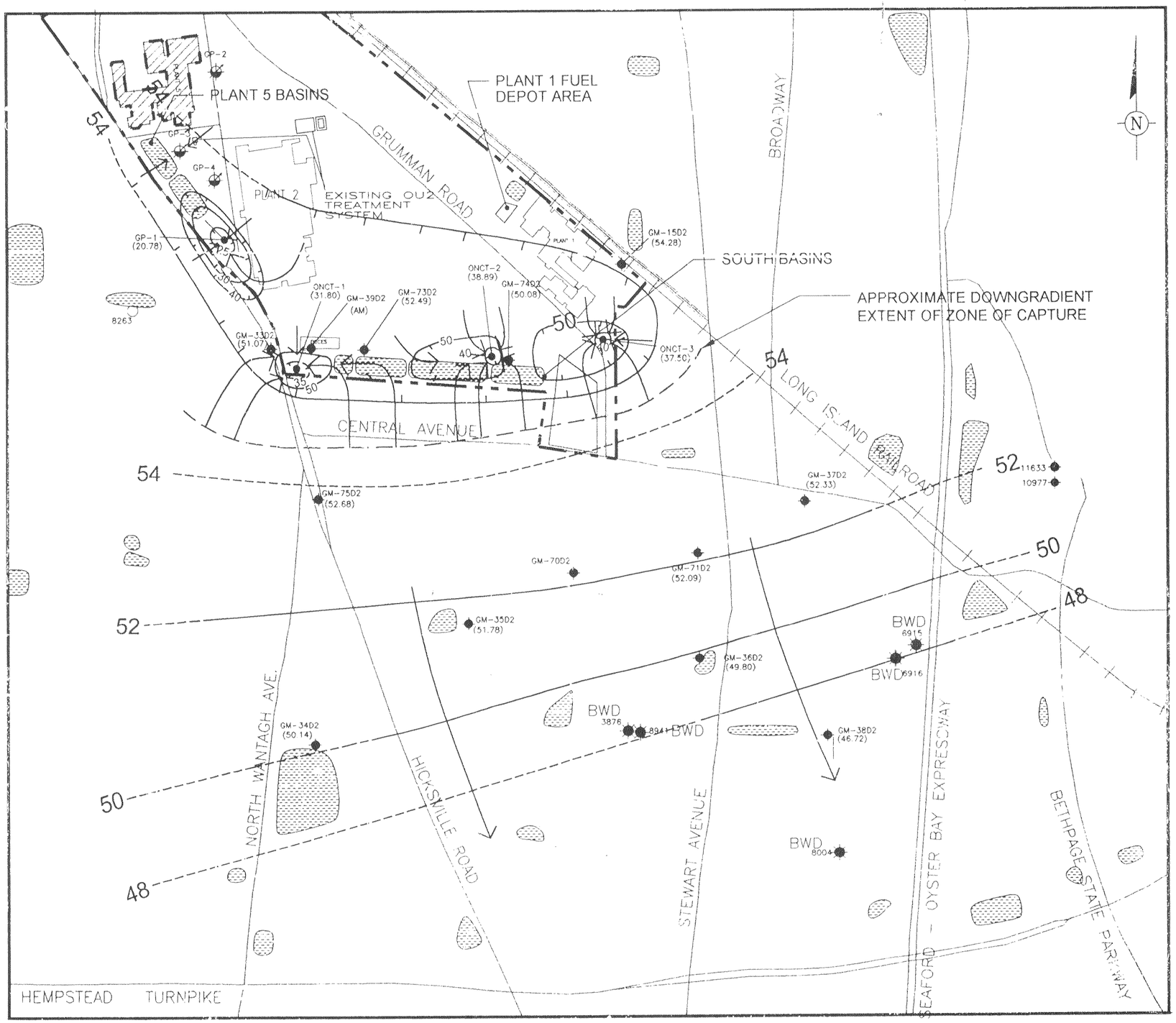

EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- RECHARGE BASIN
- GM-36D2 (46.72) — 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 (37.50) — 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

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 1,100 GPM, 900 GPM, 650 GPM, AND 450 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 450 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.

0 800 FT

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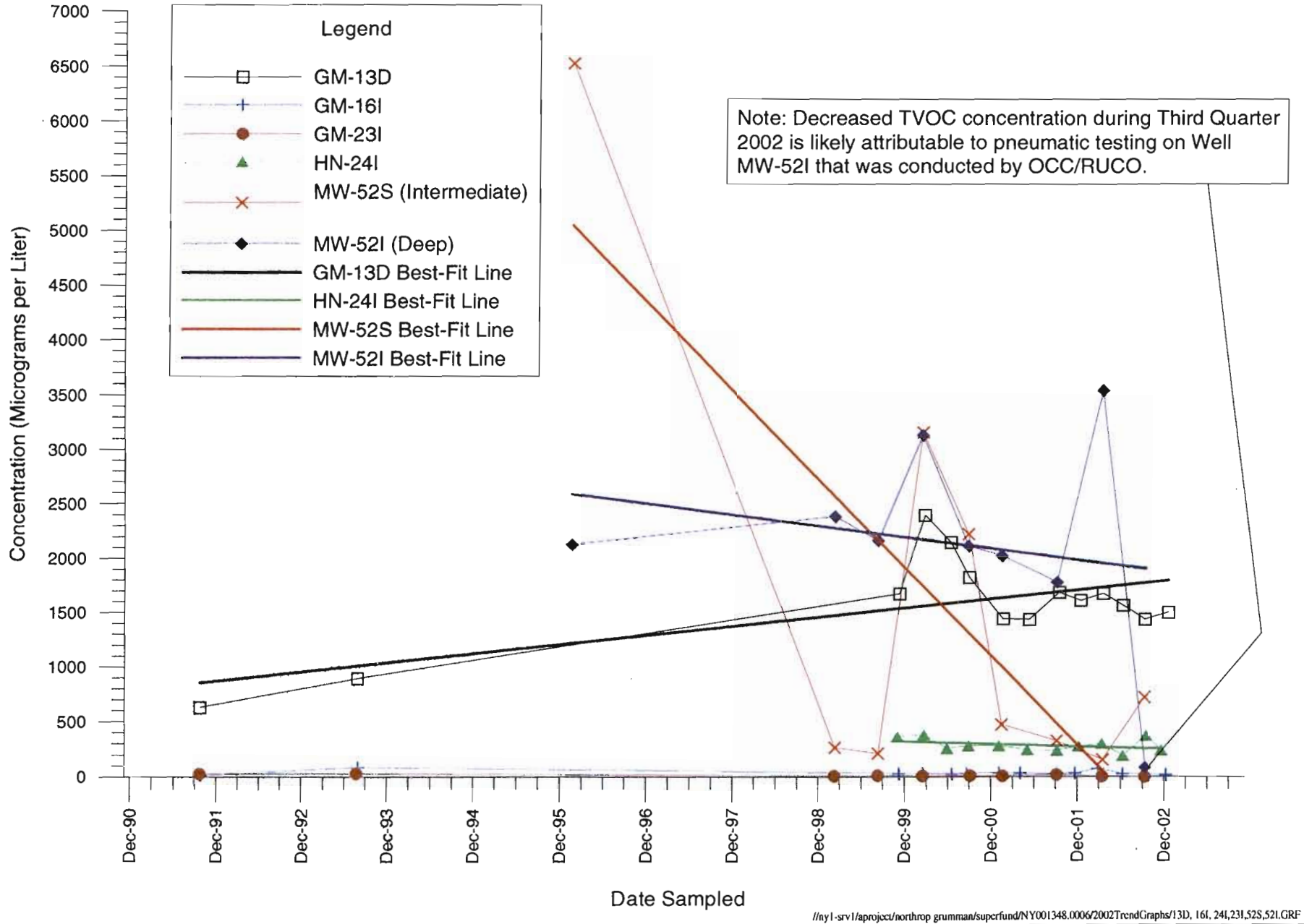
NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE ELEVATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE D2 ZONE JANUARY 29, 2002

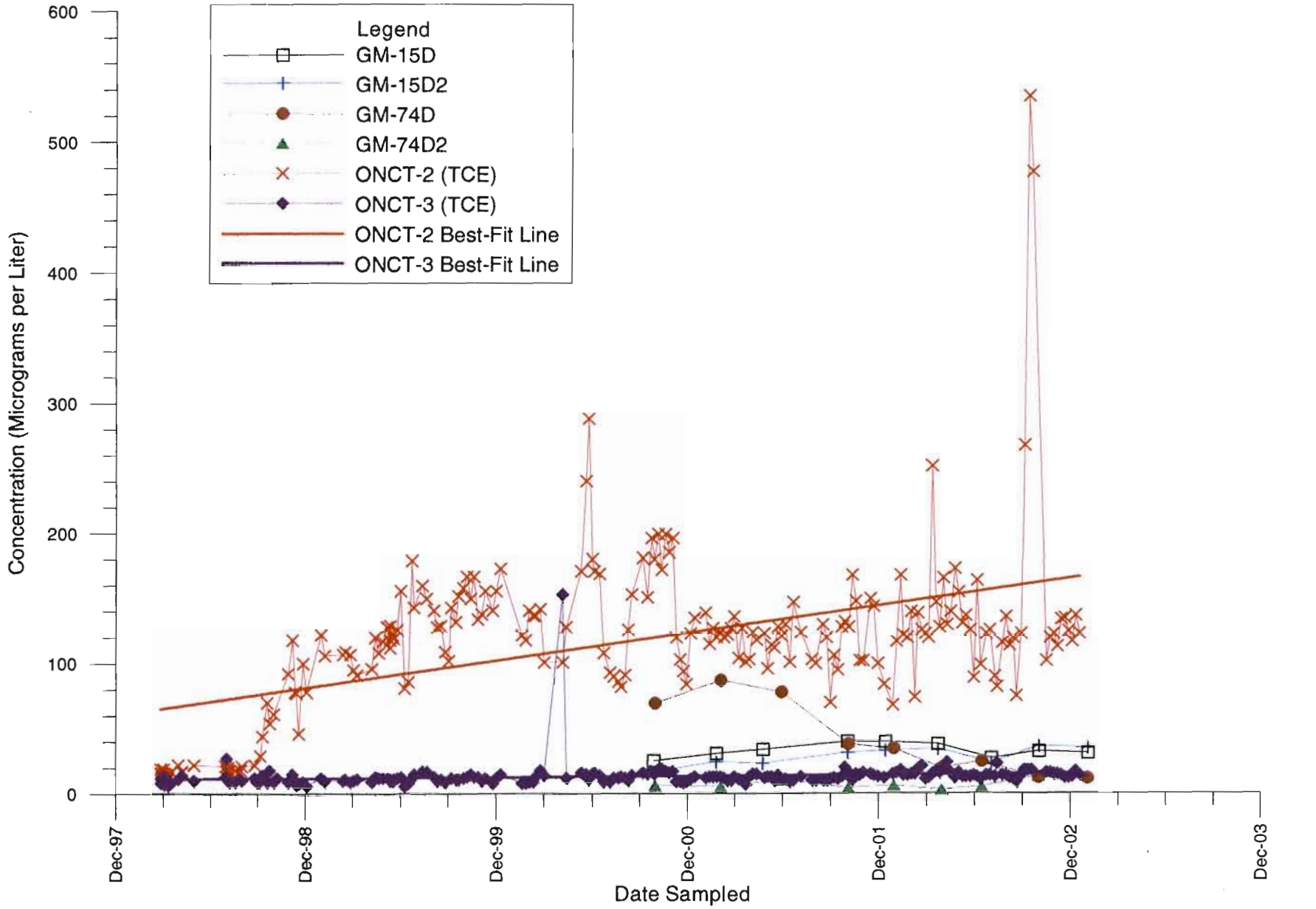
DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	3/27/03	COS	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		CONTRACT NUMBER	DRAWING NUMBER
		NY001348.006	4



ARCADIS

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

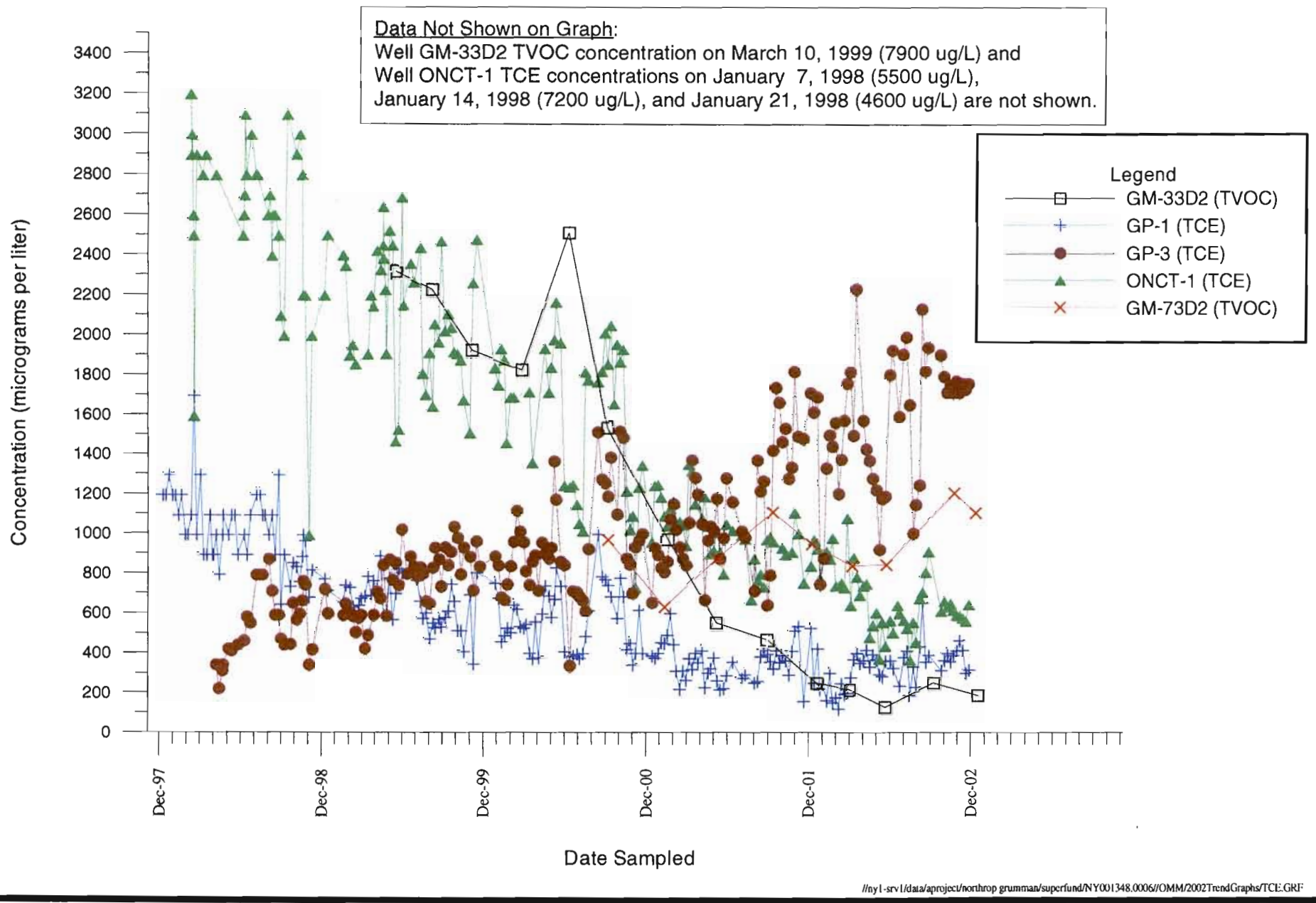
FIGURE 5



ARCADIS

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

FIGURE 6



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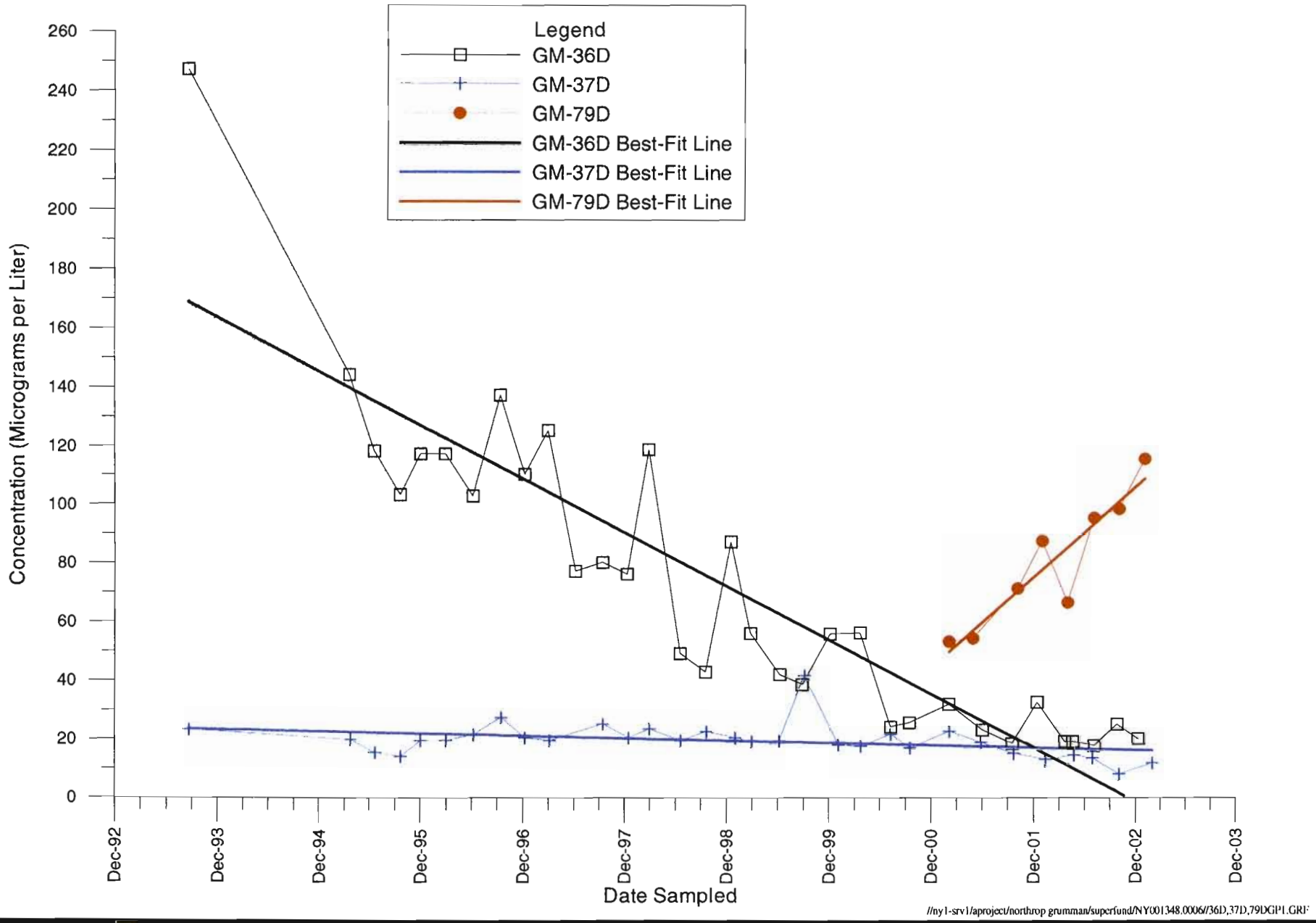
ARCADIS

Volatile Organic Compound Concentrations along the Southern and Southwestern Property Boundary in Deep 2 OU2 Remedial Wells, Industrial Well GP-3, and Monitoring Wells GM-33D2 and GM-73D2 Northrop Grumman Corporation, Bethpage, New York

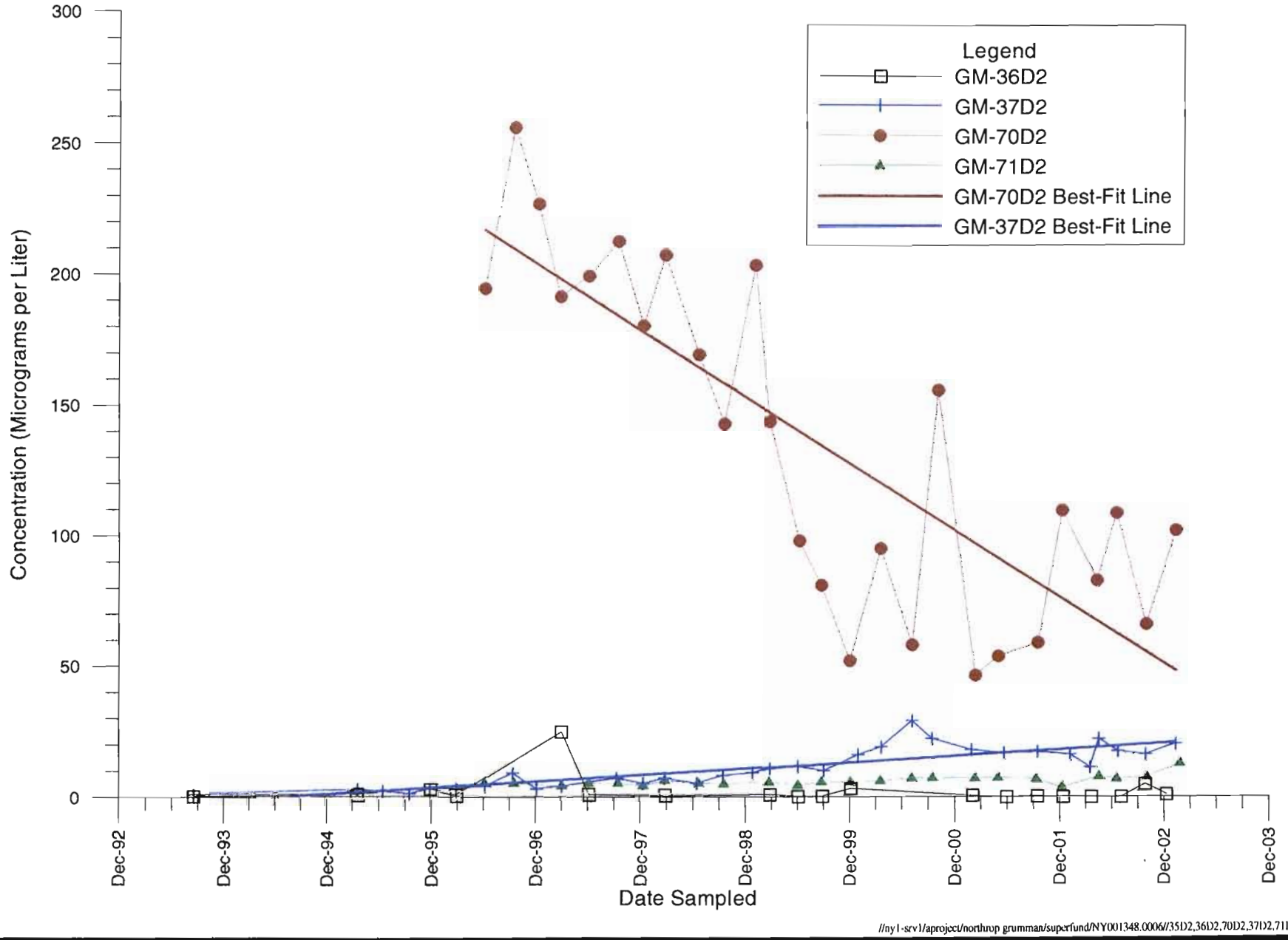
FIGURE 7



ARCADIS

Total Volatile Organic Compound Concentrations in Eastern Off-site Deep Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

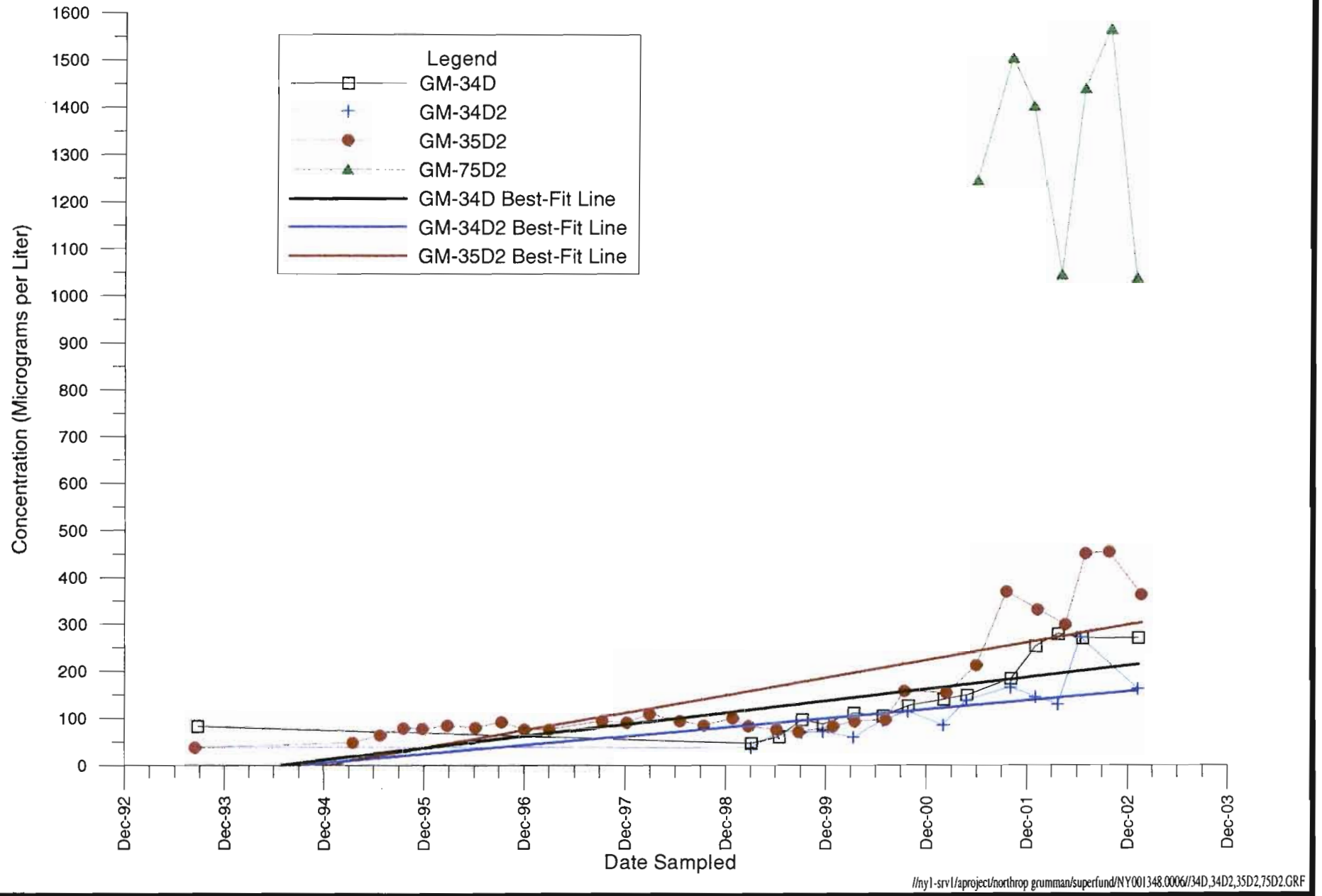
FIGURE 8



ARCADIS

Total Volatile Organic Compound Concentrations in Eastern Off-site Deep2 Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

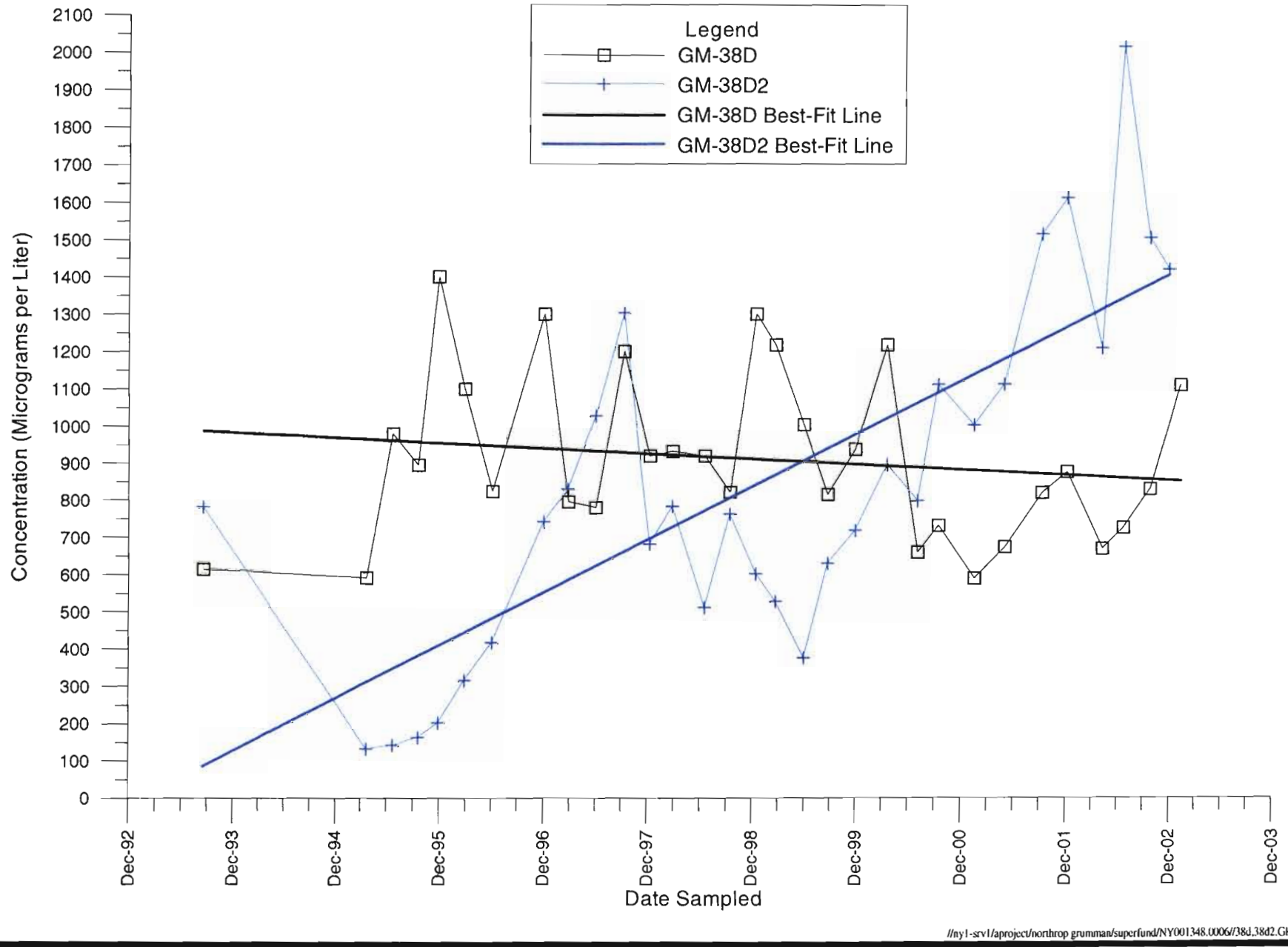
FIGURE 9



ARCADIS

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

FIGURE 10



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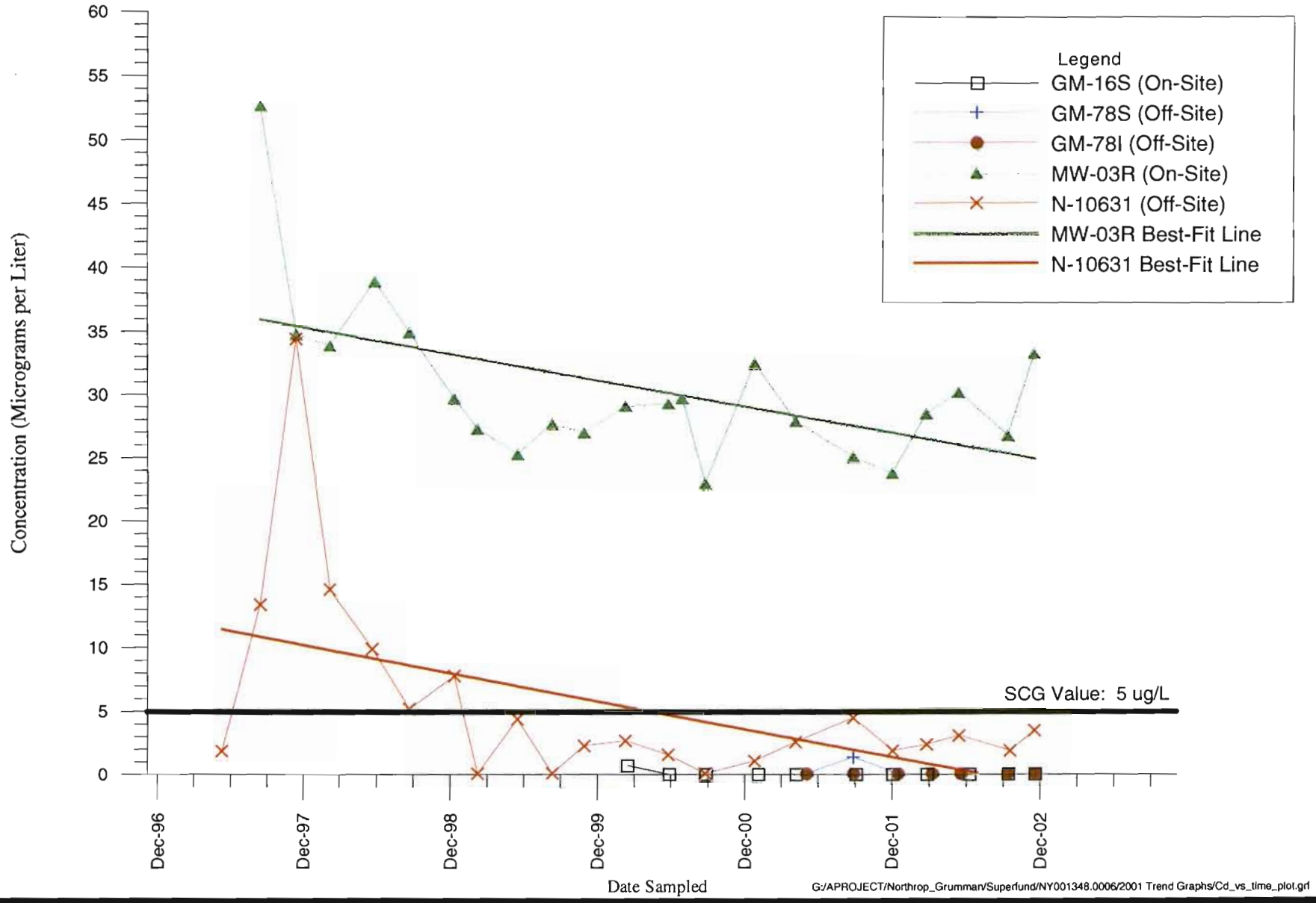
ARCADIS

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

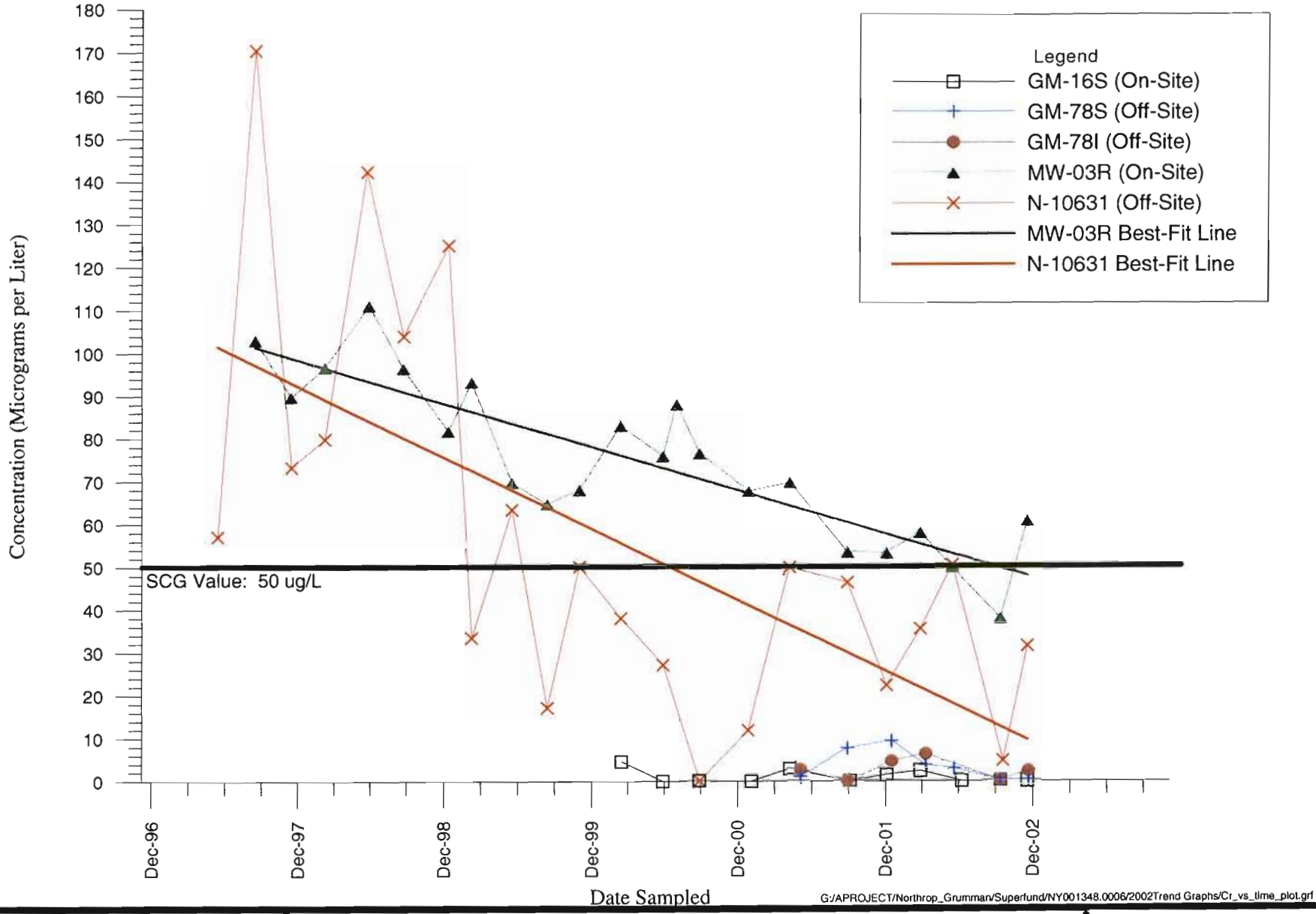
FIGURE 11



ARCADIS

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

FIGURE
12



ARCADIS

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

FIGURE
13

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Appendix A

Water-Level Measurement Logs

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Project/No. NY00 1348.0006.00002 Well H2O levels Date 1/29/03

Screen Setting _____ Measuring Point Description _____ Casing Diameter (inches) _____

Static Water Level _____ Measured Width _____ Well Materials PVC / ST. Steel

Total depth _____ Pump On: _____ Pump Intake: _____

Purge Method Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: _____

Submersible _____

Other _____ Bailer Type: _____ Sampled By: GW/KS

Time / Well #	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)
15S			50.74								
15I			50.29								
15D2			55.50								
15D			52.84								
ONCT-3		450	71.20								
19S			48.38								
19I			53.80								
730			49.90								
730D2			52.13								
ONCT-2		650	71.11								
740D2			57.28								
740			50.58								
741			44.22								
ONCT-1		900	72.30								
3R			40.36								
390			44.69								
18D			51.77								
18I			48.97								
6P1		1100	96.00								
17D			58.84								
17I			55.36								
17SR			55.19								
13D			53.17								
791			45.49								
790			46.83								
79S			45.12								
16I			55.02								
16SR			54.90								

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Project/No. N4001348.0006.00007 Well Hzo levels Date 1/29/03

Screen Setting _____ Measuring Point Description _____ Casing Diameter (inches) _____

Static Water Level _____ Measured Width _____ Well Materials PVC / ST. Steel

Total depth _____ Pump On: _____ Pump Intake: _____

Purge Method Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: _____

Submersible _____

Other _____ Bailer Type: _____ Sampled By: GW / KS

Time / Well #	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)
23S			DRY								
23I			INACCESIBLE (CAR ON TOP)								
FW-03			INACCESIBLE (locked gate)								
HN-29I			53.38								
HN-29D			54.12								
HN-24I			62.98								
18S			47.58								
N-10600			45.20								
78I			47.33								
78S			47.05								
N-9921			37.94								
34D			19.58								
3402			21.05								
75D2			40.95								
N-10627			37.87								
N-10624			not collected (Anamolous)								
35D2			44.50								
N-10634			44.94								
N-10631			44.53								
33D2			55.78								
N-10597			45.59								
20D			43.50								
20I			41.34								
21I			42.55								
21D			48.33								
21S			40.11								
N-10633			43.70								
71D2			46.36								

ARCADIS GERAGHTY & MILLER

Groundwater Sampling Form

Project/No. N4001348.0006.00002 Well Hno Levels Date 1/29/03

Screen Setting _____ Measuring Point Description _____ Casing Diameter (inches) _____

Static Water Level _____ Measured Width _____ Well Materials PVC / ST. Steel

Total depth _____ Pump On: _____ Pump Intake: _____

Purge Method Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: _____

Submersible _____

Other _____ Bailer Type: _____ Sampled By: GW / KS

~~Time~~ Well #	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)
70D2			45.98								
N-10821			39.60								
36D			39.85								
36D2			41.80								
38D			42.60								Key BROKEN IN LOCK NEEDS NEW LOCK
38D2			44.84								
37D			44.25								
37D2			44.84								
39D2			47.80								
HN-42I			57.56								
HN-42S			58.27								
HN-40S			55.54								
HN-40I			55.33								

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Appendix B

Groundwater Sampling Logs

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Human | Project No.: NY001348.0006.00007 | Page 1 of 1

Site Location: Bethpage, NY (near to Steam plant) | Date: 12/19/07

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

Weather: Cloudy, 45° | Sampling Time: Begin 1005 End 1035

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	58'
Depth to Water (ft bmp)	52.91'
Water-Level Elevation (ft)	
Water Column in Well (ft)	5.09'
Casing Diameter/Type	4" (1.65) PVC
Gallons in Well	3.3
Gallons Pumped/Bailed Prior to Sampling	(3x) 10 → 14
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1010 end 1025
Pumping Rate (gpm)	Q = 1.5 T = 7 V = 2
Evacuation Method	Submersible Pump

Field Parameters

	I	1V	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	/silty
pH (s.u.)	7.35	7.13	6.91	6.77
Conductivity (mS/cm)				
(µmhos/cm)	214	189.6	195.5	208.0
Turbidity (NTU)	>1000	445	162	132
Temperature (°C)	14.3	16.2	17.2	17.5
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time				(4V

Remarks: 14 Gallons removed to get a low turbidity.

Constituents Sampled	Container Description		Number 4V	Number 5V	Preservative
CHECK TOC	[illegible]	Temp	17.5	17.3	
		cond	215	216	
		pH	6.78	6.47	
		Turb	116	42.7	

Sampling Personnel: KS/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.: NY000345.0006.00002 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 12/19/96

Site/Well No.: MW-6F2 (mean casing) | Replicate No.: | Code No.:

Weather: cloudy, 40° | Sampling Time: Begin 1300 End 1330

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	59
Depth to Water (ft bmp)	51.45'
Water-Level Elevation (ft)	
Water Column in Well (ft)	7.55'
Casing Diameter/Type	4" PVC (.65)
Gallons in Well	4.9
Gallons Pumped/Bailed Prior to Sampling	(3X) 15
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1310 end 1325
Pumping Rate (gpm)	Q=2 T=8 V=3
Evacuation Method	Submersible Pump

Field Parameters

Field Parameters	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	6.69	6.77	6.79	6.78
Conductivity ~~(mS/cm)~~ (µmhos/cm)	185	171.8	169.2	174.0
Turbidity (NTU)	>100	330	220	95
Temperature (°C)	12.8	14.7	15.3	14.9
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time				

(40 ↓)

Remarks

Constituents Sampled	Container Description		Number	Preservative
Check TOC		4V		
	PH	6.79		
	Cond	174.0		
	Temp	15.2		
	Turb	50		

Sampling Personnel: KS/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 #: 13[illegible] Project Name: [illegible] (Rumsey) Page: 1 of 1

Site Location: RUMSEY - BATAVIA, NY Date: 12/17/02

Site/Well No.: MW-3R Replicate No.: Code No.:

Weather: Clear, 38° Sampling Time: Begin 0943 End 1010

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	55
Depth to Water (ft bmp)	40.95'
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.05'
Casing Diameter/Type	2" (PVC)
Gallons in Well	2.2
Gallons Pumped/Bailed Prior to Sampling	(3x) 6.6
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 0943 end 1010
Pumping Rate (gpm)	Q = ½ T = 15 1V = 5
Evacuation Method	Submersible Pump

Field Parameters

Field Parameters	I	1V	2V	3V	4V
Color		colorless			
Odor		odorless			
Appearance		clear			
pH (s.u.)	7.23	6.58	6.10	6.15	6.1[illegible]
Conductivity (mS/cm)					
(µmhos/cm)	149.0	140.1	138.2	138.1	139
Turbidity (NTU)	>1000	>1000	75	26	16
Temperature (°C)	10.1	12.3	12.8	12.9	12.[illegible]
Dissolved Oxygen (mg/L)					
Salinity (%)					
Time Sampling Method	0943	0944	0953	0958	1003

Remarks: TOTAL OF 9 GALLONS REMOVED FROM WELL (4½ Volumes)

Constituents Sampled	Container Description	Number	Preservative
CHECK LIST			

Sampling Personnel: KSI/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. NY60134D.0006.0002 | Page 1 of ____

Site Location: Bethpage | Date: 1-10-03

Site/Well No.: RTI MW04 | Replicate No. ____ | Code No. ____

Weather: Sunny/Cold | Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	56.05
Depth to Water (ft bmp)	46.20
Water-Level Elevation (ft)	
Water Column in Well (ft)	10
Casing Diameter/Type	2"
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	5.0
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	1	2	3
Color				
Odor				
Appearance				
pH (s.u.)	5.3	5.84	6.02	6.12
Conductivity (mS/cm)				
(µmhos/cm)	287	302	291	289
Turbidity (NTU)			13.4	5.84
Temperature (°C)	15.4	14.1	15.6	16.0
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				

Remarks: ____

Constituents Sampled	Container Description	Number	Preservative

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: Chromium | Project No. NV001342.0002 | Page 1 of ____

Site Location: Bethpage | Date: 1-10-03

Site/Well No.: PLTI-MW05 | Replicate No. ____ | Code No. ____

Weather: Sunny / Cold | Sampling Time: Begin ____ End ____

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	56.00
Depth to Water (ft bmp)	46.32
Water-Level Elevation (ft)	9.68
Water Column in Well (ft)	9.68
Casing Diameter/Type	2" (.16)
Gallons in Well	1.5
Gallons Pumped/Bailed Prior to Sampling	5
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters	I	1U	2U	3U
Color				
Odor				
Appearance				
pH (s.u.)	5.67	5.71	5.76	5.73
Conductivity (~~mS/cm~~) (µmhos/cm)	241	169	166.5	180
Turbidity (NTU)	>200	>200	>100	>50
Temperature (°C)	13.6	15.2	13.4	13.7
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks	2:00	2:01.5	2:03	2:04.5

Constituents Sampled	Container Description		Number	Preservative
~~Cr~~ Cr (VI)	4V			
	pH	5.73		
	Cond	180.2		
	Turb	20.9		
	Temp.	13.7		
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.: 30013HP.0004.0002 | Page: 1 of ____

Site Location: ____ | Date: 1-10-03

Site/Well No.: ALT MW06 | Replicate No.: ____ | Code No.: ____

Weather: Sunny/Cold | Sampling Time: Begin ____ 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)	62.00	pH (s.u.)	5.95	5.87	5.77	5.80
Depth to Water (ft bmp)	50.63	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	238	263	275	277
Water Column in Well (ft)	11.37	Turbidity (NTU)				9.24
Casing Diameter/Type	2"	Temperature (°C)	12.5	14.7	15.1	15.0
Gallons in Well		Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	5.4 gallons	Salinity (%)				
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin ____ end ____	Remarks				
Pumping Rate (gpm)						
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative

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
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0002 Well ID: MW-13
Date: 1-16-03 Sampled By: GW
Sampling Time: _____ Recorded By: GW
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low flow
Casing Diameter: _____ Purge Rate: 450 ml/min
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 53.20 Pump Intake Depth _____
Water Column: _____ Pump on: 11:10 Off: 12:20
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
11:15				260	6.49	254	13.4	53.20	.51	
11:20				268	5.95	254	12.3		3.26	
11:25				269	5.94	251	13.0		.91	
11:30				269	5.87	253	13.5	53.21	.46	
11:35				269	5.87	252	13.3		.42	
11:40				262	5.87	253	13.3		.50	
11:45				269	5.91	253	13.3	53.28	.47	
11:50				269	5.91	254	13.4		.34	
11:55				269	5.94	254	13.5		.35	
12:00				269	5.87	253	13.5	53.24	.29	
12:05				270	5.89	255	13.5		.27	
12:10				270	5.87	253	13.4	53.25	.33	
12:15		96.9L	TB 3.46	270	5.88	256	13.3		.35	

Well Secure: _____ Purge Water Disposal: _____
Color: Colorless Turbidity(qualitative): _____
odor moderate

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. | Page 1 of 1

Site Location | Date 16 JAN 03

Site/Well No. GM-14 | Replicate No. | Code No.

Weather 20° SUNNY. | Sampling Time: Begin 1705 | End 1712

Evacuation Data

Measuring Point	T.O.C.
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	55
Depth to Water (ft bmp)	48.55
Water-Level Elevation (ft)	
Water Column in Well (ft)	6.5
Casing Diameter/Type	4"
Gallons in Well	4.5
Gallons Pumped/Bailed Prior to Sampling	13
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1705 end
Pumping Rate (gpm)	2 gpm
Evacuation Method	

Field Parameters

Field Parameters	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	5.75	5.68	5.70	5.58
Conductivity (mS/cm)				
(µmhos/cm)	249	214	217	220
Turbidity (NTU)				5.31
Temperature (°C)	12.0	14.2	14.4	14.4
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks	TVR			

Constituents Sampled	Container Description	Number	Preservative
VOCs			

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: Crumrum | Project No.: NY001347.0006.0002 | Page 1 of ____

Site Location: Bathpop | Date: 1·10·03

Site/Well No.: 155 | Replicate No.: ____ | Code No.: ____

Weather: Cloudy / Cold | Sampling Time: Begin ____ End ____

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	80.00
Depth to Water (ft bmp)	50.68
Water-Level Elevation (ft)	29.32 (.65)
Water Column in Well (ft)	19.0
Casing Diameter/Type	
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	19 x 3 = 57 gal.
Sample Pump Intake Setting (ft bmp)	Q = 2.5 T = 23
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters	I	1V	2V	3V
Color				COLORLESS
Odor				none
Appearance				CLEAR
pH (s.u.)	5.79	5.54	5.45	5.64
Conductivity (mS/cm)				
(µmhos/cm)	500	443	409	399
Turbidity (NTU)	119	22.6	3.73	2.18
Temperature (°C)	15.9	15.0	15.4	15.9
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				
1V = 8 min		1:00	1:08	1:16
SI 12.53				

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: GW BH

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. NY001347.0006.00002 | Page 1 of 1

Site Location: Bethpage NY | Date: 1.10.03

Site/Well No.: CM 15 I | Replicate No. | Code No.

Weather: Cloudy/Cold | 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	4" PVC
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	80 BSI
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters	I	1V	2V	3V
Color				colorless
Odor				none
Appearance				clear
pH (s.u.)	7.45	5.69	5.52	5.52
Conductivity ~~(mS/cm)~~ (µmhos/cm)	289	290	302 ~~346~~	312
Turbidity (NTU)				1.24
Temperature (°C)	15.5	14.4	14.6	14.2
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

~~2 x 18~~

2 x 1 1/2

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: BW, BH

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: 20001348.0006 Task: 0002 Well ID: GM 15-D
Date: 1/6/03 Sampled By: BM / GW
Sampling Time: _____ Recorded By: BM / GW
Weather: Cloudy, Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: 4" PVC Purge Method: _____
Casing Diameter: _____ Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 52.69 Pump Intake Depth _____
Water Column: _____ Pump on: 1:15 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
1:20				309	5.58	181.9	14.4	52.69	1.81	
1:25				318	7.76	186.9	14.3		1.24	
1:30				323	6.61	185.8	14.2	52.69	1.45	
1:35				326	5.14	183.9	14.3		1.40	
1:40				321	5.04	180.0	14.4		1.20	
1:45				329	5.02	179.9	14.5		1.21	
1:50				329	5.01	179.1	14.4	52.69	1.22	
1:55				329	5.01	179.1	14.4		1.22	
2:00				330	5.01	180.2	14.5		1.21	
2:05				331	5.01	180.0	14.5		1.21	
2:10				330	5.00	179.9	14.6		1.17	
2:15				331	5.00	179.6	14.5		1.17	
2:20			1.95	322	5.00	179.0	14.5		1.24	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001343.0006 Task: 0002 Well ID: GM 15-D2
Date: 1.6.03 Sampled By: BH/CW
Sampling Time: _____ Recorded By: BH/CW
Weather: Cloudy/Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC 4" Purge Method: _____
Casing Diameter: _____ Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 54.14 Pump Intake Depth _____
Water Column: _____ Pump on: 2:25 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
2:30				319	5.51	83.6	12.9	54.14	4.55	
2:35				328	5.20	84.2	12.4		3.23	
2:40				323	5.32	83.2	13.3		3.55	
2:45				326	5.30	83.0	13.2		3.57	
2:50				324	5.28	83.3	13.1		3.59	
2:55				324	5.30	83.1	13.1		3.61	
3:00				324	5.30	83.1	13.3	53.90	3.74	
3:05				326	5.30	83.1	13.3		3.84	
3:10				325	5.32	83.4	13.4		3.83	
3:15				327	5.32	83.0	13.4		3.88	
3:20				325	5.29	83.1	13.4		3.98	
3:25				326	5.31	83.1	13.4		4.01	
3:30				327	5.30	83.3	13.7	53.90	4.00	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No.: NY000134806.0007 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 12/17/02

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

Weather: Clear, 30° | Sampling Time: Begin 1445 End 1520

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	70'
Depth to Water (ft bmp)	55.47
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.53
Casing Diameter/Type	4"(PVC) (.65)
Gallons in Well	9.5
Gallons Pumped/Bailed Prior to Sampling	(3x) 30
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1445 end 1520
Pumping Rate (gpm)	Q=1.5 T=20 V=7
Evacuation Method	Submersible Pump

Field Parameters

Field Parameters	I	10	20	30
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	6.12	5.92	5.71	5.84
Conductivity (mS/cm)	[illegible]			
(µmhos/cm)	121.1	119.6	1215	118.9
Turbidity (NTU)	45	11	6.3	2.6
Temperature (°C)	14.5	15.3	14.7	14.8
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1450	1457	1504	1511

Remarks:

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS / 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.: NY001342.0006.0003 | Page 1 of ____

Site Location: Bethpage NY | Date: 1.9.03

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

Weather: Cloudy / Cold | Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	145.00
Depth to Water (ft bmp)	134.00 pucker
Water-Level Elevation (ft)	
Water Column in Well (ft)	11.00
Casing Diameter/Type	4 (.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	22
Sample Pump Intake Setting (ft bmp)	90 PSI
Purge Time	begin 2[illegible] end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	1	2	3
Color				
Odor				
Appearance				
pH (s.u.)	8.55	8.85	9.05	9.01
Conductivity (mS/cm)				
(µmhos/cm)	400	335	336	322
Turbidity (NTU)				>100
Temperature (°C)	11.8	14.7	15.4	15.7
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: BH

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: Ruman | Project No.: Moving5.0006.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 12/17/02

Site/Well No.: 175R | Replicate No.: | Code No.:

Weather: clear, 32° | Sampling Time: Begin 1125 End 1220

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	70'
Depth to Water (ft bmp)	55.44
Water-Level Elevation (ft)	
Water Column in Well (ft)	14.56'
Casing Diameter/Type	4" (0.65)
Gallons in Well	9.5 ✓
Gallons Pumped/Bailed Prior to Sampling	(3x) - 30
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1135 end 1215
Pumping Rate (gpm)	~~Gallons~~
Evacuation Method	Submersible Pump

Field Parameters

Field Parameters	I	1 ✓	2 ✓	3 ✓
Color	colorless			
Odor	odorless			
Appearance	clear			
pH (s.u.)	6.39	6.42	6.51	6.54
Conductivity (mS/cm)				
(µmhos/cm)	108.2	105.7	104.1	107.0
Turbidity (NTU)	9.4	4.2	1.8	1.3
Temperature (°C)	11.8	12.5	11.8	11.8
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ Time	1135	1145	1155	1205

Sampling Method:

Remarks:

Constituents Sampled	Container Description	Number	Preservative
Chlor COC			

Sampling Personnel: KS/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: NY001348.0006 Task: 00002 Well ID: GM-17I

Date: 12-27-02 Sampled By: GW

Sampling Time: _____ Recorded By: GW

Weather: CLEAR 32° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: LOW flow

Casing Diameter: _____ Purge Rate: 450 ml/min

Total Depth: _____ Total Volume Purged: _____

Depth to Water: 55.18 Pump Intake Depth _____

Water Column: _____ Pump on: 12:15 Off: 1:10

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
12:15	450 ml/m			199	7.52	158.0	11.7	55.18	4.18	
12:20				210	7.30	143.8	13.1	3-	3.93	
12:25				217	7.14	136.1	13.0	55.17	3.92	
12:30				218	7.02	135.4	13.0		3.32	
12:35				218	6.94	125.3	5.9	55.18	3.70	
12:40				219	6.87	125.5	11.6		2.87	
12:45				220	6.81	123.4	12.7	55.18	2.80	
12:50				221	6.73	123.4	12.6		2.67	
12:55				221	6.71	123.4	12.3	55.19	2.61	
1:00				220	6.66	122.7	11.7		2.63	
1:05		6	5.3	218	6.64	121.0	11.1		2.68	

Well Secure: _____ Purge Water Disposal: NC POTW

Color: COLORLESS Turbidity(qualitative): CLEAR

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0002 Well ID: GM-17D
Date: 12-27-02 Sampled By: BW
Sampling Time: _____ Recorded By: BW
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low flow
Casing Diameter: _____ Purge Rate: 450 ML/min
Total Depth: _____ Total Volume Purged: 8 Gal
Depth to Water: 57.04 Pump Intake Depth _____
Water Column: _____ Pump on: 1:20 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
1:25	450ml/			259	5.57	123.2	16.7	57.04	3.73	
1:30				258	5.61	121.4	17.0		5.32	
1:35				262	5.66	120.8	16.9	57.04	5.89	
1:40				266	5.64	121.4	16.3		5.60	
1:45				267	5.63	121.5	16.4	57.04	5.74	
1:50				271	5.61	121.2	16.5		5.94	
1:55				273	5.61	126.7	16.6		6.33	
2:00				274	5.55	147.8	16.5		6.48	
2:05				—	—	—	—		—	
2:10				270	5.50	121.2	16.6	57.04	6.34	
2:15				270	5.50	121.3	16.5		6.42	
2:20				281	5.50	121.5	16.7	57.04	6.35	
2:25		8	23	273	5.50	121.1	16.9		6.25	

Well Secure: _____ Purge Water Disposal: NK POTW
Color: COLORLESS Turbidity(qualitative): CLEAR

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project # NY001345.0006.0001 | Project No. GRUMMAN | Page 1 of 1

Site Location GRUMMAN, BETHPAGE, NY | Date 12/7/07

Site/Well No. 18S | Replicate No. | Code No.

Weather clear, 30° | Sampling Time: Begin 1040 | End 1110

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67
Depth to Water (ft bmp)	48.63
Water-Level Elevation (ft)	
Water Column in Well (ft)	18.37
Casing Diameter/Type	2" PVC
Gallons in Well	2.93
Gallons Pumped/Bailed Prior to Sampling	(3x) 9
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1050 end 1115
Pumping Rate (gpm)	Q = ½ T = 14 10 = 6
Evacuation Method	Submersible Pump

Field Parameters

	I	IV	2V	3V
Color		Colorless		
Odor		odor less		
Appearance		Clear		
pH (s.u.)	6.59	6.71	6.52	6.52
Conductivity (mS/cm)				
(µmhos/cm)	147.3	146.5	142.6	142.7
Turbidity (NTU)	70	17	7.7	5.8
Temperature (°C)	14.6	15.0	14.6	14.4
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method	1052	1058	1104	1110

Remarks: 9 GALLONS removed from well

Constituents Sampled	Container Description	Number	Preservative
CHECK COC			

Sampling Personnel: KS/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 60001348.0006.0002 | Project No. | Page 1 of

Site Location Bethpage NY | Date 1-7-03

Site/Well No. 18I | Replicate No. | Code No.

Weather Sunny/Cold | Sampling Time: Begin 2:45 End

Evacuation Data

Measuring Point

MP Elevation (ft)

Land Surface Elevation (ft)

Sounded Well Depth (ft bmp) 105'

Depth to ~~Water~~ PACKER (ft bmp) 94'

Water-Level Elevation (ft)

Water Column in Well (ft) 11'

Casing Diameter/Type 4" (0.65)

Gallons in Well 7.2

Gallons Pumped/Bailed Prior to Sampling 22

Sample Pump Intake Setting (ft bmp)

Purge Time begin 2:45 end

Pumping Rate (gpm)

Evacuation Method

Field Parameters

Field Parameters	I	1	2	3
Color				
Odor				
Appearance				
pH (s.u.)	5.83	5.94		6.02
Conductivity (~~mS/cm~~ ~~uS~~ ~~umhos/cm~~)	397	376		446
Turbidity (NTU)				
Temperature (°C)	14.1	14.5		15.3
Dissolved Oxygen (mg/L)				
Salinity (%) 2:45				
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel G.W. BH.

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	mililiter	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: NM000348.0006 Task: 0002 Well ID: 6R-18D

Date: 12.27.02 Sampled By: DW

Sampling Time: _____ Recorded By: DW

Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low flow

Casing Diameter: _____ Purge Rate: 450 ml/min

Total Depth: _____ Total Volume Purged: _____

Depth to Water: 52.17 Pump Intake Depth _____

Water Column: _____ Pump on: _____ 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
2:55	450ml			281	5.49	109.3	14.1	52.17	5.02	
3:00				288	5.39	106.6	15.2		4.54	
3:05				286	5.43	104.2	15.3		5.50	
3:10				288	5.53	102.4	15.4	52.17	6.14	
3:15				281	5.61	102.0	15.5		6.07	
3:20				282	5.65	101.4	15.4		6.04	
3:25				281	5.65	101.4	15.4	52.17	6.10	
3:30				282	5.67	100.5	15.3		6.06	
3:35				281	5.66	100.4	15.3		6.02	
3:40				282	5.66	100.5	15.3		6.01	
3:45				284	5.64	100.1	15.3	52.18	6.04	
3:50				282	5.66	100.5	15.3		6.08	
3:55			5.3	282	5.65	100.5	15.3		6.09	

Well Secure: _____ Purge Water Disposal: _____

Color: Colorless Turbidity(qualitative): Clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project NY001348.0000.0002 | Project No. | Page 1 of

Site Location BETHPAGE NY | Date 1-3-03

Site/Well No. 6M-26I | Replicate No. | Code No.

Weather | Sampling Time: Begin | End

Evacuation Data

Measuring Point TOC

MP Elevation (ft)

Land Surface Elevation (ft)

Sounded Well Depth (ft bmp) 105'

Depth to ~~Water~~ Packer (ft bmp) 94'

Water-Level Elevation (ft)

Water Column in Well (ft) 11'

Casing Diameter/Type 4" (0.65)

Gallons in Well 7.2

Gallons Pumped/Bailed Prior to Sampling 27

Sample Pump Intake Setting (ft bmp)

Purge Time begin end

Pumping Rate (gpm)

Evacuation Method

Field Parameters

	I	1J	2J	3J
Color				~~BRN~~ colorless
Odor				none
Appearance				clear
pH (s.u.)	8.85	10.57	10.26	10.72
Conductivity (~~mS/cm~~)				
(µmhos/cm)	150.3	248	238	227
Turbidity (NTU)				26.3
Temperature (°C)	11.5	13.6	12.3	14.5
Dissolved Oxygen (mg/L)				

Salinity (%)

Sampling Method

Remarks 5 GAL PAILS

DTW - 40.65

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: NY 001348.0002.0002 | Project No. | Page 1 of

Site Location: BOMPACE NY | Date: 1-3-03

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

Weather | Sampling Time: Begin 12:30 End

Evacuation Data		Field Parameters	I	II	III	IV
Measuring Point		Color				COLORLESS
MP Elevation (ft)		Odor				NONE
Land Surface Elevation (ft)		Appearance				CLEAR
Sounded Well Depth (ft bmp)	226'	pH (s.u.)	7.23	7.26	7.14	7.39
Depth to Water (ft bmp)	215	Conductivity ~~(mS/cm)~~ (µmhos/cm)	108.7	109	108.7	106.8
Water-Level Elevation (ft)		Turbidity (NTU)				1.01
Water Column in Well (ft)	11	Temperature (°C)	11.1	12.7	14.0	14.4
Casing Diameter/Type	4" (0.65)	Dissolved Oxygen (mg/L)				
Gallons in Well	7.2	Salinity (%)				
Gallons Pumped/Bailed Prior to Sampling	22	Sampling Method				
Sample Pump Intake Setting (ft bmp)		Remarks	5 GAL PAILS			
Purge Time	begin 1:00 end		1 1 1 12			
Pumping Rate (gpm)						
Evacuation Method						

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
mL	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001348.0006.00007 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 12/18/02

Site/Well No.: 21S | Replicate No.: | Code No.:

Weather: clear, 40° | Sampling Time: Begin 1450 End 1520

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67
Depth to Water (ft bmp)	40.69
Water-Level Elevation (ft)	
Water Column in Well (ft)	26.31
Casing Diameter/Type	Steel 2" (.16)
Gallons in Well	5.8
Gallons Pumped/Bailed Prior to Sampling	(3x) 18
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1505 end 1520
Pumping Rate (gpm)	Q = 2 T = 9 IV = 3
Evacuation Method	Submersible pump

Field Parameters

Field Parameters	I	1V	2V	3V
Color				COLORLESS
Odor				ODORLESS
Appearance				CLEAR
pH (s.u.)	7.88	7.81	7.47	7.57
Conductivity (mS/cm)				
(µmhos/cm)	102.6	104.-	103.8	103.1
Turbidity (NTU)				18.2
Temperature (°C)	11.6	12.2	12.2	12.1
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	3:05	3:08	3:11	3:14

Remarks:

Constituents Sampled	Container Description	Number	Preservative
CHECK COC			

Sampling Personnel: KS/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. NY001348.0006.0002 | Page 1 of ____

Site Location: Bethpage NY | Date: ____

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

Weather: Cloudy/cold | Sampling Time: Begin ____ 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)		pH (s.u.)	7.45	9.95	10.04	10.01
Depth to Water (ft bmp)	129	~~Conductivity (mS/cm)~~				
Water-Level Elevation (ft)		(µmhos/cm)	134.2	136.6	155.3	134.5
Water Column in Well (ft)	11'	Turbidity (NTU)				0.49
Casing Diameter/Type	4"	Temperature (°C)	12.2	12.5	12.9	13.1
Gallons in Well	7.2	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	22	~~Salinity (%)~~	12:00 Hach			
Sample Pump Intake (Packer Pressure) Setting (ft bmp)	90 PSI	Sampling Method				
Purge Time	begin ____ end ____	Remarks				
Pumping Rate (gpm)			XXXX			
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
Every 7 gallons in interval			

Sampling Personnel: BH

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: NY001348.0006 Task: 0002 Well ID: 6m-21-D
Date: 1.22.03 Sampled By: BH
Sampling Time: _____ Recorded By: BH
Weather: Cloudy / Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: _____
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 48.68 Pump Intake Depth _____
Water Column: _____ Pump on: _____ 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
10:45				315	4.93	84.3	12.1	48.68	4.2	
10:50				316	5.03	83.2	12.2		4.41	
10:55				316	5.04	82.6	12.3		4.4	
11:00				318	5.03	82.7	12.2	48.68	4.2	
11:05				319	5.02	83.3	12.4		4.2	
11:10				320	5.04	83.6	12.4		4.4	
11:15				319	5.03	84.5	12.5		4.6	
11:20				319	5.00	84.5	12.6		4.41	
11:25				318	5.03	84.7	12.6		4.6	
11:30				319	5.01	85.2	12.5		4.8	
11:35				317	5.00	85.5	12.5		4.8	
11:40				319	5.01	85.2	12.6		4.8	
11:45			46.0	317	5.01	85.9	12.5	48.72	4.8	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NK01345.0006.0 Task: 0008 Well ID: HN-24I
Date: 12/20/02 Sampled By: KS/GW
Sampling Time: 1350 Recorded By: KS
Weather: Raining, 50° Coded Replicate No.: Rep122002 / MS/MSD

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow - Submersible Pump
Casing Diameter: 4" Purge Rate: ~400 ml/minute
Total Depth: 158' Total Volume Purged: 8 Gallons
Depth to Water: 63.40 Pump Intake Depth 153'
Water Column: Pump on: 1400 Off: 1455
Gallons/Foot: Parameters Sampled: Check TOC
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
1406	400	0	—	210	7.26	320	14.6	63.40'	5.84	
1410			-	209	7.08	321	14.2	-	5.61	
1415			-	215	7.07	319	14.3	-	5.60	
1420			-	220	6.76	319	14.3	63.40'	5.35	
1425			-	222	6.68	318	14.3	-	5.37	
1430			-	225	6.59	318	14.3	-	5.38	
1435			-	226	6.53	316	14.4	-	5.60	
1440			-	226	6.49	317	14.4	63.40'	5.61	
1445	↓		(39)	226	6.48	317	14.4	-	5.38	
(1450)	↓		(5)							
(1455)	↓									

Well Secure: YES Purge Water Disposal: NC Sewer
Color: colorless Turbidity(qualitative): clear
Very Mild odor

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 01400134S. 0016 Task: 00002 Well ID: MW-29I
Date: 12/20/02 Sampled By: KS/GW
Sampling Time: 1100 Recorded By: KS/GW
Weather: Raining, 50° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow - Redi - Flow
Casing Diameter: 4" Purge Rate: 600 ml/min
Total Depth: 130' Total Volume Purged: 9 Gallons
Depth to Water: 53.75' Pump Intake Depth 215'
Water Column: Pump on: 1128 Off: 1225
Gallons/Foot: Parameters Sampled: Check 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
1135	~600	0	-	88	10.36	135.9	14.8	53.75'	6.10	
1140	↓		-	82	10.47	132.7	14.9	-	6.10	
1145			-	78	10.51	132.1	15.4	-	6.11	
1150			-	72	10.53	128.9	15.3	55.45	6.23	
1155			-	68	10.51	126.5	15.7	-	6.34	
1200			-	67	10.51	125.8	15.8	-	6.37	
1205			-	64	10.51	125.0	15.8	55.38	6.40	
1210			-	64	10.51	124.7	15.6	-	6.29	
1215			-	64	10.53	124.1	15.8	-	6.22	
1220			20	63	10.53	124.5	15.9	55.42	6.14	
	↓									

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

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0002 Task: 00002 Well ID: MW-29D
Date: 12/20/02 Sampled By: KS/GW
Sampling Time: 1230 Recorded By: KS
Weather: Raining, 50° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow - Bladder Pump (non-dedicated)
Casing Diameter: 4" Purge Rate: ~450 ml/minute
Total Depth: 220 Total Volume Purged: 9 GALLONS
Depth to Water: 54.39' Pump Intake Depth 215'
Water Column: Pump on: 1235 Off: 1340
Gallons/Foot: Parameters Sampled: Check 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
1240	~450	0	—	114	9.24	143.3	14.8	54.39	6.24	
1245			-	121	9.07	142.4	14.4	-	5.97	
1250			-	139	8.69	139.9	14.4	-	6.32	
1255			-	147	8.56	138.6	14.7	54.39	6.17	
1300			-	175	7.42	159.5	14.9	-	6.03	
1305			-	176	7.49	151.0	14.7	-	6.00	
1310			-	177	7.53	140.3	14.2	54.39	5.90	
1315			-	181	7.53	139.3	14.2	-	5.52	
1320			-	181	7.52	138.8	14.5	-	5.53	
1325			-	186	7.50	139.4	14.6	-	5.51	
1330				185	7.50	140.2	14.7	54.39	5.51	
1335	↓		5.0	185	7.52	140.7	14.8	-	5.50	

Well Secure: Yes Purge Water Disposal: NC Sewer
Color: Colorless Turbidity(qualitative): odorless/clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No.: NY001348.0006.00001 | Page 1 of 1

Site Location: Bethpage, NY | Date: 12/19/02

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

Weather: cloudy, 45° | Sampling Time: Begin 1110 End 1245

Evacuation Data		Field Parameters	I	~~II~~	~~III~~	IV
Measuring Point	Toc	Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	51' (actual ~50.25')	pH (s.u.)	6.58			6.59
Depth to Water (ft bmp)	49.06'	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	215			191.3
Water Column in Well (ft)	1.94', .77 gallons in well	Turbidity (NTU)	>1000			>1000
Casing Diameter/Type	4" (.65) PVC	Temperature (°C)	13.7			16.4
Gallons in Well	~~2.00~~ 1.25	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	(3x) (6) → 3 GALLONS ~~Removed~~	Salinity (%)				
		~~Sampling Method~~ Time	1215			1240
Sample Pump Intake Setting (ft bmp)		Remarks				
Purge Time	begin 1120 end 1245					
Pumping Rate (gpm)						
Evacuation Method	~~Submersible pump~~ NOT ENOUGH H2O TO PUMP Bailer					

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KSI/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: NY001343.0006 Task: 0002 Well ID: GM-33D-2
Date: 1-16-03 Sampled By: GW
Sampling Time: _____ Recorded By: _____
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: _____
Casing Diameter: _____ Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 55.~~2222~~ Pump Intake Depth _____
Water Column: _____ Pump on: _____ 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
1:35	500 mL/			261	6.23	103.2	14.4	55.82	6.14	
1:40				263	6.20	96	15.0		6.02	
1:45				270	5.96	95.7	15.1		5.48	
1:50				282	5.59	95.9	15.1	~~55.84~~	6.12	
1:55				294	5.44	95.5	15.2		6.37	
2:00				291	5.37	95.3	15.5		6.35	
2:10				292	5.46	95.0	15.4	55.84	6.34	
2:15				294	5.50	95.0	15.5		6.31	
2:20				296	5.49	94.4	15.5		6.25	6.25
2:25				296	5.46	94.3	15.5		6.49	
2:30				296	5.51	94.2	15.6	55.84	6.48	
2:35		~960	~91	296	5.51	93.9	15.6		6.46	

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

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NYDC 3458.6 Task: 2 Well ID: 341D
Date: 16 JAN 03 Sampled By: MS GW
Sampling Time: _____ Recorded By: MS
Weather: 20° SUNNY Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: LOW FLOW BLADDER
Casing Diameter: 2" Purge Rate: 450 mL/min
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 19.[illegible]87 Pump Intake Depth _____
Water Column: _____ Pump on: [illegible].1520 Off: _____
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
1525	450			177	8.97	194	10.6	—	0.31	
1530	"			159	8.98	206	10.3	—	0.165	
1535				83	8.30	221	10.1	19.8*	0.46	
1540	"			-28	7.71	211	10.1	—	0.39	
1545	"			18	7.14	208	9.8	—	0.47	
1550	"			33	6.95	209	9.6	*	0.40	
1555	"			48	6.74	206	10.2	*	0.53	
1600	"			63	6.57	206	10.0	*	0.44	
1605	"			68	6.53	207	9.8	*	0.83	
1610	"			71	6.43	208	9.7	*	0.50	
1615	"			78	6.42	198.4	10.0	*	0.61	
1620	"		4.97	76	6.44	207	9.8	*	0.58	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

* M-SCOPE ACTING UP (METAL WELL, V. COLD)

ARCADIS GERAGHTY & MILLER

Low-Flow Groundwater Sampling Log

Project Number: N4001348.6 Task: 2 Well ID: 34 DZ

Date: 15 JAN 03 Sampled By: MS GW

Sampling Time: _____ Recorded By: MS

Weather: 25° P. SUNNY Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: LOW FLOW BLADDER

Casing Diameter: 4" Purge Rate: 450

Total Depth: _____ Total Volume Purged: _____

Depth to Water: 21.03 Pump Intake Depth _____

Water Column: _____ Pump on: 1455 Off: 1615

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
1505	450			277	6.40	92.7	4.1	—	5.85	
1510	"			270	6.70	90.0	5.4	—	4.52	
1515	"			234	7.46	88.0	6.3	21.03	3.12	
1520	"			229	7.76	87.0	7.0	—	2.83	
1530	"			205	8.73	83.3	8.0	21.01	2.60	
1535	"			170	9.43	82.3	7.7	—	1.53	
1540	"			-61	7.29	252.0	8.4	—	0.77	
1545	"			-37	7.04	238.0	9.0	21.04	1.47	
1550	"			-1	6.83	179.0	9.1	—	2.30	
1555	"			17	6.91	144.8	8.9	—	3.00	
1600	"			44	6.68	106.0	8.5	21.04	4.97	
1605	"			69	6.57	95.0	8.1	—	5.45	
1610	"			74	6.50	93.0	8.2	—	5.45	
1615	"			87	6.50	90.4	8.0	—	5.48	
1620	"	10	17	95	6.46	89.7	7.7	21.03	5.59	

Well Secure: _____ Purge Water Disposal: _____

Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N4001348.0006 00002 | Project No.: | Page 1 of

Site Location: BETHPAGE | Date: 1-28-03

Site/Well No.: 6M-35D-2 | Replicate No.: | Code No.:

Weather: | Sampling Time: Begin 12:00 End 2:15

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	530.00
Depth to Water (ft bmp)	507.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	23
Casing Diameter/Type	4"(0.65)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45
PACKER PRESSURE Setting (ft bmp)	225 PSI
Purge Time	begin 12:00 end 2:00
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	1U	2U	3U
Color				NONE
Odor				SLIGHT
Appearance				CLEAR
pH (s.u.)	7.26	6.45	6.21	5.67
Conductivity (~~mS/cm~~)				
(µmhos/cm)	142.5	132.1	134.9	130.3
Turbidity (NTU)				.33
Temperature (°C)	10.7	14.12	14.12	14.6

Dissolved Oxygen (mg/L):

Salinity (%):

Sampling Method:

Remarks: 5GAL PAILS ITH 1111

Constituents Sampled	Container Description	Number	Preservative
VOC			

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 NY001348.0006 Project No. 00002 Page 1 of 1

Site Location N. GRUMMAN, BETHPAGE, NY Date 12/16/02

Site/Well No. 36D Replicate No. Code No.

Weather SUNNY, 40° Sampling Time: Begin 0900 End 1110

Evacuation Data

Measuring Point TOC

MP Elevation (ft)

Land Surface Elevation (ft)

Sounded Well Depth (ft bmp) 214'

Depth to ~~Water (ft bmp)~~ Product 202'

Water-Level Elevation (ft)

Water Column in Well (ft) 12'

Casing Diameter/Type 4" (.65)

Gallons in Well 8

Gallons Pumped/Bailed Prior to Sampling 24

~~Sample Pump Intake~~ Setting (ft bmp) Product Pressure: 110 PSI

Purge Time begin 0906 end 1110

Pumping Rate (gpm)

Evacuation Method Dedicated Bladder

Field Parameters

	1	1V	2	3V
Color		colorless		
Odor		odorless		
Appearance		clear		
pH (s.u.)	5.96	5.47	5.39	5.53
Conductivity (mS/cm)				
(µmhos/cm)	103.6	144.1	121.8	144.5
Turbidity (NTU)				0.30
Temperature (°C)	12.1	13.6	13.6	13.8
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ Time	1206	0947	1031	1105

Sampling Method

Remarks DTW: 4062'

5 GAL PAILS : LIT & Sample Split w/ BWD (Hazm Labs)

Constituents Sampled	Container Description	Number	Preservative
CHECK COC			

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

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: NY001348.0006 | Project No. 00007 | Page 1 of 1

Site Location: N-GRUMMAN, BETHPAGE, NY | Date: 12/16/02

Site/Well No.: 3602 | Replicate No. | Code No.

Weather: OVERCAST, 35° | Sampling Time: Begin 1110 End 1730

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	540'
Depth to ~~Water~~ (ft bmp) PACKER	518'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	4" (.65)
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
~~Sample Pump Intake Setting (ft bmp)~~ PACKER PRESSURE:	235 PSI
Purge Time	begin 1103 end 1730
Pumping Rate (gpm)	
Evacuation Method	DEDICATED Bladder

Field Parameters

	I	10	20	30
Color		Colorless		
Odor		odorless		
Appearance		clear		
pH (s.u.)	6.62	9.38	9.43	8.87
Conductivity (mS/cm)				
(µmhos/cm)	136.2	187	142.4	177.6
Turbidity (NTU)				14
Temperature (°C)	13.3	13.5	13.4	13.4
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ Time				
Sampling Method	1113	1135	1200	1225

Remarks: DTW: 47.86'

5 Gallon Pails: NA NA

Constituents Sampled	Container Description	Number	Preservative
CHECK COC			

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

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.: 4400B4P.0006.0200 Page: 1 of ____

Site Location: ____ Date: 2-4-03

Site/Well No.: GM-37D Replicate No.: ____ Code No.: ____

Weather: RAINY & 40° Sampling Time: Begin 11:00 End 1:150

Evacuation Data

Measuring Point	____
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" (PVC)
Gallons in Well	143±
Gallons Pumped/Bailed Prior to Sampling	45.0
Sample Pump Intake Setting (ft bmp)	PACKER ORIGINAL 1/0 PSI
Purge Time	begin 11:30 end 1:45
Pumping Rate (gpm)	____
Evacuation Method	____

Field Parameters

Field Parameters	I	IJ	2J	3J
Color				COLORLESS
Odor				NONE
Appearance				CLEAR
pH (s.u.)	7.65	5.74	4.92	4.94
Conductivity ~~(mS/cm)~~ (µmhos/cm)	231	233	230	226
Turbidity (NTU)				.53
Temperature (°C)	13.4	13.4	14.2	14.7
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: ____

Remarks: 5 GAL PAILS 1 1/2 1111

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel: G.W.

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.: NY001348.0006 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 1/22/03

Site/Well No.: GM 37D2 | Replicate No.: — | Code No.: —

Weather: Clear, 19° F | Sampling Time: Begin 1050 End

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	390
Depth to ~~Water~~ Packer (ft bmp)	367
Water-Level Elevation (ft)	
Water Column in Well (ft)	23
Casing Diameter/Type	4" (.65)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45
Sample Pump Intake Setting (ft bmp)	Packer Press. 180 PSI
Purge Time	begin 1115 end
Pumping Rate (gpm)	
Evacuation Method	Ded Bladder

Field Parameters

Field Parameters	I	10	20	30
Color				
Odor				
Appearance				
pH (s.u.)	5.05	5.03	5.04	4.97
Conductivity (mS/cm)				
(µmhos/cm)	231	234	230	234
Turbidity (NTU)				
Temperature (°C)	11.7	12.6	14.2	13.8
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ DTW	45.02	45.19	45.02	45.0
~~Remarks~~ Gal's	0	15	30	45
Time	1118	1240	1419	

Constituents Sampled	Container Description	Number	Preservative
VOC	40 ML VOA VIAL	7	None
	BWD/HZM	2	HCL

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

#-GM38R is Rep 1/21/03

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Grumman | Project No.: NY001348.0006 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 1/21/03

Site/Well No.: GM 38D | Replicate No.: GM 38R | Code No.:

Weather: Clear 25°F | Sampling Time: Begin (SH) 1336/1305 End

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	340'
Depth to ~~Water~~ Packer (ft bmp)	317'
Water-Level Elevation (ft)	
Water Column in Well (ft)	23'
Casing Diameter/Type	4" (.65)
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
Sample ~~Pump~~ Intake Setting (ft bmp)	Packer Press: 145 PSI
Purge Time	begin 1336 end
Pumping Rate (gpm)	
Evacuation Method	Ded Bladder Pump

Field Parameters

Field Parameters	1	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	6.16	5.49	5.30	5.30
Conductivity (mS/cm)			(SH) ~~123.0~~	
(µmhos/cm)	123.4	123.7	~~124.3~~	122.6
Turbidity (NTU)				
Temperature (°C)	12.1	10.4	11.2	12.2
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ DTW	42.43	42.66	42.86	42.75
~~Sampling Method~~ Time	1340	1419	1500	1545
~~Remarks~~ Gals	0	15	30	45

Constituents Sampled	Container Description	Number	Preservative
VOC	40 mL VOA VIAL	2	None
	BWD/HZM	2	HCL

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. NY001348.0006.0002 | Page 1 of 1

Site Location: Bethpage NY | Date: 12-10-02

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

Weather: Clear 30° | Sampling Time: Begin 0930 End 1215

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	495'
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	23
Casing Diameter/Type	4" (.65)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45
~~Sample Pump Intake~~ Packer Setting (ft bmp) Pressure	220 PSI
Purge Time	begin 0930 end 1205
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	1V	2V	3V
Color	Colorless			
Odor	odorless			
Appearance	clear			
pH (s.u.)	5.01	4.83	4.63	4.68
Conductivity (mS/cm)	138.0	81.5	88.5	95.8
(µmhos/cm)				
Turbidity (NTU)				0.80
Temperature (°C)	12.3	12.2	12.8	12.7
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
~~Remarks~~ Time	945	1030	1115	1200
	4 Buckets			
	//////////			

Constituents Sampled	Container Description	Number	Preservative
VOCs			None

Sampling Personnel: BH

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
	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.: NY000348.0006.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 12/18/02

Site/Well No.: HW-40S | Replicate No.: | Code No.:

Weather: clear 40° | Sampling Time: Begin 0905 End 1000

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	59
Depth to Water (ft bmp)	56.30
Water-Level Elevation (ft)	
Water Column in Well (ft)	2.70
Casing Diameter/Type	4" (.65)
Gallons in Well	1.75
Gallons Pumped/Bailed Prior to Sampling	(3x) 5.5
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 0920 end 0955
Pumping Rate (gpm)	Q: 1/2 T= 11 IV= 4
Evacuation Method	Submersible Pump

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	5.77	5.93	5.42	5.46
Conductivity (mS/cm)				
(µmhos/cm)	255	245	241	233
Turbidity (NTU)				16
Temperature (°C)	12.2	13.1	13.5	14.8
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	0938	0942	0946	0950

Remarks:

Constituents Sampled	Container Description	Number	Preservative
CMEN VOC			

Sampling Personnel: KS/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: NY001345.0002 Task: 00002 Well ID: MW-40I
Date: 12/18/02 Sampled By: KS /KW
Sampling Time: 1002 Recorded By: KS
Weather: Clear, 40° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow - Submersible Pump
Casing Diameter: 4" Purge Rate: 400 ml/min
Total Depth: 118' Total Volume Purged: 9 Gallons
Depth to Water: 56.12' Pump Intake Depth 113'
Water Column: Pump on: 1020 Off: 1125
Gallons/Foot: Parameters Sampled: Check 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
1025	400	0	—	316	5.46	256	15.0	56.12'	6.29	
1030			—	315	5.51	754	15.1	-	5.75	
1035			—	315	5.57	251	15.8	-	5.74	
1040			—	313	5.55	255	15.2	56.21'	5.50	
1045			—	312	5.52	255	15.3	-	4.43	
1050			—	310	5.54	256	15.4	-	4.37	
1055			—	309	5.54	256	15.2	56.13'	4.18	
1100			—	308	5.58	256	15.2	-	5.27	
1105			—	307	5.52	256	15.2	-	5.02	
1110			—	306	5.52	255	15.4	56.13'	5.04	
1115			—	305	5.52	255	15.4	-	5.06	
1120			6.3	305	5.52	255	15.4	56.13'	5.11	
	↓									

Well Secure: YES Purge Water Disposal: NC Sewer
Color: Colorless Turbidity(qualitative): Odorless / Clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001348.0006.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 12/18/02

Site/Well No.: MW-42S | Replicate No.: | Code No.:

Weather: clear, 40° | Sampling Time: Begin 1200 End 1330

Evacuation Data			Field Parameters	1	2V	3V
Measuring Point	TOC		Color	Brown w/Sediment		
MP Elevation (ft)			Odor	None		
Land Surface Elevation (ft)			Appearance	Turbid (>200)		
Sounded Well Depth (ft bmp)	60 ?	Bailed to Well Bottom	pH (s.u.)	8.63	8.91	8.57
Depth to Water (ft bmp)	58.91'	.75 Liter Removed	Conductivity (mS/cm)			
Water-Level Elevation (ft)			(µmhos/cm)	319	258	233
Water Column in Well (ft)	1.09'	.75'	Turbidity (NTU)			>200
Casing Diameter/Type	4" (.65)		Temperature (°C)	13.5	12.3	13.4
Gallons in Well	.71	.48	Dissolved Oxygen (mg/L)			
Gallons Pumped/Bailed Prior to Sampling	2.5	1.5	Salinity (%)			
Sample Pump Intake Setting (ft bmp)			Sampling Time Method	1207	1315	1320
Purge Time	begin ____ end ____		Remarks	1.5 Gallons Removed		
Pumping Rate (gpm)	~~0.1 L/min~~					
Evacuation Method	Bailer					

Constituents Sampled	Container Description	Number	Preservative
Chloride, Cond			

Sampling Personnel: KS/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

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

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00002 Well ID: HN-42I
Date: 12/18/02 Sampled By: KS/GW
Sampling Time: 1152 Recorded By: KS
Weather: Clear, 40° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow - Submersible Pump
Casing Diameter: 4" Purge Rate: ~400 ml/min
Total Depth: 110' Total Volume Purged: 9 Gallons
Depth to Water: 58.16' Pump Intake Depth 105'
Water Column: Pump on: 12:00 Off: 1310
Gallons/Foot: Parameters Sampled: Check 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
1205	~400	0	-	53	11.11	510	12.4	58.16'	6.30	
1210			-	52	11.01	502	12.6	-	3.43	
1215			-	52	10.96	456	12.7	-	3.37	
1220			-	53	10.90	445	13.0	58.27'	3.61	
1225			-	54	10.83	430	13.8	-	3.53	
1230			-	55	10.79	422	14.1	-	3.54	
1235			-	56	10.74	404	14.1	55.26	3.48	
1240			-	57	10.72	399	13.9	-	3.56	
1245			-	59	10.71	378	13.4	-	3.61	
1250			-	59	10.67	376	13.2	58.25'	3.62	
1255			-	59	10.63	364	13.1	-	3.80	
12,00			(22)	61	10.64	345	13.3	58.28'	3.76	
"										
	"									

Well Secure: YES Purge Water Disposal: NC Sewer
Color: colorless Turbidity(qualitative): Heavy Silt

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Grumman | Project No. NY001348.0006 | Page 1 of 1

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

Site/Well No.: GM-70D2 | Replicate No.: None | Code No.: —

Weather: Clear, 30° F | Sampling Time: Begin 1100 | End

Evacuation Data	
Measuring Point	TOC
MP Elevation (ft)	—
Land Surface Elevation (ft)	—
Sounded Well Depth (ft bmp)	330'
Depth to ~~Water~~ Packer (ft bmp)	308'
Water-Level Elevation (ft)	—
Water Column in Well (ft)	22'
Casing Diameter/Type	4" (.65)
Gallons in Well	14.3
Gallons Pumped/Bailed Prior to Sampling	42.9 gals
Sample ~~Pump Intake~~ Setting (ft bmp)	Packer Press. 150 PSI
Purge Time	begin 1130 end ____
Pumping Rate (gpm)	____
Evacuation Method	Ded. Bladder Pump

Field Parameters	I	II	III	30
Color				
Odor				
Appearance				
pH (s.u.)	6.91	7.12	5.94	
Conductivity (mS/cm)				
(µmhos/cm)	107.4	107.6	105.9	
Turbidity (NTU)				
Temperature (°C)	13.7	~~12.8~~ 13.2 (SH)	14.9	
Dissolved Oxygen (mg/L)				
~~Salinity (‰)~~ DTW	45.98'	46.00	46.00	46.0
~~Sampling Method~~ Time	1105	1200	1235	
~~Remarks~~ Gals	0	15	30	45

Constituents Sampled	Container Description	Number	Preservative
VOCs	40 mL VOA VIAL	2	None
		2	HCL (BWD)

Sampling Personnel: S.H.

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.: NY000348.0004.00002 — Page: 1 of ____

Site Location: BETHPAGE NY — Date: 2-4-03

Site/Well No.: 6M-710-2 — Replicate No.: ____ — Code No.: ____

Weather: RAINY - 40° — Sampling Time: Begin 2:00 End 3:55

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	464'
Depth to Water (ft bmp)	442'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22
Casing Diameter/Type	4" (0.65)
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
~~PA Oxp PRESSURE~~ ~~Sample Pump Intake~~ Setting (ft bmp)	220PSI
Purge Time	begin 2:10 end 3:45
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	10	20	30
Color				COLORLESS
Odor				NONE
Appearance				CLEAR
pH (s.u.)	5.59	5.73	5.35	5.31
Conductivity ~~(mS/cm)~~ (µmhos/cm)	121.7	157.3	153.2	154.4
Turbidity (NTU)				0.57
Temperature (°C)	14.0	13.5	13.4	13.5
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				

Remarks: OTW 4.0.24

5 GA PAILS ~~IIII~~ III

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
Low-Flow Groundwater Sampling Log

Project Number: 04001348.0006 Task: 00002 Well ID: GM 74I
Date: 1/13/03 Sampled By: BH
Sampling Time: _____ Recorded By: BH
Weather: Sunny Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: _____
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: _____ Pump Intake Depth _____
Water Column: _____ Pump on: 9:42 Off: 10:32
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
9:45				260	7.20	111.5	11.2		7.0	
9:50				263	6.41	115.4	11.8		6.4	
9:55				270	6.41	122.5	10.8		6.6	
10:00				269	6.32	122.3	10.8		6.6	
10:05				271	6.13	122.5	10.7		6.4	
10:10				270	6.01	122.1	10.8		6.5	
10:15				272	6.01	122.9	10.6		6.5	
10:20				266	5.86	122.1	10.5		6.3	
10:25				264	5.90	122.9	10.5		6.1	
10:30			6.00	267	5.89	123.2	10.5		6.1	
~~10:35~~										
~~10:40~~										
~~10:45~~										

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0002 Well ID: GM 74D
Date: 1.13.03 Sampled By: BH
Sampling Time: _____ Recorded By: BH
Weather: Sunny / Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: _____
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 50.75 Pump Intake Depth _____
Water Column: _____ Pump on: 10:43 Off: 11:47
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
10:45				285	5.01	107.7	10.3	50.71	4.3	
10:50				296	4.86	108.3	4.9		5.1	
10:55				297	4.82	106.7	10.5	50.74	5.0	
11:00				300	4.81	106.4	10.3		5.1	
11:05				303	4.75	106.9	10.2		4.9	
11:10				306	4.77	106.9	10.3		4.6	
11:15				308	4.78	107.2	10.3		4.6	
11:20				311	4.75	107.4	10.3		4.6	
11:25				312	4.76	107.1	10.3		4.5	
11:30				314	4.71	107.7	10.6		4.4	
11:35				315	4.73	107.7	10.5		4.4	
11:40				316	4.76	108.4	10.4		4.4	
11:45			6.07	315	4.74	107.9	10.5		4.4	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 1Y001348.0006 Task: 00002 Well ID: GM74-02
Date: 1·13·03 Sampled By: BH
Sampling Time: _____ Recorded By: BH
Weather: Sunny / Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: _____
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 57.22 Pump Intake Depth _____
Water Column: _____ Pump on: 11:57 Off: 1:03
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
12:00				292	5.02	91.6	11.0	57.22	15.0	
12:05				296	4.90	91.5	11.2		12.0	
12:10				296	4.84	95.1	10.9		8.8	
12:15				292	5.07	99.9	10.7		12.5	
12:20				291	5.01	86.6	11.01		12.3	
12:25				291	5.03	86.1	11.2		10.2	
12:30				291	5.05	85.2	11.2		11.7	
12:35				292	5.10	83.8	11.2	57.20	9.1	
12:40				293	5.05	85.2	11.1		10.4	
12:45				294	5.08	85.0	11.5		9.7	
12:50				295	5.12	86.2	11.4		10.8	
12:55				293	5.06	86.6	11.7		12.3	
1:00			0.69	296	5.12	87.1	11.5	57.28	12.0	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY0C1348.0006 Task: 00002 Well ID: 75D2
Date: 1·9·03 Sampled By: BM/GW
Sampling Time: _____ Recorded By: BM/GW
Weather: Clear/Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: _____
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 41.24 Pump Intake Depth _____
Water Column: _____ Pump on: _____ 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
11:50				292	6.03	166.5	15.5	41.24	8.5	
11:55				288	5.44	166.1	15.4		9.1	
12:00				286	5.33	166.7	15.3		9.2	
12:05				289	5.35	166.5	15.3		9.3	
12:10				290	5.26	166.7	15.4		9.5	
12:15				295	5.20	169.1	15.4	41.M	9.8	
12:20				296	5.21	169.8	15.2		10.01	
12:25				297	5.21	170.0	15.2		10.02	
12:30				297	5.18	170.0	15.2		10.08	
12:35				298	5.21	170.5	15.2		10.02	
12:40				300	5.20	170.6	15.2		10.02	
12:45				299	5.19	171.0	15.2		10.02	
12:50			0.00	300	5.19	171.1	15.3	41.12	10.03	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Grumman | Project No.: NY001345.0006.00002 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 12/15/02

Site/Well No.: 785 | Replicate No.: | Code No.:

Weather: Cloudy, 45°C | Sampling Time: Begin 1445 End 1510

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point	TOC	Color				Cloudy
MP Elevation (ft)		Odor				Mild
Land Surface Elevation (ft)		Appearance				Cloudy
Sounded Well Depth (ft bmp)	70'	pH (s.u.)	6.03	5.95	5.97	5.95
Depth to Water (ft bmp)	47.76	Conductivity ~~(mS/cm)~~ (µmhos/cm)	447	445	458	440
Water-Level Elevation (ft)		Turbidity (NTU)	—	65		
Water Column in Well (ft)	22.24	Temperature (°C)	13.1	13.8	14.4	15.8
Casing Diameter/Type	4" PVC (.65)	Dissolved Oxygen (mg/L)				
Gallons in Well	14.45	Salinity (%)				
Gallons Pumped/Bailed Prior to Sampling	(3X) 50	~~Sampling Method~~ Time	2:40	2:48	2:59	3:05
Sample Pump Intake Setting (ft bmp)	65'	Remarks				
Purge Time	begin 1452 end 1510					
Pumping Rate (gpm)	Q=2 T=25 V=8					
Evacuation Method	Submersible Pump					

Constituents Sampled	Container Description	Number	Preservative
Chem loc			

Sampling Personnel: KS / 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: NM001348.0002.00006 Task: 00002 Well ID: '78I

Date: 12/19/02 Sampled By: KSlow

Sampling Time: 1400 Recorded By: KSlow

Weather: cloudy, 45° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow Submersible Pump

Casing Diameter: 4" Purge Rate: N500 ml/min

Total Depth: 110' Total Volume Purged:

Depth to Water: 48.09' Pump Intake Depth 100'

Water Column: Pump on: 1350 Off: 1435

Gallons/Foot: Parameters Sampled: Check 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
1355	N500	C	-	160	6.31	239	13.6	48.09	2.98	
1402			-	192	6.35	239	13.5	-	3.15	
1405			3.7	198	6.35	237	13.8	-	3.07	
1410			-	207	6.31	237	14.1	48.09	2.95	
1415			-	215	6.32	237	14.0	-	2.93	
1420			1.5	217	6.31	237	13.6	-	2.80	
1425	↓		0.85	217	6.31	239	13.5	48.09	2.31	

Well Secure: Y(E)

Color: colorless

odorless

Purge Water Disposal: NYC Sewer

Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0002 Well ID: GM 79I
Date: 1-14-03 Sampled By: BH
Sampling Time: _____ Recorded By: BH
Weather: Cold/Sunny Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: _____
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 47.10 Pump Intake Depth _____
Water Column: _____ Pump on: 10:07 Off: 11:15
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
10:10				285	5.8	145.7	12.1	47.10	9.3	
10:15				285	5.3	137.7	13.1		15.2	
10:20				287	5.3	134.8	13.1		17.2	
10:25				288	5.2	133.0	13.1		17.7	
10:30				288	5.2	132.3	13.4		18.8	
10:35				292	5.1	130.9	13.4		19.1	
10:40				295	5.1	131.1	13.3		19.9	
10:45				294	5.1	131.3	13.2	47.10	21.1	
10:50				296	5.1	130.9	13.3		24.6	
10:55				296	5.1	130.8	13.3		26.6	
11:00				296	5.1	130.7	13.4		27.4	
11:05				296	5.1	129.0	13.4		28.1	
11:10			3.01	299	5.0	129.0	13.4	47.10	28.1	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00002 Well ID: GM 79D
Date: 1.14.03 Sampled By: BM
Sampling Time: _____ Recorded By: BM
Weather: Sunny / Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: _____
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 48.50 Pump Intake Depth _____
Water Column: _____ Pump on: 11:17 Off: 12:23
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
11:20				292	5.18	117.0	13.3	48.50	17.0	
11:25				297	5.11	117.1	13.9		16.6	
11:30				298	4.94	114.0	14.1		17.6	
11:35				298	4.92	114.0	14.1		16.3	
11:40				300	4.97	120.7	13.7		15.4	
11:45				300	4.96	123.1	13.9		15.2	
11:50				302	4.99	119.7	13.9		15.0	
11:55				303	5.01	120.2	13.8		13.4	
12:00				302	4.99	121.5	13.0		15.7	
12:05				303	5.00	121.5	13.0		15.5	
12:10				302	5.00	121.3	13.8		15.4	
12:15				303	5.00	121.4	13.7		14.6	
12:20			1.24	304	4.98	121.6	13.9		13.0	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001848.0006 Task: 00002 Well ID: 10627
Date: 1.9.03 Sampled By: BH/CW
Sampling Time: _____ Recorded By: BH/CW
Weather: Clear / Cold Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: ~~PVC~~ Steel Purge Method: _____
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 35.75 Pump Intake Depth _____
Water Column: _____ Pump on: _____ 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
1:10			~~254~~	254	6.35	117.7	14.6	35.75	10.2	
1:15				248	6.52	115.8	14.7		9.9	
1:20				30	7.71	110.8	14.7		5.0	
1:25				22	7.1	105.8	14.7		4.8	
1:30				17	7.79	103.3	14.7		4.0	
1:35				-5	8.14	92.8	14.9	55.58	2.4	
1:40				-20	8.15	89.0	15.0		1.7	
1:45				-27	8.35	89.1	15.1		2.0	
1:50				-35	8.46	89.4	14.9		2.1	
1:55				-47	8.62	90.7	14.7		2.8	
2:00				-44	8.67	92.7	14.8	38.78	2.5	
2:05				-55	8.72	93.9	14.8		2.4	
2:10		8 gal.	38.8	-54	8.81	94.5	14.9		2.6	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

0 5.3
T 13.4
C 28

10 16.60
30.69

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: SHANNAN | Project No.: NY001348.0006.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 12/17/02

Site/Well No.: N - 10631 | Replicate No.: | Code No.:

Weather: clear, 30° | Sampling Time: Begin 1310 End 1400

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67
Depth to Water (ft bmp)	45.05
Water-Level Elevation (ft)	
Water Column in Well (ft)	21.95
Casing Diameter/Type	2" (0.16)
Gallons in Well	3.502
Gallons Pumped/Bailed Prior to Sampling	(3x) 11
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1330 end 1355
~~Pumping Rate (gpm)~~	Q = 1/2 T = 22 V = 7
Evacuation Method	Submersible bladder

Field Parameters

Field Parameters	I	1V	2V	3V
Color				BLACK TINT
Odor				SLIGHT
Appearance				CLEAR
pH (s.u.)	6.18	6.52	6.40	6.33
Conductivity (mS/cm)				
(µmhos/cm)	146.5	149.5	143.4	142.6
Turbidity (NTU)	300	50	9.9	8.7
Temperature (°C)	13.0	13.0	13.4	13.4
Dissolved Oxygen (mg/L)				
Salinity (%)				
Time ~~Sampling Method~~	1331	1338	1345	1353

Remarks:

Constituents Sampled	Container Description	Number	Preservative
Check Coc			

Sampling Personnel: KS / 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: Allumination | Project No.: NM001348.0006.00002 | Page 1 of 1

Site Location: Bethpage, NY | Date: 12/15/02

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

Weather: Clear, 40° | Sampling Time: Begin 1415 End 1450

Evacuation Data

Measuring Point	Toc
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67'
Depth to Water (ft bmp)	45.86'
Water-Level Elevation (ft)	
Water Column in Well (ft)	21.14'
Casing Diameter/Type	2" (.16)
Gallons in Well	3.38
Gallons Pumped/Bailed Prior to Sampling	(3x) 11
Sample Pump Intake Setting (ft bmp)	8
Purge Time	begin 1430 end 1442
Pumping Rate (gpm)	Q=1 T=12 1V=4
Evacuation Method	Submersible Pump

Field Parameters

Field Parameters	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	8.38	8.52	8.35	8.36
Conductivity (mS/cm)				
(µmhos/cm)	137.8	129.4	126.4	125.8
Turbidity (NTU)				9.2
Temperature (°C)	10.9	13.0	13.4	13.7
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1430	1434	1438	1442

Remarks:

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS / 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

Appendix C

Chain Of Custody Records

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name 30021348.0006.0002

Project Location Wilmington

Laboratory Severn Trent

Project Manager D. Stern

Sampler(s)/Affiliation BH ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOA Vials VOC						Remarks	Total
GM 38D2	L	12.10.02		2							2
TB 12.10.02				2							2

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

Total No. of Bottles/ Containers: 4

Relinquished by:		Organization: ARCADIS	Date 12/10/02	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: Report to David Stern

Delivery Method: ☐ In Person ☒ Common Carrier FedEx ☐ Lab Courier ☐ Other _____

SPECIFY

SPECIFY

AG 05-12/01

ARCADIS

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

Project Number/Name NY003442.0006.0002

Project Location Bethpage / N. Grumman

Laboratory H2M

Project Manager David Stern

Sampler(s)/Affiliation BH / Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOA Vials (HCl) VOCs						Remarks	Total
GM38D2	L	12.10.02		2							

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

Total No. of Bottles/ Containers

Relinquished by: Bill Hakeman	Organization: ARCADIS	Date 12/16/02	Time 2:15	Seal Intact?		
Received by: _____	Organization: H2M	Date 12/19/02	Time 14:15	Yes	No	(N/A)
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?		
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No	N/A

Special Instructions/Remarks: _____

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

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name ALY003IS.0006.00007 / Bethpage

Project Location BETHPAGE, NY

Laboratory STL - CT

Project Manager Carlo Sin Cairoli

Sampler(s)/Affiliation KS (AGM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC (with MTBE)						Remarks	Total
TB121602	L	12/16/02		2							2
36D	L	12/16/02		2							2
36D2	L	12/16/02		2							2

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

Total No. of Bottles/ Containers: (6)

Relinquished by: [signature]	Organization: ARCADIS SIM	Date 12/16/02	Time 1730	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

ARCADIS

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

Project Number/Name GILLMAN / BWD

Project Location PRINCE, NY

Laboratory H2M

Project Manager Carl Sun Gilman

Sampler(s)/Affiliation MS (ARCADIS)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TCL VOC (SW 8260B)	TCL VOC (SW 8260B)					Remarks	Total
36D	L	12/11/01		2							2
36D2	L	12/11/01		2							2

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

Total No. of Bottles/ Containers 4

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 12/16/02	Time 13:45	Seal Intact?	
Received by: [signature]	Organization: H2M	Date 12/16/02	Time 13:45	(Yes) No N/A	
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A	

Special Instructions/Remarks: 4 [illegible] (MS) Any Questions Call Chris Sun @ 621 2119 - 1100

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

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NYO13619.0006.00007 / Kronman

Project Location Potsdam, NY

Laboratory STL

Project Manager Carlo San Giovani

Sampler(s)/Affiliation KS/GW (AGRA)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC (3 x 40 ml vials)	Total Cd/Cr (500 ml plastic)	Dissolved Cd/Cr (500 ml plastic)				Remarks	Total
TP121702	L	12/17/07		2							2
FD121702	L			2	1						3
MW3-3R	L			2	1	1					4
18S	L			2	1	1					4
17SR	L			2	1	1					4
N-10621	L			2	1	1					4
16SR	L	↓		2	1	1					4

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

Total No. of Bottles/Containers 25

Relinquished by: [signature]	Organization: ARCADIS G+M	Date 12/17/07	Time 1730	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

* Dissolved Cd/Cr samples field filtered to .45 microns

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex ☐ Lab Courier ☐ Other _____

SPECIFY SPECIFY

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name M001305.0005.00002 / Glenmont

Project Location Bethpage, NY

Laboratory STL-CT

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS/GM (AGIM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC (Unpreserved) (1 amber vial)						Remarks	Total
TB121802	L	12/18/02		2							2
HN-40S	L			2							2
HN-40I	L			2							2
FB121802	L			2							2
HN-42I	L			2							2
HN-42S	L			2							2
N-10634	L			2							2
[illegible]				2							

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

Total No. of Bottles/Containers 16

				Seal Intact?
Relinquished by: [illegible]	Organization: [illegible]	Date 12/18/02	Time [illegible]	
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 Skeen

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

AG 05-12/01

CHAIN - OF - CUSTODY RECORD

Phone: (412) 826-5245 | **Microseeps, Inc. - 220 William Pitt Way - Pittsburgh, PA 15238** | Fax No. : (412) 826-3433

Company : ARCADIS
Co. Address : 88 DURYEA RD MELVILLE NY. 11747
Proj. Manager: DAVE STERN
Proj. Location: BETHPAGE NY.
Proj. Number: NY000134 8.0006.00002
Phone # : (631-249-7600 **Fax # :** (631-249-7610
Sampler's signature : DNW

Parameters Requested

601-602

Results to : DAVE STERN ARCADIS
88 DURYEA RD.
MELVILLE NY. 11747
Invoice to : SAME AS ABOVE

Cooler ID	Cooler Temp.

Sample ID	Sample Description	Date	Time	Comp.	Grab	# Cont.	Remarks
DUPLICATE	INFLUENT	12-19-02	—		✓	2	
	EFFLUENT	12-19-02	—		✓	2	

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
DNW	ARCADIS	12-19-02	4:40				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Accompany Samples YELLOW COPY : Laboratory File PINK COPY : Submitter

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001318.0006.00002

Project Location BETHPAGE NY

Laboratory SEVERN - TRENT SHELTON

Project Manager DAVE STERN

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

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VOC	500ml UNP TOTAL CaCl (MW03)	500ml PLASTIC DISSOLVED* CaCl (MW03)				Remarks	Total
MW-1GF	L	12-19-02			1	1					2
MW-2GF					1	1					2
GM-32S				2	1	1					4
GM-78S				2	1						3
GM-78I				2	1						3
FB 12-19-02				2	1						3
TB 12-19-02				2							2

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

Total No. of Bottles/ Containers: 19

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 12/19/02	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:

* DISSOLVED SAMPLES WERE ALREADY FIELD FILTERED WITH .45 MICRON FILTER

REPORT TO DAVE STERN.

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

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001348.0006.0000 / Kleinman

Project Location Bethpage NY

Laboratory STL - CT

Project Manager Carlo San Giovani

Sampler(s)/Affiliation KS/GN (ARCADIS)

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	1,4-DIOXANE (8270 SIM) VOC (UNPRESERVED)	Remarks	Total
TB122002	L	12/20/11		2		2
TB122002	L			2		2
REP122002	L			2		2
MW-24I *	L			6 *		6
MW-29I	L			2		2
MW-29S	L			2		2

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

Total No. of Bottles/Containers 16

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 12/20/11	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: Report to Dave Stein.

* use sample for MS/MSD please.

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

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001348.0006.00002

Project Location BETHPAGE NY.

Laboratory SEVERN-TRENT - SPECTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOC (W)						Remarks	Total
GM-17I	L	12-27-02		2							2
GM-17D	↓	↓		2							2
GM-18D				2							2
TB-12-27-02				2							2

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

Total No. of Bottles/ Containers: 8

Relinquished by: GW	Organization: ARCADIS	Date 12/27/02	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: REPORT TO DAVE STERN

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

AG OF

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

Project Number/Name N4001348.0006.00002

Project Location BETHPAGE NY

Laboratory SEVERN TRENT SHELTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VOC						Remarks	Total
6M-201	L	1-3-03		2							2
6M-200	L	1		2							2
TB 1-3-03	L	1		2							2

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

Total No. of Bottles/ Containers: 6

Relinquished by: [signature]	Organization: ARCADIS	Date 1/3/03	Time 5:30	Seal Intact?	
Received by: _____	Organization: _____	Date __/__/__	Time _____	Yes No N/A	
Relinquished by: _____	Organization: _____	Date __/__/__	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date __/__/__	Time _____	Yes No N/A	

Special Instructions/Remarks: REPORT TO DAVE STERN

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

AG 05-0597

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001348.0006.00002

Project Location BETHPAGE NY

Laboratory SEVERN-TRENT SILVERTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W., B.H.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VOC (UVP)						Remarks	Total
GM-39D	L	1-7-03		2							2
GM-39D-2				2							2
GM-18I				6*							6
EBP 1-7-03				2							2
TB 1-7-03				2							2
FB 1-7-03				2							2

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

Total No. of Bottles/Containers 16

Relinquished by: [signature]	Organization: ARCADIS	Date 1/7/03	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date __/__/__	Time _____	Yes	No N/A
Relinquished by: _____	Organization: _____	Date __/__/__	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date __/__/__	Time _____	Yes	No N/A

Special Instructions/Remarks: REPORT TO DAVE STERN

* PLEASE USE THIS SAMPLE FOR AN MS/MSD QA/QC SAMPLE

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

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name 30100134P.0006.0002

Project Location Bethpage NY

Laboratory Severn Trent Stratton

Project Manager Dave Stern

Sampler(s)/Affiliation Bill

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml vials VOCs						Remarks	Total
GM 21D	L	1.5.03		2							2
GM 21I	"	"		2							2
TB 1.5.03	"	"		2							2
				6							

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

Total No. of Bottles/ Containers: 6

Relinquished by: [signature]	Organization: ARCADIS	Date 1/5/03	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A

Special Instructions/Remarks: Report To Dave Stern

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

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name: 40013918.0006 00002

Project Location: LATHAM NY

Laboratory: SPECTRUM - TRIMATRIX SYRACUSE

Project Manager: LOUIS STANO

Sampler(s)/Affiliation: C.W. LH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA (VOC)						Remarks	Total
GM-D7502	L	1-30-03		2							2
GM-16L		1-30-03		2							2
N-10627				2							2
TB-1-9-03				2							2
FB 1-9-03				2							2

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

Total No. of Bottles/ Containers: 10

Relinquished by: [signature]	Organization: ARCADIS	Date 1/9/03	Time 5:45	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 STANO

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

AG 05-12/01

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

Project Number/Name N10012148.0006.00002

Project Location LITTLE NECK NY

Laboratory SEVERN-TRENT SHELTON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W. B.H.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40ml VOA VOC	500ml PLASTIC TOTAL Cr only (Unfilt)					Remarks	Total
6M-15S	L	1-10-03		2	1						3
6M-15I				2							2
LT/MW-04					1						1
LT/MW-05					1						1
LT/MW-06					1						1
FB1-10-03				2	1						3
TB1-10-03	V	V		2							2

ANALYSIS / METHOD / SIZE

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

Total No. of Bottles/ Containers 13

				Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 1/10/03	Time 4:00	
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

ARCADIS

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

Project Number/Name M0013480006-0002

Project Location KETTLE NY

Laboratory SEVERN-TRENT ENVIRON

Project Manager DAVE STERN

Sampler(s)/Affiliation G.U.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOC (DW)						Remarks	Total
ONCT-1	L	1-13-03		2							2
ONCT-2				2							2
ONCT-3				2							2
ONCT DUPLICATE				2							2
ONCT FIELD				2							2
GP-1/3 DUPLICATE				6*							6
GP-1/3 EQUIPMENT				2							2
GP-1				2							2
GP-3				2							2
TB-1-13-03(S)				2							2
KCP-1-13-03				2							2
GM-7HI				2							2
GM-7HD				2							2
GM-7HD-2				2							2
GM-7HD-2				2							2
TB-1-13-03				2							2

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

Total No. of Bottles/ Containers 26 (3)

Relinquished by: [signature]	Organization: ARCADIS	Date 1/13/03	Time 4:00	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 USE THIS SAMPLE FOR AN MS/MSD QA/QC SAMPLE

REPORT TO DAVE STERN

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

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name 30013452.0006.0002

Project Location Dethpage NY

Laboratory Severn Trent

Project Manager Dave Stern

Sampler(s)/Affiliation BH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOA VIALS	ANALYSIS / METHOD / SIZE: VOCs	Remarks	Total
OM 79E	L	1.14.03		2			2
OM 79D	L	1.14.03		2			2
TB 1.14.03	L	1.14.03		1			1
						Total No. of Bottles/ Containers	5

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

Relinquished by: [signature]	Organization: ARCADIS	Date 1/14/03	Time _____	Seal Intact?		
Received by: [signature]	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

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NIAGB48.6.2 / GRUMMAN

Project Location BUFFALO, NY

Laboratory STL, CT

Project Manager CARLO

Sampler(s)/Affiliation _____

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40mL VOA vial VOCs (USP)						Remarks	Total
TB011503	L	01/15/03		2							2
FB011503				2							2
73D				2							2
~~34FD~~				2							2
34D2				2							2

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

Total No. of Bottles/ Containers 10

				Seal Intact?
Relinquished by: M Saunders	Organization: ARCADIS	Date 01/15/03	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: Report to Dave Heron (631) 391-5284

Delivery Method: ☐ In Person ☑ Common Carrier FedEx SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY000348.0006.00002

Project Location BETHPAGE NY

Laboratory SEVERN TRENT STL

Project Manager D. NOFSTER

Sampler(s)/Affiliation G.W MS.

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	TOM VOCs (SW)						Remarks	Total
GM-13D	L	1-16-03		2							2
GM-38D-2				2							2
GM-34D				2							2
TB 1-16-03				2							2

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

Total No. of Bottles/ Containers 8

Relinquished by:	Organization: ARCADIS	Date 1/16/03	Time 6:30	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks: REPORT TO CAMP SITE

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

SPECIFY

SPECIFY

AG 05-12/01

ARCADIS

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

Project Number/Name NY001312.0006.00007

Project Location RETINAGE NY

Laboratory SEVERN - TRENT SVERN

Project Manager DAVE STORM

Sampler(s)/Affiliation C.W. & MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 4oz VOC 624 VOC	4oz VOC in Amber 624 (WD)					Remarks	Total
CM-14	L	1-16-03		2	2						4

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

Total No. of Bottles/ Containers 4

Relinquished by: _____	Organization: ARCADIS	Date 1/16/03	Time 6:30	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: RETURN TO DAVE STORM

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

ARCADIS

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

Project Number/Name NY001348.0006.00002

Project Location Bethpage NY

Laboratory AZM 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 HCL 8260						Remarks	Total
GM 7002	L	1/20/03		2							2

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

Total No. of Bottles/ Containers: 2

Relinquished by: Shawn Healey	Organization: Arcadis (NYM)	Date 1/20/03	Time 9:45	Seal Intact?	
Received by: [illegible]	Organization: UPS	Date 1/20/03	Time 16:45	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 David Stern

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

ARCADIS

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

Project Number/Name NY001342.0006.00002

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: 40 ML VOA VIAL (MNA) VOC						Remarks	Total
GM 70Dr	L	1/20/03		2							2
TB 1/20/03	L	1/20/03		2							2

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

Total No. of Bottles/ Containers 4

Relinquished by: Shawn Healey	Organization: Arcadis G&M	Date 1/20/03	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: _____

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

ARCADIS

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

Project Number/Name 14001348.0006.00002

Project Location S Bethpage, NY

Laboratory STL

Project Manager David Stern

Sampler(s)/Affiliation SN

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 ml VOA vial (unp) VOC						Remarks	Total
GM 37D2	L	1/22/03		6							6
TB 1/22/03	L	"		2							2

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

Total No. of Bottles/ Containers 8

Relinquished by: [signature]	Organization: Arcadis GSM	Date 1/22/03	Time 1130	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:

Use GM 37D2 for a MSD

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

ARCADIS

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

Project Number/Name NY001348.0006.0002 / [illegible]

Project Location Bethpage NY

Laboratory STL LI

Project Manager David Stern

Sampler(s)/Affiliation SH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: NO ML VOA (HCL) VOC						Remarks	Total
GM 36D	L	1/21/03		2							2
GM 37D2	L	1/22/03		2							2

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

Total No. of Bottles/ Containers 4

Relinquished by: Shawn Hadley	Organization: Arcadis G&M	Date 1/23/03	Time [illegible]	Seal Intact? Yes No N/A
Received by: [signature]	Organization: LIAN	Date 1/23/03	Time [illegible]	
Relinquished by: _____	Organization: _____	Date __/__/__	Time _____	Seal Intact? Yes No N/A
Received by: _____	Organization: _____	Date __/__/__	Time _____	

Special Instructions/Remarks: * Split Samples w/ Grumman for Pahse II Data Quality

No Questions call Dave Stern @ 631-249-7600

Delivery Method: ☑ In Person ☐ Common Carrier _____ ☐ Lab Courier ☐ Other _____

SPECIFY SPECIFY

AG 05-12/01

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

oject Number/Name N4001348.0006.00002

oject Location Bethpage NY

aboratory STL

oject Manager David Stern

ampler(s)/Affiliation SH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml VOA (HCl) Vial						Remarks	Total
GM 38D	L	1/21/03		2							2
GM 38R	L			2							2
TB 1/21/03	L			2							2

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

Total No. of Bottles/ Containers 6

elinquished by: Shawn Hatcher	Organization: Arcadis G&M	Date 1/21/03	Time 1100	Seal Intact?	
eceived by:	Organization:	Date / /	Time	Yes	No N/A
elinquished by:	Organization:	Date / /	Time	Seal Intact?	
eceived by:	Organization:	Date / /	Time	Yes	No N/A

ecial Instructions/Remarks: _____

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

AG 05-0597

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name: NY000348.0006.00002

Project Location: BETHPAGE NY

Laboratory: SEVERN-TRENT STANTON

Project Manager: DAVE STERN

Sampler(s)/Affiliation: G.W.,

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: HUMI VOA (VOC)						Remarks	Total
GM-35D-2	L	1-28-03		2							2
TB 1-28-03	✓	✓		2							2

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

Total No. of Bottles/ Containers: 4

Relinquished by: [signature]	Organization: ARCADIS	Date 1/28/03	Time 4:50	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 ☐ Lab Courier ☐ Other _____

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NFA - N. Colonie - Bethlehem Haz

Project Location BETHLEHEM NY

Laboratory H2M

Project Manager _____

Sampler(s)/Affiliation G. Williams/ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA (HCl) VOC						Remarks	Total
GM35D2	L	1-28-03		2							2

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

Total No. of Bottles/ Containers

Relinquished by:		Organization: ARCADIS	Date 1/28/03	Time 4:10	Seal Intact?	
Received by:		Organization: H2M	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 _____ ☐ Lab Courier ☐ Other _____

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name 84013482 0006.0002

Project Location BUFFALO, NY

Laboratory SEVERN-TRENT SHELTON

Project Manager DAVE STERN

Sampler(s)/Affiliation GW,

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA (HCl)						Remarks	Total
GM-37D	L	2-4-03		2							2
GM-71D-2	"	"		2							2
TB 2-4-03	"	"		2							2

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

Total No. of Bottles/ Containers 6

Relinquished by: [signature]	Organization: ARCADIS	Date 2/4/03	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: RETURN TO DAVE STERN

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

AG 05-0597

ARCADIS

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

Project Number/Name NY NORTHROP GRUMMAN/BETHPAGE H2O

Project Location BETHPAGE NY

Laboratory H2M

Project Manager _____

Sampler(s)/Affiliation G.W. ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1,4 DIOXANE (8270C SIM)	VOC (8260B)					Remarks	Total
GM-37D	L	2-4-03		2							2
GM-71D2	↓	↓		2							2

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

Total No. of Bottles/ Containers 4

Relinquished by: [signature]	Organization: ARCADIS	Date 2/4/03	Time	Seal Intact? Yes No N/A
Received by: [signature]	Organization: H2M	Date 2/4/03	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 _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

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

To:
David Stern

Copies:

From:
Donna M. Brown and Mary Ann Doyle

Date:
March 21, 2003

ENVIRONMENTAL

Subject:
Data Validation of Volatile Organic Compound Groundwater Samples Collected for the Fourth Quarter 2002 Monitoring Program, Northrop Grumman, Bethpage, New York (Project No. NY001348.00006.00004).

DATA VALIDATION

Water samples, field replicates, field blanks, and trip blanks were collected December 2002 and January 2003 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. Sample GM-14 was analyzed according to USEPA Method 624.

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 and SVOCs data were discussed in a separate memo.

The analytical data for samples were provided by the laboratory in six sample delivery groups (SDG) 202695, 202788, 202854, 202885, 202910, and 202988. The data validation results for these SDGs are discussed separately below.

SDG 202695

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 November 27, and December 4, 2002. The compound relative response factors (RRFs) were >0.05 and compound percent relative standard deviation (%RSD) values were <30%.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed with the samples. The compound RRFs were >0.05 and percent difference (%D) values were <25.

V. BLANKS

Three method blanks were analyzed with this SDG. No compound or TICs were detected. Methylene chloride was detected in one method blank associated with 36D, 36D2, MW-3R, 18S, 17SR, N-10631, and 16SR.

Four trip blanks were analyzed with this SDG. The following target compound was detected in the trip blanks:

Trip Blank TB121002

Compound	Concentration in ug/L
Acetone	13

Associated Samples: GM38D2, 36D, and 36D2

Two field blank was collected and analyzed with the samples. The following compounds were detected in the field blank:

Field Blank 121702

Compound	Concentration in ug/L
Methylene Chloride	0.5J

Associated samples: MW3R, 18S, 17SR, N10631, and 16SR.

The following samples were qualified as non-detect (U) based on the blank results:

Compound	Sample ID
Methylene Chloride	36D2
Acetone	GM-38D2

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 (MS/MSD/MSB) AND LABORATORY CONTROL SAMPLES (LCS)

The MS/MSD/MSB and 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

Target compounds were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

All TICs were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

SDG 202788

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 September 17, 2002 and October 9, 2002. All compound RRFs were >0.05 and RSDs were <30%.

IV. CONTINUING CALIBRATION

Five continuing calibrations were performed in this SDG. The compounds had RRFs >0.05. The following %Ds were >25%:

Calibration date: 12/23/02

Compound	%D
Chloromethane	26.4

Associated samples: GM-78I, FB121902, and TB121902

Calibration date: 12/26/02

Compound	%D
Acetone	37.3
2-Butanone	46.0
2-Hexanone	63.2
Chloromethane	32.3

Associated samples: GM32S, GM78S, REP12202, HN24I, HN29D, TB122002, and FB122002.

Calibration date: 12/27/02

Compound	%D
Chloromethane	43.9
Vinyl Chloride	34.8
Acetone	75.9
2-Butaone	83.5
2-Hexanone	100

Associated sample: HN29I.

Calibration date: 01/02/03

Compound	%D
Vinyl Chloride	33.3
Trichlorotrifluoroethane	25.7
2-Butanone	31.9
Toluene	37.8

Associated samples: GM17I, GM17D, GM18D and TB122702

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 the samples in this SDG. The following compound was detected in a method blank:

Method Blank 13076-020

Compound	Concentration in ug/L
Methylene Chloride	0.55J

Associated samples: GM32S, GM78S, REP122002, HN24I, and HN29D

Four trip blanks were analyzed with this SDG. The following target compounds were detected in the trip blanks:

Trip Blank TB 121902

Compound	Concentration in ug/L
Methylene chloride	2 J

Associated sample: MEIGF, ME2GF, GM32S, GM78S, and GM78I.

Trip Blank TB010303

Compound	Concentration in ug/L
Acetone	5J

Associated samples: GM20I and GM20D

Two field blanks were analyzed with this SDG. The following target compound was detected in a field blank:

Field Blank FB121902

Compound	Conc in ug/L
Methylene chloride	3 J

Associated samples: MW1GF, MW2GF, GM32S, GM78S, and GM78I

The following samples were qualified as non-detect (U) based on the blank results:

Compound	Sample ID
Methylene Chloride	GM78I and HN29D

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MS/MSD/MSB AND LCS

The %R and RPD were within QC limits in the MS/MSD/MSB and LCS except for the %R in the MS trichloroethene which was above QC limits. 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

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)

All TICs were reported correctly.

XII. OVERALL ASSESSMENT OF DATA.

Sample HN-24I was replicated and labeled REP122002. The replicate results were acceptable.

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

SDG 202854

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.. All compound RRFs were >0.05 and %RSD values were <30%.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed with the samples. The RRFs were >0.05. The following %Ds were >25%:

Calibration Date: 01/15/03

Compound	% D
Bromomethane	32.5
Acetone	39.5
2-Butanone	25.9
Vinyl Acetate	26.9
2-Hexanone	31.9

Associated sample: GM15I and GM15S

The 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 compound was detected in a method blank:

Method Blank 13672-001

Compound	Concentration in ug/L
Methylene chloride	0.70 J

Associated samples: GM15I and GM15S

Four trip blanks and two field blanks were analyzed with the samples. The following compounds were detected in the blanks:

Trip Blank TB010603

Compound	Concentration in ug/L
Bromomethane	1 J
Trichlorotrifluoroethane	0.6 J

TIC	Retention Time
Unknown Siloxane	21.23
Cyclotetrasiloxane,octameth	19.09

Associated samples: GM15D and GM15D2

Trip Blank TB010703

Compound	Concentration in ug/L
Bromomethane	1 J
Acetone	8 J
Trichlorotrifluoroethane	0.8 J

TIC	Retention Time
Unknown Siloxane	22.96
Cyclotetrasiloxane,octameth	19.09

Associated samples: GM39D, GM39D2, GM18I, and REP1-7-03

Trip Blank TB010803

Compound	Concentration in ug/L
Methylene chloride	0.5 J

Associated samples: GM21D and GM21I

Trip Blank 010903

Compound	Concentration in ug/L
Methylene chloride	0.4 J

Associated samples: GM75D2, GM16I, and N-10627

Field Blank FB010703

Compound	Concentration in ug/L
Bromomethane	0.9 J
Acetone	5 J
Trichloroethene	4 J

Associated samples: GM39D, GM39D2, GM18I, and REP1-7-03.

Field Blank FB010903

Compound	Concentration in ug/L
Methylene Chloride	0. 6 J
Carbon Disulfide	0.7 J

TIC	Retention Time
Unknown Siloxane	22.96

Associated samples: GM75D2, GM16I, and N-10627, GM15S, GM15I

The following compounds were qualified as non-detect (U) based on blank results:

Compound	Sample ID
Trichlorotrifluoroethane	GM-15D and GM-15D2
Trichloroethene	GM-18I
Methylene chloride	GM-75D2
Carbon disulfide	GM-75D2 and N-10627

An unknown siloxane at retention time 21.23 through 21.29 was qualified as not usable (R) based on blank result in GM-15D2, GM-16I, N-10627, GM-75D2, GM-15S (trip blank in SDG 202885) and GM-15I (trip blank in SDG 202885).

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MS/MSD/MSB AND LCS

The MS/MSD/MSB and 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

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)

All TICs were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Sample GM-39D2 was replicated and labeled REP010703. The replicate results were acceptable.

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

SDG 202885

I. HOLDING TIMES

The samples were analyzed within holding time requirements except for ONCT-1, GP-3, GP-1/3 INFLUENT, and GP-1 which were analyzed outside the holding times. The results for the above samples were qualified as estimated (J) if detected and estimated (UJ) in not detected.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on January 9, 2003. The compound relative response factors (RRFs) were >0.05 and compound percent relative standard deviation (%RSD) values were <30%.

IV. CONTINUING CALIBRATION

Four continuing calibrations were performed with the samples. The compound RRFs were >0.05. The following percent difference (%D) values were >25:

Calibration Date: 1/15/03

Compound	% D
Bromomethane	32.5
Acetone	39.5
2-Butanone	25.9
Vinyl Acetate	26.9
2-Hexanone	31.9

Associated samples: TB011003 and FB011003.

Calibration Date: 1/16/03

Compound	% D
Bromomethane	35.9
Vinyl Acetate	38.8
2-Butanone	25.2

Associated samples: ONCT-3, TB011303, ONCT EFFLUENT, GM-741, GM-74D, and GM-74D-2.

Calibration Date: 1/17/03

Compound	% D
4-Methyl 1-2-Pentanone	26.0
Vinyl Acetate	32.4
Bromomethane	31.9

Associated samples: TB011303(S), ONCT-2, GP-1/3 EFFLU, GP-1DL, GP-1/3 INFLUDL, REP011303, ONCT-1DL, ONCT INFLUEN, and GM-73D-2.

Calibration Date: 1/21/03

Compound	% D
Bromomethane	32.8
Acetone	47.4
2-Butanone	32.1
2-Hexanone	37.0

Associated samples: GP-3DL, GP-3, ONCT-1, GP-1/3 INFLU and GP-1.

The associated sample compound results were qualified as estimated (J) if detected, and estimated (UJ) if not detected.

V. BLANKS

Four method blanks were analyzed with this SDG. No compound or TICs were detected except for methylene chloride in 13672-1MB which was associated with samples FB011003 and TB011003. No qualification of data was necessary.

Three trip blanks and one field blank were analyzed with this SDG. The following target compound or TICs was detected in the blanks:

Trip Blank TB011003

Compound	Concentration in ug/L
Methylene chloride	0.5 JB

TIC	Retention Time
Unknown Siloxane	21.25

Associated Samples: GM-15S and GM-15I in SDG 202854

Trip Blank TB011303

Compound	Concentration in ug/L
Methylene chloride	0.5 J

TIC	Retention Time
Cyclotetrasiloxane,octameth	19.13
Unknown Siloxane	21.25

Associated Samples: REP-1-13-03, GM-73D2, GM-74I, GM-74D, and GM-74D-2.

Field Blank FB011003

Compound	Concentration in ug/L
Methylene chloride	0.4 JB

Associated Samples: GM-15S and GM-15I in SDG 202854

No qualifcation of the data was necessary based on 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/MARTIX SPIKE BLANKS (MS/MSD/MSB) AND LABORATORY CONTROL SAMPLES (LCS)

The MS/MSD/MSB and 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

Target compounds were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

A TICs was reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Samples GP-3, GP-1/3 INFLUENT, GP-1, and ONCT-1 were analyzed at a secondary dilution due to concentrations of compounds exceeding the calibration range of the instrument and qualified by the laboratory with an "A" qualifier in the original analysis. The original analysis was reported except for the "A" qualified results, in which the secondary dilution was reported.

Sample ONCT INFL was replicated and labeled REP-1-13-03. The replicate results were acceptable.

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

SDG 202910

I. HOLDING TIMES

The samples were analyzed within holding time requirements except for samples GM-37D and TB012203 which were analyzed outside the holding time. The temperature of the samples collected on January 20, 2003 when received by the laboratory was above the acceptable storage temperature. Samples GM-37D2, TB012203, GM-70D2 and TB1/20/03 were qualified as estimated (J) and estimated (UJ) if not detected.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

Two initial calibrations were performed on January 9 and 20, 2003. All compound RRFs were >0.05 and RSDs were <30%.

IV. CONTINUING CALIBRATION

Five continuing calibrations were performed in this SDG. The compounds had RRFs >0.05. The following %Ds were >25%:

Calibration date: 1/17/03

Compound	%D
Bromomethane	31.9
Vinyl Acetate	32.4
4-Methyl-2-Pentanone	26.0

Associated samples: GM-79I, GM-79D, and GM-34D2

Calibration date: 1/20/03

Compound	%D
Bromomethane	30.0
Vinyl Acetate	28.6

Associated samples: GM-14 and FB011603

Calibration date: 1/21/03

Compound	%D
Acetone	47.4
Bromomethane	32.8
2-Butanone	32.1
2-Hexanone	37

Associated samples: TB011403, TB011503, FB011503, TB011603, TB012003, GM-33D2, 73D, GM-13D and GM-70D2.

Calibration date: 1/30/03

Compound	%D
Vinyl Acetate	94.5

Associated samples: TB12203 and GM37D

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 the samples in this SDG. No target compound or TICS were detected in a method blanks:

Six trip blanks were analyzed with this SDG. The following target compounds or TICs were detected in the trip blanks:

Trip Blank TB 011403

Compound	Concentration in ug/L
Methylene chloride	1 J

TIC	Retention Time
CyclotetraSiloxane, octameth	19.18
Unknown Siloxane	21.32

Associated sample: GM-79I and GM-79D

Trip Blank TB011503

Compound	Concentration in ug/L
Methylene chloride	0.5 J

TIC	Retention Time
CyclotetraSiloxane, octameth	19.18
Unknown Siloxane	21.31
Unknown Siloxane	23.01
Unknown Alkane	25.28

Associated samples: 73D and 34D2

Trip Blank TB011603

Compound	Conc in ug/L
Unknown Alkane	25.29

Associated samples: GM-73D, GM-33D2, and GM-34D

Trip Blank TB

TIC	Retention Time
CyclotetraSiloxane, octameth	19.19
Unknown Siloxane	21.32

Associated samples: GM-70D2

Trip Blank TB012103

Compound	Conc in ug/L
Methylene chloride	0.3 J
Trichloroethene	0.6 J

TIC	Retention Time
Unknown Siloxane	21.30

Associated samples: GM-38D and GM-38R

Trip Blank TB012203

TIC	Retention Time
Unknown Siloxane	21.25

Associated samples: GM-37D2

Two field blanks were analyzed with this SDG. The following target compound was detected in a field blank:

Field Blank FB011503

Compound	Conc in ug/L
Methylene chloride	0.5 J

TIC	Retention Time
Unknown Siloxane	21.34

Associated samples: 73D and 34D2.

Methylene chloride was qualified as non-detect (U) in GM-38D and GM-38R. An Unknown Siloxane was qualified as not usable (R) in GM-70D2 at retention time 21.31 and 73D at retention time 21.32.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MS/MSD/MSB AND LCS

The %R and RPD were within QC limits in the MS/MSD/MSB and LCS.

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 reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Sample GM-38D was replicated and labeled GM-38R. The replicate results were acceptable.

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

SDG 202988

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 January 9, 2003. All compound RRFs were >0.05 and %RSD values were <30%.

IV. CONTINUING CALIBRATION

Two continuing calibrations were performed with the samples. The RRFs were >0.05. The following %Ds were >25%:

Calibration Date: 1/30/03

Compound	% D
Vinyl Acetate	94.5

Associated samples: TB012803 and GM-35D2.

Calibration Date: 2/11/03

Compound	% D
Bromomethane	36.6
Vinyl Acetate	42.5
4-Methyl-2-Pentanone	25.4

Associated samples: TB020403, GM-37D, and GM-71D2.

The compounds were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples.

V. BLANKS

Two method blanks were analyzed with the samples in this SDG. No compounds or TICs were detected in the method blanks.

Two trip blanks were analyzed with the samples. The following compounds were detected in the blanks:

Trip Blank TB012803

TIC	Retention Time
Unknown Silosane	21.27

Associated samples: GM-35D2.

Trip Blank TB020403

Compound	Concentration in ug/L
4-Methyl-2-Pentanone	1 J

TIC	Retention Time
1,2,4-Trichlorobenzene	22.576

Associated samples: GM-37D and GM-71D-2.

Based on blank results 4-methyl-2-pentanone was qualified as non-detect (U) in GM-37D and GM-71D-2.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MS/MSD/MSB AND LCS

The MS/MSD/MSB and 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

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)

A compound methylacetate in GM-37D and 1,2,4-trichlorobenzene in TB020403 were detected and reported on the quantitation report. They are not target compounds and were added to the TIC forms for GM-37D and TB020403.

XII. OVERALL ASSESSMENT OF DATA

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Fourth 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 202695			
GM38D2	202695-001	12/10/2002	12/11/2002
TB121002	202695-002	12/10/2002	12/11/2002
TB121602	202695-003	12/16/2002	12/17/2002
36D	202695-004	12/16/2002	12/17/2002
36D2	202695-005	12/16/2002	12/17/2002
TB121702	202695-006	12/17/2002	12/18/2002
FB121702	202695-007	12/17/2002	12/18/2002
MW-3R	202695-008	12/17/2002	12/18/2002
18S	202695-009	12/17/2002	12/18/2002
17SR	202695-010	12/17/2002	12/18/2002
N-10631	202695-011	12/17/2002	12/18/2002
16SR	202695-012	12/17/2002	12/18/2002
TB121802	202695-013	12/18/2002	12/19/2002
HN-40S	202695-014	12/18/2002	12/19/2002
HN-40I	202695-015	12/18/2002	12/19/2002
FB121802	202695-016	12/18/2002	12/19/2002
HN-42I	202695-017	12/18/2002	12/19/2002
HN-42S	202695-018	12/18/2002	12/19/2002
N-10634	202695-019	12/18/2002	12/19/2002
GM-21S	202695-020	12/18/2002	12/19/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Fourth 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 202788			
MW-1GF	202788-001	12/19/2002	12/20/2002
MW-2GF	202788-002	12/19/2002	12/20/2002
GM-32S	202788-003	12/19/2002	12/20/2002
GM-78S	202788-004	12/19/2002	12/20/2002
GM-78I	202788-005	12/19/2002	12/20/2002
FB121902	202788-006	12/19/2002	12/20/2002
TB121902	202788-007	12/19/2002	12/20/2002
TB122002	202788-008	12/20/2002	12/21/2002
FB122002	202788-009	12/20/2002	12/21/2002
REP122002	202788-010	12/20/2002	12/21/2002
HN-24I	202788-011	12/20/2002	12/21/2002
HN-29I	202788-012	12/20/2002	12/21/2002
HN-29D	202788-013	12/20/2002	12/21/2002
GM-17I	202788-014	12/27/2002	12/28/2002
GM-17D	202788-015	12/27/2002	12/28/2002
GM-18D	202788-016	12/27/2002	12/28/2002
TB122702	202788-017	12/27/2002	12/28/2002
GM-20I	202788-018	1/3/2003	1/4/2003
GM-20D	202788-019	1/3/2003	1/4/2003
TB010303	202788-020	1/3/2003	1/4/2003

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Fourth 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 202854			
GM-15D	202854-001	1/6/2003	1/7/2003
GM-15D-2	202854-002	1/6/2003	1/7/2003
TB010603	202854-003	1/6/2003	1/7/2003
GM-39D	202854-004	1/7/2003	1/8/2003
GM-39D-2	202854-005	1/7/2003	1/8/2003
GM-18I	202854-006	1/7/2003	1/8/2003
REP010703	202854-007	1/7/2003	1/8/2003
TB010703	202854-008	1/7/2003	1/8/2003
FB010703	202854-009	1/7/2003	1/8/2003
GM-21D	202854-010	1/8/2003	1/9/2003
GM-21I	202854-011	1/8/2003	1/9/2003
TB010803	202854-012	1/8/2003	1/9/2003
GM-75D-2	202854-013	1/9/2003	1/10/2003
GM-16I	202854-014	1/9/2003	1/10/2003
N-10627	202854-015	1/9/2003	1/10/2003
TB010903	202854-016	1/9/2003	1/10/2003
FB010903	202854-017	1/9/2003	1/10/2003
GM-15S	202854-018	1/10/2003	1/11/2003
GM-15I	202854-019	1/10/2003	1/11/2003
PLT1 MW-04	202854-020	1/10/2003	1/11/2003

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Fourth 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 202885			
PLT1 MW-05	202885-001	1/10/2003	1/11/2003
PLT1 MW-06	202885-002	1/10/2003	1/11/2003
FB011003	202885-003	1/10/2003	1/11/2003
TB011003	202885-004	1/10/2003	1/11/2003
ONCT-1	202885-005	1/13/2003	1/14/2003
ONCT-2	202885-006	1/13/2003	1/14/2003
ONCT-3	202885-007	1/13/2003	1/14/2003
ONCT INFLUENT	202885-008	1/13/2003	1/14/2003
ONCT EFFLUENT	202885-009	1/13/2003	1/14/2003
GP-1/3 INFLUENT	202885-010	1/13/2003	1/14/2003
GP-1/3 EFFLUENT	202885-011	1/13/2003	1/14/2003
GP-1	202885-012	1/13/2003	1/14/2003
GP-3	202885-013	1/13/2003	1/14/2003
TB011303 (S)	202885-014	1/13/2003	1/14/2003
REP011303OCIN	202885-015	1/13/2003	1/14/2003
GM-74I	202885-016	1/13/2003	1/14/2003
GM-74D	202885-017	1/13/2003	1/14/2003
GM-74D-2	202885-018	1/13/2003	1/14/2003
GM-73D-2	202885-019	1/13/2003	1/14/2003
TB011303	202885-020	1/13/2003	1/14/2003

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Fourth 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 202910			
GM 79I	202910-001	1/14/2003	1/15/2003
GM 79D	202910-002	1/14/2003	1/15/2003
TB011403	202910-003	1/14/2003	1/15/2003
TB011503	202910-004	1/15/2003	1/16/2003
FB011503	202910-005	1/15/2003	1/16/2003
73D	202910-006	1/15/2003	1/16/2003
34D2	202910-007	1/15/2003	1/16/2003
GM-13D	202910-008	1/16/2003	1/17/2003
GM-33D-2	202910-009	1/16/2003	1/17/2003
GM-34D	202910-010	1/16/2003	1/17/2003
TB011603	202910-011	1/16/2003	1/17/2003
GM-14	202910-012	1/16/2003	1/17/2003
FB011603	202910-013	1/16/2003	1/17/2003
GM 70D2	202910-014	1/20/2003	1/21/2003
TB012003	202910-015	1/20/2003	1/21/2003
GM 38D	202910-016	1/21/2003	1/22/2003
GM 38R	202910-017	1/21/2003	1/22/2003
TB012103	202910-018	1/21/2003	1/22/2003
GM 37D2	202910-019	1/22/2003	1/23/2003
TB012203	202910-020	1/22/2003	1/23/2003
SDG 202988			
GM-35D-2	202988-001	1/28/2003	1/29/2003
TB012803	202988-002	1/28/2003	1/29/2003
GM-37D	202988-003	2/4/2003	2/5/2003
GM-71D-2	202988-004	2/4/2003	2/5/2003
TB020403	202988-005	2/4/2003	2/5/2003