ARCADIS

Third Quarter 2001
Groundwater Monitoring Report

Operable Unit 2
Northrop Grumman Corporation,
Bethpage, New York

P R E P A R E D F O R

Northrop Grumman Corporation

ARCADIS

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1. Introduction

This groundwater monitoring report was prepared as part of the operation, maintenance, and monitoring (OM&M) activities for the Operable Unit 2 (OU2) groundwater remedy at the Northrop Grumman Corporation (Northrop Grumman) Bethpage, New York facility. Both the hydraulic (i.e., groundwater elevation measurements) and groundwater quality monitoring activities described in this report are currently being conducted by Northrop Grumman on a voluntary basis in accordance with the New York State Department of Environmental Conservation (NYSDEC)-approved groundwater monitoring plan (ARCADIS Geraghty & Miller, Inc., 2001a). The purpose of the monitoring is to evaluate the effectiveness of the OU2 remedy at achieving the remedial goal of preventing the off-site migration of volatile organic compound (VOC)-impacted groundwater. A groundwater Record of Decision (ROD) for the Northrop Grumman and Naval Weapons Industrial Reserve Plant (NWIRP) sites was signed and issued by the NYSDEC on March 29, 2001. In addition to other items, the ROD incorporated the former groundwater Interim Remedial Measure (IRM) into the final ROD remedy for the sites. Upon execution of a Remedial Design/Remedial Action (RD/RA) Consent Order, an OM&M plan will be prepared and submitted to the NYSDEC for review. Following NYSDEC approval of the plan, the specified groundwater monitoring and reporting will be implemented as a required component of the groundwater remedy.

As described in the First Quarter 2001 Groundwater Monitoring Report (ARCADIS G&M, Inc. 2001b), this report has a slightly different emphasis from past quarterly reports. The same information will continue to be collected and provided as in past quarterly reports (with the exception of precipitation data). However, the evaluation of the groundwater monitoring data will focus on evaluating short-term changes (i.e., between quarters) rather than providing a detailed analysis and evaluation of data for the entire period of record. The latter will continue to be performed for the annual (i.e., fourth quarter) report.

This report discusses short-term changes in groundwater flow, if any, OU2 system operation, groundwater quality observed during the Third Quarter of 2001 (July to September 2001) and presents a comparison of the Third Quarter data to the results from the previous quarter. As in previous groundwater monitoring reports, this report also includes findings, conclusions, and recommendations for modifications to the current groundwater monitoring program. The conclusions and recommendations made in this report will continue to be re-evaluated in future reports as additional

hydraulic and groundwater quality data become available and recommendations will be incorporated, as appropriate, into the final OM&M Plan.

2. Monitoring Program

Except as described in Section 2.3 (Modifications to the Field Program) of this report, the Third Quarter 2001 groundwater monitoring network (hydraulic and groundwater quality) is consistent with the network listed in the OU2 Groundwater Monitoring Plan (ARCADIS Geraghty & Miller, Inc. 2001a), which was approved by the NYSDEC. The Northrop Grumman site, the location of the OU2 systems, neighboring properties (i.e., the NWIRP and Occidental Chemical Corporation/RUCO Polymer Corporation sites), and well locations are shown on Figure 1.

The hydrogeologic zones monitored 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, provided as Appendix B of the Groundwater Feasibility Study (ARCADIS Geraghty & Miller, Inc. 2000).

Hydraulic and groundwater quality monitoring for the Third Quarter 2001 was conducted from September 18 to October 12, 2001. Appendix A contains water-level measurement logs, Appendix B contains groundwater sampling logs, Appendix C contains chain-of-custody records, and Appendix D contains data validation memoranda for the Third Quarter 2001 monitoring round.

2.1 Hydraulic Monitoring

Field conditions encountered during this monitoring round prevented the measurement of a water level in one well in the hydraulic monitoring network; for additional detail, see Section 2.3 – Modifications to Field Program, of this report.

Water levels were measured to determine the hydraulic effects, both horizontally and vertically, of pumping the OU2 remedial wells and Well GP-3. The results of the Third Quarter 2001 hydraulic monitoring round are described in Section 4 (Groundwater Flow) of this report.

2.2 Groundwater Quality Monitoring

Field conditions encountered during this monitoring round prevented sampling of two wells in the groundwater quality monitoring network, and additional analytes were

added to the list of analytical parameters for two monitoring wells; for additional detail, see Section 2.3 – Modifications to Field Program, of this report. Section 5 (Groundwater Quality) of this report summarizes the analytical results of groundwater samples collected during the Third Quarter of 2001.

2.3 Modifications to Field Program

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

- Water-level measurements and groundwater samples cannot currently be obtained from Monitoring Well N-10624 due to silt in the well screen.

- As requested during the August 2001 Technical Advisory Committee (TAC) Meeting, total cadmium (Cd) and chromium (Cr) were added to the list of analytes for Monitoring Wells GM-37D and GM-37D2 this round to determine the concentration of these constituents south of the Northrop Grumman property.

- Light, non-aqueous-phase liquid (LNAPL) was detected by others in Monitoring Well GM-14 (Figure 1). Therefore, the proposed groundwater samples (for VOCs and semivolatile organic compounds [SVOCs] analyses) were not collected this round.

3. OU2 Operational Monitoring

Northrop Grumman collected water samples from the OU2 remedial wells (GP-1, ONCT-1, ONCT-2, and ONCT-3), Industrial Supply Well GP-3 and GP-10 and the influent and effluent streams from the two OU2 groundwater treatment systems (i.e., Plants 5 [GP-1] and 5E [ONCT] systems) on a weekly basis during the Third Quarter of 2001. These samples were analyzed by Northrop Grumman's internal laboratory for trichloroethene (TCE) or TCE and vinyl chloride monomer (VCM). TCE or TCE/VCM concentrations for the OU2 remedial wells/industrial supply wells and the OU2 treatment systems during this quarter are provided in Tables 1 and 2, respectively. Section 3.1 (Pumpage) discusses and evaluates the pumpage recorded for the OU2 wells and Industrial Supply Well GP-3. Section 3.2 (Treatment System Operational Data) discusses the results of the weekly operational monitoring by Northrop Grumman for the ONCT and GP-1/3 treatment systems. Section 5 (Groundwater Quality) discusses the results of the weekly operational monitoring collected by Northrop Grumman of the OU2 remedial wells.

In addition to the samples collected by Northrop Grumman, ARCADIS collected water samples as part of the quarterly monitoring activities from OU2 Remedial Wells GP-1, ONCT-1, ONCT-2, and ONCT-3, Industrial Well GP-3, and the influent/effluent water streams of Plants 5 and 5E. These samples were analyzed for the full Target Compound List (TCL) for VOCs. Section 5 (Water Quality) of this report discusses the results of the quarterly sampling of the OU2 wells. Section 3.2 (Treatment System Operational Data) discusses the data for the treatment systems. ARCADIS also collected hydraulic (pumping depth to water) measurements and instantaneous pumping rates from OU2 Wells GP-1, ONCT-1, ONCT-2, and ONCT-3 during each quarterly monitoring round (an instantaneous flow rate cannot currently be measured in Well GP-3; for additional details, see Section 3.1 – Pumpage, of this report).

Collectively, the above data are utilized as follows:

- To determine the volume of impacted groundwater that is pumped and treated by the Plant 5 and Plant 5E treatment systems; these data are also compared to design pumpage.
- To monitor and document the specific capacities of the OU2 remedial wells.
- To calculate the VOC mass removed (in combination with the water quality data) by the OU2 remedial wells and Well GP-3.
- To monitor and document VOC concentrations in the OU2 systems and wells, and document the performance (efficiency) of the systems in treating the impacted groundwater.

Table 3 summarizes the pumpage from the OU2 wells and Well GP-3, as well as the VOC mass removed this quarter. Details on the rationale and sampling/measurement procedures for OU2 operational monitoring and quarterly monitoring are provided in the 2000 Annual Groundwater Monitoring Report (ARCADIS Geraghty & Miller, Inc. 2001c).

3.1 Pumpage

The design pumping rates (i.e., remedial well pumping rates, determined by groundwater modeling, that would prevent the off-site migration of VOC-impacted groundwater) of OU2 Wells GP-1, ONCT-1, ONCT-2, and ONCT-3 are 1,075 gallons per minute (gpm), 1,000 gpm, 600 gpm, and 700 gpm, respectively (Geraghty &

Miller, Inc. 1996), for a total rate of 3,375 gpm. If the wells were pumped continuously at the design rates, this would result in a total of 413.1 million gallons (MG) being pumped over a period of 85 days this quarter (July 3 through September 25, 2001).

The total pumpage and average pumping rate for each OU2 remedial well this quarter were calculated using methods described in previous quarterly reports. Pumpage from Industrial Supply Well GP-3 supplemented the total gallons pumped during this quarter. The number of days each OU2 remedial well was operational out of a possible 85 days (i.e., July 3 to September 25, 2001) during this quarter (pumping records were unavailable for the period from September 25 to September 30, 2001) and their average pumping rates when operational is provided in Table 3. These periods of operation and average pumping rates equate to approximately 517.3 MG pumped by the OU2 remedial wells for the period of record this quarter, or approximately 125 percent of the total design pumpage given above. Industrial Supply Well GP-3 was operational for all of the period of record this quarter and pumped at an average rate of 561 gpm; this equates to 68.7 MG pumped in addition to the quantity pumped by the OU2 remedial wells. Overall, the remedial well design pumping rates described above were exceeded this quarter. It is assumed that the OU2 wells were also operating above the design rates during the five days from which records are currently unavailable (pumping data through July 3, 2001 were provided in the second quarter 2001 report). If the records are found, they will be discussed in a subsequent report.

Table 4 summarizes the performance data collected from the OU2 remedial wells for the Second and Third Quarters of 2001. Based on instantaneous pumping rates and drawdowns measured during the Third Quarter 2001, the specific capacities for the OU2 remedial wells are as follows: GP-1 (27.9 gallons per minute per foot [gpm/ft]); ONCT-1 (38.7 gpm/ft); ONCT-2 (32.9 gpm/ft); and ONCT-3 (34 gpm/ft). For Wells ONCT-1, ONCT-2, and ONCT-3, the specific capacities calculated for this quarter exceed the minimum required for the remedial well pumps to operate in their optimum performance range (Geraghty & Miller, Inc. 1996).

3.2 Treatment System Operational Data

Based on the average influent and effluent TCE concentrations for the ONCT and GP-1 systems (Table 2), treatment system TCE removal efficiencies are 99.9 percent for both systems. Based on the influent and effluent TVOC sample results (Table 10), the removal efficiencies of the ONCT and GP-1 treatment systems are 99.8 percent and 99.5 percent, respectively. Therefore, based on the near-weekly Northrop Grumman

sampling and analysis for TCE and the quarterly sampling by ARCADIS for TVOCs, treatment system removal efficiencies are essentially identical and very high.

Based on the VOC concentrations and pumping totals for the OU2 remedial wells and Well GP-3, a total of 2,219 pounds (lbs) of VOCs were removed from groundwater and treated by the OU2 treatment systems this quarter (Table 3).

4. Groundwater Flow

This report section presents the results of the groundwater-level measurements collected during the Third Quarter 2001 and evaluates the effectiveness of the OU2 remedial system at achieving the overall goal of preventing the off-site migration of VOC-impacted groundwater. The evaluation of the hydraulic (i.e., groundwater-level measurement) data is performed using methods described in previous quarterly monitoring reports.

The Third Quarter 2001 hydraulic measurement round was conducted on October 12, 2001 while the OU2 remedial system was operating; the wells measured and water-level data obtained are summarized in Table 5. During the measurement round, the instantaneous flow rates at the ONCT wells (currently the only wells where an instantaneous flow rate can be measured) were as follows: 1,135 gpm (ONCT-1); 906 gpm (ONCT-2); and 1,278 gpm (ONCT-3). The average pumping rates for Wells GP-1 and GP-3 on October 12, 2001 were 1,180 gpm and 520 gpm, respectively. Using the water-level data collected, maps showing the water-table configuration and directions of groundwater flow (i.e., the shallow zone) and the potentiometric surface configuration and groundwater flow directions in the intermediate and D2 zones were prepared. These maps illustrate the effect (i.e., hydraulic containment) of the operation of the OU2 groundwater remedy on horizontal groundwater flow patterns. To evaluate the effect of the OU2 groundwater remedy on vertical groundwater flow patterns, vertical hydraulic gradients were calculated using water-level data from shallow/intermediate, intermediate/deep, and deep/D2 monitoring well clusters; vertical hydraulic gradients are presented in Table 6.

4.1 Shallow Zone

The configuration of the water table and horizontal directions of groundwater flow in the shallow zone during the Third Quarter of 2001 are shown on Figure 2. The effects of the OU2 groundwater treatment systems discharges and stormwater runoff (as recharge to the South Recharge Basins and the Plant 5 Recharge Basins) on shallow

groundwater flow during this quarter are described below. In addition, this report section also describes vertical hydraulic gradients measured during this quarter and compares these gradients to the simulated steady-state vertical gradients predicted by the groundwater flow model (ARCADIS Geraghty & Miller, Inc. 2000) under the scenario where the OU2 remedial wells are preventing the off-site movement of VOC-impacted groundwater (i.e., containment).

As shown on Figure 2, the configuration of the water table on October 12, 2001 shows two areas of groundwater mounding situated on the Northrop Grumman site; one mound is centered on the South Recharge Basins and the other is centered on the Plant 5 Recharge Basins. In the south-central portion of the Northrop Grumman site (i.e., the area between the Plant 5 and South Recharge Basins), the horizontal direction of shallow groundwater flow is generally to the south-southeast.

The maximum elevation of the mounding beneath and around the Plant 5 Basins is greater than 66 feet relative to mean sea level (ft msl). As a result of the mounding the regional south-southeast shallow groundwater flow direction is modified with the horizontal direction of shallow groundwater flow in the vicinity of the Plant 5 Basins being radially to the north, south, west, and east away from the basins. This radial horizontal groundwater flow creates a hydraulic barrier that prevents on-site, VOC-impacted groundwater in this area of the shallow zone from migrating off-site. In addition, the groundwater mounding also increases the vertical hydraulic gradient in the vicinity of the Plant 5 Basins, resulting in a downward vertical component of groundwater flow from the shallow zone to the intermediate zone. Using water-level data from this round, vertical gradients were calculated for the shallow-intermediate monitoring well clusters in the area of the Plant 5 Recharge Basins (GM-16SR/16I and GM-17SR/GM-17I). The vertical gradient at Wells GM-16SR/GM-16I was oriented downward, while the vertical gradient at Wells GM-17SR/GM-17I was slightly upward; the latter is likely an anomalous result, given the historical trend in water levels and vertical gradients during pumping of nearby Wells GP-1 and GP-3 and treated effluent discharge to the Plant 5 Basins, located adjacent to Wells GM-17SR/GM-17I.

As shown on Figure 2, the maximum elevation of the mound beneath and around the South Recharge Basins is greater than 70 ft msl, and the mound extends across most of the width of the southern boundary of the site. Similar to the situation described above for the Plant 5 Basins, the regional shallow groundwater flow direction is modified by the mounding with the result that the horizontal direction of shallow groundwater flow in the vicinity of the South Recharge Basins is radially to the north, south, west, and

east away from the basins, thereby creating a hydraulic barrier that prevents on-site, VOC-impacted groundwater in this area from migrating off-site in the shallow zone. Similar to the Plant 5 Basins, the mounding around the South Recharge Basins also increases the vertical gradient in the vicinity of the basins, resulting in a downward vertical groundwater flow component from the shallow zone to the intermediate zone. Also, similar to the Plant 5 Basins area, water-level data for this round from the shallow-intermediate monitoring well clusters in the area of the South Recharge Basins (GM-15S/GM-15I; GM-18S/GM-18I; GM-19S/GM-19I; GM-21S/GM-21I; and GM-78S/GM-78I [Figure 2 and Table 6]) show that the vertical gradients are oriented downward with the steepest gradient at the well cluster nearest the basins (i.e., GM-21S/GM-21I).

Vertical gradients calculated from groundwater elevation data from clustered monitoring wells that are close to groundwater flow model predictions are a key indication that the OU2 groundwater remedial system, through pumpage from the D2 zone and recharge to the shallow zone, has created an effective hydraulic barrier to off-site groundwater flow. As shown on Table 6, vertical gradients this quarter at the monitoring well clusters located nearest the Plant 5 and South Recharge Basins (i.e., GM-16SR/GM-16I, GM-18S/GM-18I; GM-19S/GM-19I; and GM-21S/GM-21I) are oriented downward and are greater than the gradients predicted by the groundwater flow model. The vertical gradients at Well Clusters GM-15S/GM-15I and GM-78S/GM-78I are also oriented downward and are close to model predictions. These data indicate that there is a strong downward vertical component of groundwater flow in the vicinity of the basins from the shallow zone toward the intermediate zone.

In conclusion, the downward vertical gradients coupled with the radial horizontal flow components near the recharge basins collectively create a hydraulic barrier that prevents on-site, VOC-impacted groundwater from migrating off-site in the shallow zone.

4.2 Intermediate Zone

The analysis and interpretation of groundwater flow (horizontal and vertical) in the intermediate zone during the Third Quarter of 2001 was conducted using the same methods as described in Section 4.1 (Shallow Zone) above. The configuration of the potentiometric surface and horizontal groundwater flow directions in the intermediate zone during this quarter are shown on Figure 3. Table 6 summarizes vertical gradient calculations for intermediate/deep wells.

As shown on Figure 3, the configuration of the potentiometric surface in the intermediate zone is similar to the water-level configuration observed in the shallow zone, with mounding centered beneath the Plant 5 and South Recharge Basins (maximum water-level elevations at the Plant 5 Basins and the South Recharge Basins are both greater than 66 ft msl). This indicates that the OU2 groundwater treatment systems discharges and stormwater runoff (as recharge to these basins) are substantially affecting groundwater flow in the intermediate zone, with the horizontal component of flow nearest the basins oriented radially away from the basins. The resultant vertical gradients in monitoring well clusters near the basins (i.e., GM-15I/GM-15D, GM-17I/GM-17D, GM-20I/GM-20D, and GM-74I/GM-74D) are oriented downward and are greater than model predictions.

Collectively, these data indicate that the hydraulic barrier to groundwater flow extends vertically downward to the intermediate zone and is similar in extent to that observed in the shallow zone, thereby preventing the off-site migration of VOC-impacted groundwater in the intermediate zone.

4.3 Deep Zone

As stated in previous reports, since groundwater in the deep zone is expected to be flowing in a predominantly vertical (downward) direction in the general vicinity of the OU2 remedial wells/Plant 5 and South Recharge Basins, the analysis of the effectiveness of the OU2 remedial wells at achieving the goals in this zone is conducted using vertical gradient calculations for deep/D2 monitoring well clusters. Table 6 summarizes the vertical hydraulic gradients calculated from data collected from well clusters in the deep/D2 zones during the Third Quarter 2001 round and compares them to model-predicted gradients.

As expected, the vertical gradients in on-site Well Clusters GM-15D/GM-15D2 (east of the South Basins) and GM-74D/GM-74D2 (at the South Basins) are oriented downward and are greater than model predictions. For deep/D2 well clusters located generally south (off-site) of the Northrop Grumman 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 Third Quarter 2001 from deep/D2 monitoring well clusters are oriented downward and are greater than steady-state gradients predicted by the groundwater flow model. Furthermore, vertical gradients in well clusters near the Northrop Grumman site boundary indicate that the

mounding of the water table coupled with pumping wells in the D2 zone is forcing on-site groundwater downward toward the pumpage in the D2 zone, and prevents groundwater from flowing off-site in the deep zone.

4.4 D2 Zone

On October 12, 2001, 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 Northrop Grumman 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 well causes the cumulative zone of capture shown on Figure 4 to extend further to the northwest than is currently shown on Figure 4. At its farthest downgradient extent (south of Well ONCT-1) the zone of capture extends approximately 800 ft south of the Northrop Grumman site boundary. Within the zone of capture (upgradient and as far as 800 ft downgradient of the OU2 remedial wells), groundwater flow directions are oriented toward the centers of pumping, indicating that groundwater in this area is fully contained and captured by the OU2 groundwater remedial system. Beyond the downgradient extent of the zone of capture, groundwater continues to flow downgradient until it is influenced by the pumping of nearby public supply wells or continues to flow south-southeast in the direction of regional groundwater flow.

Collectively, the data from the D2 zone indicate that the pumpage of the OU2 remedial wells has created a hydraulic barrier in this zone, thereby preventing the off-site migration of VOC-impacted groundwater across the entire southern boundary of the Northrop Grumman site.

4.5 Summary of Groundwater Flow Conditions

In conclusion, the hydraulic data presented in this quarterly report is similar to data in previous reports and indicate that operation of the OU2 groundwater remedial system has maintained an effective hydraulic barrier throughout the shallow, intermediate,

deep, and D2 zones, which prevents the off-site migration of on-site, VOC-impacted groundwater.

5. Groundwater Quality

The Third Quarter 2001 groundwater sampling round was conducted from September 18 to October 11, 2001. The following subsections of this report describe the distribution of VOCs in the shallow, intermediate, deep, and D2 zones and compare the VOC concentrations to New York State Standards, Criteria, and Guidance Values (SCGs). This round's water quality results are also compared to the results of the previous groundwater monitoring round. The occurrence and distribution of VCM in groundwater is discussed in Section 5.2 (Vinyl Chloride Monomer) of this report.

5.1 Volatile Organic Compounds

The goal of the on-site OU2 groundwater remedy is to capture, remove, and treat groundwater from the on-site portion of the VOC plume and, thereby prevent VOC-impacted groundwater from moving off-site. The operation of the OU2 groundwater remedy will cause the plume to bifurcate into an on-site portion and an off-site portion. As treated groundwater and precipitation continue to recharge the aquifer, a clean zone will develop between the on- and off-site portions of the bifurcated plume, within which VOC impacts will not occur or will be minimal. This clean zone will increase in size as VOC-impacted groundwater downgradient (south) and beyond the capture zone of the OU2 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 will be dependant upon maintaining the hydraulic barrier created by the on-site OU2 groundwater remedy, and the rate of growth will largely depend on the regional groundwater velocity, which is generally less than one foot per day in the Magothy aquifer.

Based on the above considerations, groundwater samples collected from wells immediately south (off-site) of the OU2 remedial wells will be the first to show water quality improvement (i.e., a decreasing trend in contaminant concentrations over time) although the improvement, due to the natural slow groundwater velocity, will be slow to occur. Monitoring wells located further downgradient will take a longer time to show an improvement in groundwater quality, as compared to wells immediately south of the OU2 remedial wells, due to the relatively slow groundwater velocity.

VOC-impacted groundwater that migrated off-site prior to the implementation of the OU2 groundwater remedy would have to migrate past off-site monitoring wells before the wells would show groundwater quality improvement related to operation of the OU2 remedial system. Depending on the contaminant concentrations and heterogeneity of the off-site groundwater, monitored water quality in off-site wells may show several trend changes before long-term trends associated with the operation of the OU2 remedial system are revealed.

Depending on the exact location of the well, water quality in on-site wells may increase, decrease, or stay the same over the short to mid-term, but over the long term a general decrease in VOC concentrations will be observed.

The following subsections of this report focus on the on- and off-site detections of VOCs in groundwater samples collected.

5.1.1 VOCs in the Shallow and Intermediate Zones

Groundwater quality data from the shallow and intermediate monitoring wells are summarized in Tables 7 and 8, respectively. The data from the shallow and intermediate wells sampled this quarter confirm that the operation of the OU2 groundwater remedial system has formed an effective hydraulic barrier that prevents the off-site movement of VOC-impacted groundwater in the shallow and intermediate zones. A detailed discussion of the water quality data for the shallow and intermediate zones follows.

Of the 13 shallow wells sampled this quarter, five wells exhibited no VOCs detections, six wells exhibited TVOC concentrations ranging from 0.3 µg/L to 6.2 µg/L with no exceedences of SCGs, and two wells (GM-15S and FW-03) exhibited TVOC concentrations of 8 µg/L and 50.7 µg/L, respectively, and had concentrations exceeding SCGs (Table 7). TCE was the main constituent detected in each well with detectable VOC concentrations. The SCG for TCE (5 µg/L) was exceeded in Wells GM-15S and FW-03; the SCG for tetrachloroethene (PCE) (5 µg/L) was exceeded in Well FW-03. Well FW-03, located over 4,000 ft north and upgradient of the OU2 remedial wells (Figure 1) exhibited the highest TVOC result, as was the case for the previous sampling round. In general, results for other shallow wells sampled this round are essentially the same as last round. Wells N-10631, N-10634, GM-17SR, GM-18S, GM-21S, and MW-3R, which exhibited non-detectable or only trace (i.e., less than 3 µg/L) VOC concentrations this quarter, are located at or downgradient of the South Recharge Basins/Plant 5 Recharge Basins and attest to the effectiveness of

the hydraulic barrier in preventing VOC-impacted groundwater from migrating off-site in the shallow zone.

Fourteen of the fifteen intermediate wells sampled this round exhibited essentially the same or lower TVOC concentrations and VOC compounds detected (i.e., PCE; TCE; 1,1,1-TCA; 1,2-DCE; 1,1-DCE; 1,1-DCA; and Freon 113) as last quarter. Of the fifteen intermediate wells sampled, ten exhibited non-detectable or trace concentrations of VOCs, (i.e., less than 5 µg/L) with no exceedences of SCGs. Wells in which SCGs were exceeded include the following: Well GM-15I, which exhibited a TVOC concentration of 21.6 µg/L; Well GM-16I, which exhibited a TVOC concentration of 26 µg/L; Well GM-23I, which exhibited a TVOC concentration of 20.7 µg/L; Well MW-52S, which exhibited a TVOC concentration of 331 µg/L (VCM is discussed in Section 5.2 [Vinyl Chloride Monomer]); and Well HN-24I, which exhibited a TVOC concentration of 239 µg/L. The TVOC results for four of the five latter wells were similar to or less than the previous round. The TVOC concentration in Well GM-15I was greater than last round. TCE was detected in Wells GM-15I, GM-16I, GM-23I, and HN-24I exceeding the SCG of 5 µg/L. Other VOCs detected in Well HN-24I exceeding their respective SCGs of 5 µg/L included PCE; 1,1,1-TCA; 1,1-DCE; 1,1-DCA; 1,2-DCE (cis/trans); and Freon 113. At the Northrop Grumman southern boundary, Wells GM-17I, GM-18I, GM-20I, GM-21I, GM-74I, and GM-79I exhibited no exceedences of SCGs this quarter. Similar to the shallow zone, intermediate wells with exceedences of SCGs and the highest TVOC concentrations (i.e., Wells GM-15I, GM-16I, MW-52S, and HN-24I) were located upgradient of the OU2 groundwater remedial system and wells with no or few VOC detections were located at or immediately south of the Northrop Grumman southern property boundary, attesting to the effectiveness of the hydraulic barrier in preventing VOC-impacted groundwater from migrating off-site in the intermediate zone.

5.1.2 VOCs in the Deep Zone

Groundwater quality data from deep monitoring wells are summarized in Table 9. In general, the data from the deep wells sampled this quarter supports the conclusion developed for the shallow and intermediate zones and confirms that the OU2 groundwater remedial system forms an effective hydraulic barrier and prevents the off-site movement of VOC-impacted groundwater in the deep zone. A detailed discussion of the water quality data for the deep zone follows.

Of the fifteen deep wells sampled this quarter, five wells exhibited non-detectable or trace (i.e., less than 4 ug/L) concentrations of VOCs with no exceedences of SCGs,

with the other ten wells each exhibiting at least one constituent that exceeded SCGs. Of the ten wells where SCGs were exceeded, seven wells exhibited TVOC concentrations ranging from 14.5 µg/L to 185.2 µg/L. In these seven wells, TCE was the compound that most frequently exceeded the SCG; other VOCs detected less frequently above the SCG include PCE; 1,1-DCE; 1,1-DCA; 1,2-DCE (cis/trans); and Freon 113. The majority of these seven wells are located south of the Northrop Grumman site. In comparison, three monitoring wells had substantially higher TVOC concentrations, as follows: Well GM-13D exhibited a TVOC concentration of 1,689 µg/L (PCE; TCE; 1,1-DCE; 1,1-DCA; 1,2-DCE [total]; and 1,1,1-TCA exceeded SCGs); Well MW-52I exhibited a TVOC concentration of 1,783 µg/L (VCM; 1,2-DCE [cis/trans]; TCE; and PCE exceeded SCGs) (VCM is discussed in Section 5.2 [Vinyl Chloride Monomer]); and Well GM-38D exhibited a TVOC concentration of 827 µg/L (TCE and 1,1-DCE exceeded SCGs).

Nine deep wells sampled this round exhibited essentially the same VOC results and compounds detected exceeding SCGs as last round, while Wells GM-13D, GM-34D, GM-38D, and GM-79D exhibited an increase in VOC concentration and Wells GM-74D and MW-52I exhibited a decrease in VOC concentrations in comparison to last round.

Wells GM-13D and MW-52I are located on the Northrop Grumman site, upgradient of the OU2 system, and Well GM-38D is located in the off-site GM-38 area; these wells have historically exhibited persistent elevated VOC concentrations in the deep zone (see Figure 1). Three of the five wells that exhibited trace or non-detectable VOC concentrations with no SCG exceedences (GM-17D, GM-18D, GM-20D) are located along the Northrop Grumman site boundary, the fourth well (N-10627) is located near (south) of the site, and the fifth well (HN-29D) is located on the NWIRP site. Wells N-10627 and GM-74D, located along or near the Northrop Grumman southern boundary, and Wells GM-36D and GM-37D, located more than 2,000 ft downgradient of the southern boundary of the Northrop Grumman site, exhibited VOC concentrations similar to or less than the previous round.

Collectively, the data indicate stable or decreasing VOC concentrations in the deep zone on and near the site and confirms that the OU2 remedial system has formed an effective hydraulic barrier and prevents the off-site movement of VOC-impacted groundwater in the deep zone. As stated above, continued monitoring of water quality in off-site wells may show several trend changes before a long-term trend associated with OU2 operation is revealed.

Overall, the quarterly monitoring data indicate higher TCE concentrations in comparison to the weekly operational data this round.

Based on the quarterly monitoring data collected by ARCADIS for the OU2 remedial wells and Well GP-3, the TVOC concentrations in OU2 Remedial Well GP-1 (586 µg/L) has remained essentially the same, while the TVOC concentration in Industrial Well GP-3 (2,304 µg/L) has increased in comparison to the previous round. The TVOC concentration in OU2 Remedial Well ONCT-1 (1,613 µg/L) has slightly increased in comparison to the previous round, while the TVOC concentrations in Wells ONCT-2 and ONCT-3 (211.9 µg/L and 33.5 µg/L, respectively) have remained essentially the same.

Section 3.2 (Treatment System Operational Data) includes an evaluation of OU2 treatment systems efficiencies.

5.1.3.2 Monitoring Wells

Well GM-33D2 (467 µg/L) (TCE and PCE exceeded SCGs), located near Well ONCT-1 exhibited lower VOC concentrations in comparison to the previous round, which appears to indicate that the OU2 groundwater remedial system continues to be effective in reducing VOC concentrations in the D2 zone in the area. Near the site southern boundary, TVOC concentrations in Wells GM-15D2 (31 µg/L) (TCE and PCE exceeded SCGs) and GM-74D2 (3.8 µg/L) (no exceedences) have remained essentially the same as the previous round, while Well GM-73D2 (1,108 µg/L) (TCE and 1,2-DCE [cis/trans] exceeded SCGs) exhibited an increase in TVOC concentrations in comparison to the last round.

Off-site VOC concentrations in the D2 zone ranged from 0.3 µg/L in Well GM-36D2 to 1,515 µg/L in Well GM-38D2 with four of the eight wells exhibiting VOC concentrations essentially the same in comparison to the previous round. The remaining wells, Wells GM-34D2, GM-35D2, GM38D2 and GM-75D2 exhibited an increase in VOC concentrations this round. Similar to last round, TCE was the compound most frequently detected off-site in the D2 zone exceeding the SCG; other VOCs detected less frequently at concentrations exceeding SCGs included PCE; 1,1-DCE; 1,1-DCA; 1,2-DCE (cis/trans); 1,1,1-TCE, and Freon 113.

As stated above, continued monitoring of water quality in off-site wells may show several trend changes before a long-term trend associated with OU2 operation is revealed.

5.2 Vinyl Chloride Monomer

In accordance with the NYSDEC-approved groundwater monitoring plan, groundwater monitoring of the VCM subplume emanating from the RUCO Polymer site (near the NWIRP area – see Figure 1) is performed by sampling Monitoring Wells GM-23S, GM-23I, MW-52S, MW-52I, and MW-52D on a semi-annual basis (twice yearly); other monitoring wells used, in part, as outpost wells to monitor the position of the VCM subplume, are monitored on a quarterly basis and include Wells GM-17SR, GM-17I, GM-17D, GM-18S, GM-18I, and GM-18D (these six wells are also sampled to monitor the effectiveness of the OU2 groundwater remedial system). However, VCM is a parameter that is monitored in all wells sampled for VOCs and Section 5.1 (Volatile Organic Compounds) of this report provides a complete discussion of other VOCs detected in the VCM monitoring well network. This section discusses the results of the Third Quarter 2001 monitoring round and compares these results to those of the previous round. Tables 7 through 10 provide the results for VCM concentrations in groundwater for this quarter and the previous round.

VCM was not detected in the shallow zone (Table 7) during this round. VCM was detected in the intermediate zone in Well MW-52S (320 µg/L) above the SCG of 2 µg/L, and was lower than the previous round. In the deep zone, VCM was detected in a single monitoring well (1,700 µg/L in MW-52I) at a concentration exceeding the SCG of 2 µg/L. This result is lower than the previous round. Well cluster MW-52 is located on Northrop Grumman's Plant 12 property, more than 4,000 ft north of OU2 Well GP-1, and has historically exhibited VCM concentrations exceeding the SCG. In the D2 zone, based on the sampling conducted by Northrop Grumman, VCM was detected in Industrial Well GP-3 above the SCG at an average concentration of 7.7 µg/L (10 µg/L in the sample collected by ARCADIS) with concentrations ranging from 4 µg/L to 11.6 µg/L (Table 1). Since Well GP-3 is located substantially further south (downgradient) than monitoring wells that historically exhibited detections of VCM above SCGs, and is deeper than any monitoring well in the network, it is reasonable to conclude that the extent of the VCM subplume is greater than previously defined by RUCO. VCM was not detected in any other D2 zone well (Table 10).

5.3 Tentatively Identified Compounds

For all groundwater samples collected during this round, in addition to the TCL VOCs, the laboratory was asked to perform an analysis and library search to identify and evaluate whether volatile Tentatively Identified Compounds (TICs) exist in the groundwater samples. TICs detected in groundwater samples collected during the

Third Quarter 2001 round are summarized in Table 11. Overall, two TICs (MTBE and hexane) were identified in Wells GM-23S and HN-42S, respectively, at estimated concentrations of 52 µg/L to 5 µg/L, respectively. 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 should be used for qualitative purposes only.

5.4 Quality Control Samples - VOCs

Based on the analytical results (Table 12) for the Third Quarter 2001 round, low levels of VOCs (e.g., acetone and methylene chloride) were detected. These results were used to validate groundwater sample results for this round. The data validation memoranda are provided in Appendix D.

5.5 Semi-Volatile Organic Compounds

As stated in Section 2.3 (Modifications to the Field Program), LNAPL was detected by others in Well GM-14, therefore groundwater sampling for SVOC analysis was not conducted this round in this well.

5.6 Cadmium and Chromium

Groundwater monitoring data from shallow and intermediate monitoring wells for the Third Quarter 2001 and the previous round for total cadmium (Cd) and total chromium (Cr) are provided in Table 13. The data were compared to SCGs. The cadmium concentration detected in Monitoring Well MW-3R (25 µg/L) exceeded the SCG of 5 µg/L and has remained essentially the same in comparison to the previous round. Cadmium was detected below the SCG in Monitoring Wells N-10631 (4.4 µg/L) and GM-78S (1.3 µg/L) and was not detected in Wells GM-16SR and GM-78I; concentrations are essentially the same in comparison to the previous round. The chromium concentration in Monitoring Well MW-3R (53.4 µg/L) exceeded the SCG of 50 µg/L and has decreased slightly in comparison to the previous round. Chromium was detected below the SCG in Wells N-10631 (46.4 µg/L) and GM-78S (7.4 µg/L) and was not detected in Wells GM-16SR and GM-78I this round. Chromium concentrations in Wells N-10631 and GM-78I have remained essentially the same in comparison to the results from the previous round. The chromium concentration in Well GM-16SR has slightly decreased, while the concentration in Well GM-78S has increased in comparison to the previous round.

Wells GM-37D and GM-37D2 were sampled for Cd/Cr for the first time this round; Cd/Cr were not detected.

5.7 Quality Control Samples - Cadmium/Chromium

Cadmium/chromium were not detected at significant concentrations in the equipment blank samples collected this quarter (Table 13).

5.8 Data Validation

ARCADIS performed validation of the groundwater quality data (including TICs) collected from monitoring wells by following the contract laboratory program national functional guidelines for organic and inorganic data review (USEPA 1994). The quality of the data is considered acceptable with the appropriate qualifications indicated on Tables 7 through 13. Data validation memoranda are provided in Appendix D.

6. Findings and Conclusions

6.1 OU2 Treatment System

1. Overall a total of 517.3 MG were pumped and treated by the OU2 treatment system during the 85 days of the Third Quarter 2001 for which records were available, which is approximately 125 percent of the total design pumpage. Pumpage of Well GP-3 supplemented the total gallons pumped by an additional 68.7 MG.

2. OU2 remedial wells specific capacities remain above the minimum values required for optimum pump performance.

3. During the Third Quarter 2001, a total of 2,219 lbs of VOCs were removed from the aquifer and treated by the OU2 treatment systems and Industrial Well GP-3. Based on the weekly water quality data collected by Northrop Grumman, the average TVOC concentration in the OU2 wells has decreased this round, with the exception of Well GP-1, where TVOC concentrations increased in comparison to the previous round. Based comparison of the near-weekly sampling by Northrop Grumman for TCE and the quarterly sampling by ARCADIS for TVOCs from the OU2 treatment system influent/effluent, treatment system efficiencies were nearly identical and very high.

6.2 Groundwater Flow

1. Water-level data for the shallow and intermediate zones for this quarter indicate that operation of the OU2 treatment system has maintained the groundwater mounding in the Plant 5 Recharge Basins and the South Recharge Basins areas and overall conditions are consistent with the prior round. Consequently, the hydraulic barrier in the shallow zone has been maintained, and extends to the intermediate zone and prevents VOC-impacted groundwater from migrating off-site in these zones.

2. Downward vertical hydraulic gradients near the Plant 5 Recharge Basins and South Recharge Basins areas remain close to or greater in magnitude than those predicted by the groundwater flow model and result in downward groundwater movement. This indicates that the mounding of the water table coupled with pumpage from the D2 zone is continuing to force on-site groundwater to move downward toward the OU2 remedial wells in the D2 zone, which prevents VOC-impacted groundwater from flowing off-site in the deep zone.

4. The configuration of the potentiometric surface in the D2 zone indicates that the zone of capture, due to pumpage of the OU2 remedial wells, extends across the entire Northrop Grumman southern property boundary and to the northwest toward Well GP-3 and continues to fully control and contain groundwater on-site and more than 800 ft south of the site.

6.3 Groundwater Quality

1. As expected, the analytical results from shallow and intermediate monitoring wells in areas within the VOC plume on the Northrop Grumman and NWIRP sites upgradient of the OU2 treatment system exhibited the highest concentrations of VOCs in these zones. At the southern property boundary and immediately south of it, shallow and intermediate monitoring wells exhibited low or non-detectable concentrations of VOCs. These results confirm the effectiveness of the OU2 treatment system in preventing the off-site migration of VOC-impacted groundwater in the shallow and intermediate zones.

2. Deep wells along the Northrop Grumman site perimeter exhibit low to non-detectable VOC concentrations. Recharge of water to the Plant 5 Basins and 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 the low to non-detectable VOC concentrations.

3. In the D2 zone, Well GM-33D2, which is the closest well to OU2 Remedial Well ONCT-1, exhibited a continued decrease in TVOC concentration, indicating that the OU2 treatment system continues to be effective in reducing VOC concentrations in the D2 zone in this area. Off-site, VOC concentrations have remained essentially the same or have increased in comparison to the previous round. Continued monitoring of water quality in off-site wells may show several trend changes before a long-term trend associated with the OU2 treatment system operation is revealed.

5. VCM was not detected in the shallow or intermediate zones. Monitoring Wells MW-52S and MW-52I were the only wells in the intermediate and deep zone where VCM was detected; these wells historically have exhibited persistent concentrations of VCM exceeding the SCG and are located more than 4,000 ft north of the northernmost OU2 remedial well (GP-1). Industrial Well GP-3 exhibited the only detection of VCM in the D2 zone; this detection exceeded the SCG, and indicates that the extent of the VCM subplume (horizontal and vertical) is greater than previously defined by RUCO.

6. Groundwater monitoring for VOCs and SVOCs near the Plant 1 Fuel Depot was not conducted this round due to the presence of LNAPL in Well GM-14.

7. Total cadmium (Cd) and chromium (Cr) were detected above SCGs in Well MW-3R. The Cd/Cr concentrations in Wells N-10631 and GM-78S were below SCGs. Total Cd/Cr were not detected in Wells GM-16SR, GM-78I, Well GM-78I, GM-37D, and GM-37D2.

7. Recommendation

Based on the results of the Third Quarter of 2001 groundwater monitoring round, ARCADIS recommends the following:

- Based on the results described in Section 6.3 (Water Quality), further monitoring of Wells GM-37D and GM-37D2 for Cd/Cr is not warranted and therefore should be discontinued.

8. References

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Table 1. Select VOC Concentrations in Water Samples Collected from OU2 Remedial Wells and Industrial Supply Wells, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York. [1] [2]

		OU2 REMEDIAL WELLS						INDUSTRIAL WELLS			
Sample Collection Date	Well ID:	GP-1		ONCT-1	ONCT-2	ONCT-3	GP-3		GP-10		GP-11	
	Units:	(ug/L)		(ug/L)	(ug/L)	(ug/L)	(ug/L)		(ug/L)		(ug/L)	
	Constituent:	VCM	TCE	TCE	TCE	TCE	VCM	TCE	VCM	TCE	VCM	TCE
7/11/2001		<0.5	357	1,018	124	13	8.4	1,162	NA	70	NS	NS
7/31/2001		<0.5	NA	NA	NA	NA	9.1	NA	NA	NA	NS	NS
8/1/2001		<0.5	276	995	103	10	7.7	1,015	NA	64	NS	NS
8/8/2001		<0.5	294	975	100	10	6.0	985	NA	68	NS	NS
8/22/2001		<0.5	NA	672	130	10	6.2	NA	NA	NA	NS	NS
8/29/2001		<0.5	252	877	120	10	7.6	715	NA	77	NS	NS
9/5/2001		<0.5	260	767	70	11	4.0	1,372	NA	79	NS	NS
9/12/2001		<0.5	383	800	106	12	11.6	1,217	NA	67	NS	NS
9/19/2001		<0.5	416	735	95	11	8.5	1,266	NA	73	NS	NS
9/27/2001		<0.5	393	974	128	13	7.6	642	NA	78	NS	NS
Average Concentration:		<0.5	329	868	108	11	7.7	1,047	NA	72	NS	NS

Notes:

(1) Water samples were collected and analyzed for TCE and VCM by Northrop Grumman; results were not validated.

(2) Industrial Supply Wells GP-10 and GP-11 are intermittently active on-site.

VOC Volatile Organic Compound
OU2 Operable Unit 2
ug/L Micrograms per liter
TCE Trichloroethene
VCM Vinyl Chloride Monomer
NS Not sampled; well not operating.
NA Not Analyzed

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Table 3. Operational Summary of the OU2 Remedial Wells and Industrial Supply Well GP-3, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Average Pumping Rate [(a)] (gpm)	Total Pumpage (a) (MG)	Design Pumpage (MG)	Percent of Design Pumpage	Average Influent TCE Concentration (ug/L)	Average Influent TVOC Concentration [(b)] (ug/L)	TVOC Mass Removed [(b)] (lbs)
OU2 Wells							
GP-1	1,146	140.2	131.6	107%	329	392	457
ONCT-1	1,031	126.1	122.4	103%	868	877	921
ONCT-2	891	109.0	73.4	148%	108	213	193
ONCT-3	1,159	141.9	85.7	166%	11	21	24
Industrial Supply Well							
GP-3	561	68.7	--	--	1,047	1,090	623
OU2 Well TOTALS:	--	**517.3**	**413.1**	**125%**	--	--	**2,219**

Notes:

(a)
- Average pumping rate and total pumpage based on Northrop Grumman records of operation from July 3 to September 25, 2001.
- All OU2 wells were 100 percent operational from July 3 to September 25 (85 days).
- Pumping rates accurate to +/-15% due to limitations in flow metering.

(b)
- TVOC concentration and TVOC mass in each well were estimated from third quarter 2001 groundwater monitoring data which indicated that TCE concentrations were a percentage of the TVOC concentration, as follows: GP-1 (84 percent); ONCT-1 (99 percent); ONCT-2 (51 percent); ONCT-3 (54 percent); and GP-3 (96 percent).
- TVOC mass total given above includes all OU2 remedial wells and Well GP-3.
- TVOC mass removed during the third quarter 2001 was based on the TCE/TVOC ratios given above and the following formula:

$$\frac{((\text{TCE concentration}) \times (\text{gallons pumped}) \times (3.785\ \text{L/gal}) \times (1 \times 10^{-6}\ \text{g/ug}) \times (2.2 \times 10^{-3}\ \text{lb/g}))}{(\text{TCE concentration} / \text{TVOC concentration})}$$

OU2	Operable Unit 2
gpm	gallons per minute
MG	Million Gallons
ug/L	micrograms per liter
lbs	pounds
--	Not Available or Not Applicable
TCE	Trichloroethene
TVOC	Total Volatile Organic Compound
L/gal	Liters per gallon
g/ug	grams per microgram
lb/g	pounds per gram

Table 4. OU2 Remedial Well Performance Data, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

OU2 Well Identification	Baseline Round Static Depth to Water 5/9/1997 [1] (ft bmp)	Last Two Water-Level Measurement Dates	Pumping Depth to Water (ft bmp)	Pumping Rate (gpm)	Drawdown (ft)	Specific Capacity [2] (gpm/ft)
ONCT-1	44.12	May 24, 2001	66.33	826	22.21	37.2
		October 12, 2001	73.46	1135	29.34	38.7
ONCT-2	50.15	May 24, 2001	77.05	1045	26.90	38.8
		October 12, 2001	77.66	906	27.51	32.9
ONCT-3	49.13	May 24, 2001	75.54	1024	26.41	38.8
		October 12, 2001	86.77	1278	37.64	34.0
GP-1	55.75	May 24, 2001	96	1150	40.25	28.6
		October 12, 2001	96.5	1135	40.75	27.9

[1] Static depth to groundwater in Well GP-1 was measured on February 27, 2001 while the vertical turbine pump was not in operation.

[2] Specific capacity is calculated by dividing the pumping rate by the drawdown.

OU2	Operable Unit 2
gpm	gallons per minute
ft bmp	feet below measuring point
ft	feet
gpm/ft	gallons per minute per foot of drawdown

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Table 5. Water-Level Measurement Data, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

Well Designation	Measuring Point Elevation (ft msl)	Depth to Water October 12, 2001 (ft bmp)	Water-Level Elevation October 12, 2001 (ft msl)
Shallow Wells			
N-9921	94.23	35.49	58.74
N-10597	109.85	44.10	65.75
N-10600	102.41	42.41	60.00
N-10631	103.47	41.40	62.07
N-10633	103.80	40.30	63.50
N-10634	101.20	42.61	58.59
N-10821	91.58	38.26	53.32
GM-15S	109.35	47.87	61.48
GM-16SR	115.86	51.02	64.84
GM-17SR	115.79	48.18	67.61
GM-18S	107.60	44.01	63.59
GM-19S	109.86	44.80	65.06
GM-21S	105.81	35.45	70.36
GM-78S	104.94	44.20	60.74
GM-79S (N-10628)	100.88	43.14	57.74
Intermediate Wells			
N-10624*	93.61		--
GM-15I	109.13	47.67	61.46
GM-16I	115.81	51.16	64.65
GM-17I	115.83	48.19	67.64
GM-18I	109.03	45.53	63.50
GM-19I	109.86	45.46	64.40
GM-20I	103.88	38.14	65.74
GM-21I	105.72	38.35	67.37
GM-74I	107.42	39.64	67.78
GM-78I	105.06	44.51	60.55
GM-79I	101.09	43.35	57.74

See notes on last page

Table 5. Water-Level Measurement Data, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

Well Designation	Measuring Point Elevation (ft msl)	Depth to Water October 12, 2001 (ft bmp)	Water-Level Elevation October 12, 2001 (ft msl)
Deep Wells			
N-10627	93.70	35.56	58.14
GM-13D	113.97	50.18	63.79
GM-15D	109.66	50.94	58.72
GM-17D	115.68	52.64	63.04
GM-18D	108.88	48.74	60.14
GM-20D	103.92	40.62	63.30
GM-34D	71.19	17.92	53.27
GM-36D	91.63	38.60	53.03
GM-37D	97.26	42.78	54.48
GM-38D	91.75	41.79	49.96
GM-74D	107.43	48.01	59.42
GM-79D	101.25	44.98	56.27
Deep2 Wells			
GM-15D2	109.59	55.11	54.48
GM-33D2	106.85	53.97	52.88
GM-34D2	71.19	19.82	51.37
GM-35D2	96.28	43.41	52.87
GM-36D2	91.60	41.10	50.50
GM-37D2	97.17	43.54	53.63
GM-38D2	91.56	43.81	47.75
GM-70D2	99.58	44.38	55.20
GM-71D2	98.45	45.42	53.03
GM-73D2	104.62	49.90	54.72
GM-74D2	107.36	57.83	49.53
GM-75D2	93.63	39.09	54.54
OU2 Remedial Wells			
GP-1**	116.78	96.50	20.28
ONCT-1	104.10	73.46	30.64
ONCT-2	110.00	77.66	32.34
ONCT-3	108.70	86.77	21.93

* Water-level measurements collected from Well N-10624 is considered anomalous due to silt in the well screen.

** Water-levels measured by using an airline.

ft msl feet relative to mean sea level

ft bmp below measuring point

OU2 Operable Unit 2

Table 6. Comparison of Observed Vertical Hydraulic Gradients from the Third Quarter 2001 Groundwater Monitoring Round to Model-Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well Pairing ID	Measuring Point Elevation (ft msl)	Well Screen Midpoint Elevation (ft msl)	10/12/01 Water-Level Elevation (ft msl)	10/12/01 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	61.48			
GM-15I	109.13	9.29	61.46	0.79	4.20	-3.40
GM-16SR	115.77	66.77	64.84			
GM-16I	115.81	-24.19	64.65	2.09	1.11	0.98
GM-17SR	115.79	50.79	67.61			
GM-17I	115.83	5.83	67.64	-0.67	8.02	-8.69
GM-18S	107.60	42.60	63.59			
GM-18I	109.03	9.03	63.50	2.68	1.78	0.90
GM-19S	109.86	64.36	65.06			
GM-19I	109.86	-25.14	64.40	7.37	2.44	4.93
GM-21S	105.81	40.81	70.36			
GM-21I	105.72	-29.28	67.37	42.66	18.44	24.21
GM-78S	104.94	39.94	60.74			
GM-78I	105.06	5.56	60.55	5.53	8.73	-3.20
GM-79S	100.88	35.88	57.74			
GM-79I	101.09	-73.91	57.74	0.00	0.91	-0.91
Intermediate-Deep Wells						
GM-15I	109.29	9.29	61.46			
GM-15D	109.66	-227.34	58.72	11.58	6.52	5.06
GM-17I	115.83	5.83	67.64			
GM-17D	115.68	-172.32	63.04	25.82	7.86	17.96
GM-20I	103.88	3.88	65.74			
GM-20D	103.92	-117.08	63.30	20.17	18.22	1.95
GM-74I	107.42	8.42	67.78			
GM-74D	107.43	-192.57	59.42	41.59	20.17	21.42
GM-79I	101.09	-73.91	57.74			
GM-79D	101.25	-183.75	56.27	13.38	15.48	-2.09
Deep-Deep 2 Wells						
GM-15D	109.66	-227.34	58.72			
GM-15D2	109.59	-436.41	54.48	20.28	14.19	6.09
GM-34D	71.19	-242.81	53.27			
GM-34D2	71.19	-443.81	51.37	9.45	2.33	7.12
GM-36D	91.63	-117.37	53.03			
GM-36D2	91.60	-443.40	50.50	7.76	2.75	5.01
GM-37D	97.26	-154.74	54.48			
GM-37D2	97.17	-282.83	53.63	6.64	3.88	2.76
GM-38D	91.75	-238.25	49.96			
GM-38D2	91.56	-393.44	47.75	14.24	6.08	8.16
GM-74D	107.43	-192.57	59.42			
GM-74D2	107.36	-444.64	49.53	39.24	28.26	10.98
N-10627	93.70	-198.80	58.14			
GM-75D2	93.63	-421.37	54.54	16.17	2.25	13.93

Vertical hydraulic gradients are calculated as follows:

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

A positive "+" gradient value indicates a downward hydraulic gradient.
A negative "-" gradient value indicates an upward hydraulic gradient.

ft msl feet relative to mean sea level
ft feet

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Second and Third Quarters 2001, 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 05/08/01	10631 N-10631 09/27/01	10634 N-10634 05/07/01	10634 N-10634 10/04/01	FW-03 FW-03 05/31/01	FW-03 FW-03 10/04/01
Chloromethane	5		<10	<10	<10 J	<10	<10 J	<10
Bromomethane	5		<10	<10	<10	<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2 J	<0.2	<0.2	<0.2
Chloroethane	5		<10	<10	<10 J	<10	<10	<10
Methylene chloride	5		<10	<10	<10	<10	<10	<10
Acetone	50		<10	<10 J	<10	<10	<10 J	<10 J
Carbon disulfide	50		<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	5		<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	5		<10	<10	<10	<10	<10	<10
1,2-Dichloroethene (total)	5		<10	<10	<10	<10	**0.6 J**	<10
Chloroform	7		<10	<10	<10	<10	**0.5 J**	**0.7 J**
1,2-Dichloroethane	5		<10	<10	<10	<10	<10	<10
2-Butanone	50		<10	<10 J	<10	<10	<10 J	<10
1,1,1-Trichloroethane	5		<10	<10	<10	<10	**2 J**	**2 J**
Carbon tetrachloride	5		<10	<10	<10 J	<10	<10	<10
Bromodichloromethane	50		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Trichloroethene	5		**0.4 J**	**0.9 J**	<10	<10	**28**	**27**
Dibromochloromethane	5		<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Benzene	0.7		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Bromoform	50		<10	<10	<10	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10 J	<10	<10	<10	<10
2-Hexanone	50		<10	<10 J	<10	<10	<10	<10
Tetrachloroethene	5		<10	<10	<10	<10	**22**	**21**
1,1,2,2-Tetrachloroethane	5		<10	<10 J	<10	<10	<10	<10
Toluene	5		<10	<10	<10	<10	<10	<10
Chlorobenzene	5		<10	<10	<10	<10	<10	<10
Ethylbenzene	5		<10	<10	<10	<10	<10	<10
Styrene	5		<10	<10	<10	<10	<10	<10
Xylene (total)	5		<10	<10	<10	<10	<10	<10
Freon-113 *	5		<10	<10	<10	<10	**3 J**	<10
Total VOCs			**0.4**	**0.9**	0	0	**56.1**	**50.7**

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 values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated Standard Criteria and Guidance value.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-15S 15S 05/02/01	GM-15S GM-15S 10/08/01	GM-16SR GM-16SR 05/08/01	GM-16SR GM-16SR 10/03/01	GM-17SR 17SR 05/02/01	GM-17SR GM-17SR 10/02/01
Chloromethane	5		<10 J	<10	<10	<10	<10 J	<10
Bromomethane	5		<10	<10	<10	<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane	5		<10 J	<10	<10	<10	<10 J	<10
Methylene chloride	5		<10	<10	<10	<10	<10	<10
Acetone	50		<10	<10	<10	<10 J	<10	<10 J
Carbon disulfide	50		<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	5		<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	5		<10	<10	<10	<10	<10	<10
1,2-Dichloroethene (total)	5		**2 J**	**0.8 J**	<10	<10	<10	<10
Chloroform	7		<10	<10	<10	<10	<10	<10
1,2-Dichloroethane	5		<10	<10	<10	<10	<10	<10
2-Butanone	50		<10	<10	<10	<10 J	<10	<10 J
1,1,1-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Carbon tetrachloride	5		<10	<10	<10	<10	<10	<10
Bromodichloromethane	50		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Trichloroethene	5		**13**	**8 J**	<10	<10	<10	<10
Dibromochloromethane	5		<10	<10	<10	<10 J	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10	<10 J	<10	<10
Benzene	0.7		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Bromoform	50		<10	<10	<10	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10	<10	<10 J	<10	<10 J
2-Hexanone	50		<10	<10	<10	<10 J	<10	<10 J
Tetrachloroethene	5		<10	<10	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane	5		<10	<10	<10	<10 J	<10	<10 J
Toluene	5		<10	<10	<10	<10	<10	<10
Chlorobenzene	5		<10	<10	<10	<10	<10	<10
Ethylbenzene	5		<10	<10	<10	<10	<10	<10
Styrene	5		<10	<10	<10	<10	<10	<10
Xylene (total)	5		<10	<10	<10	<10	<10	<10
Freon-113 *	5		<10	<10	<10	<10	<10	<10
Total VOCs			**15**	**8.8**	0	0	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated Standard Criteria and Guidance value.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-18S 18S 05/30/01	GM-18S GM-18S 09/28/01	GM-21S 21S 05/30/01	GM-21S GM-21S 09/27/01	GM-23S GM-23S 2/15/2001	GM-23S GM-23S 10/02/01
Chloromethane	5		<10 J	<10	<10 J	<10	<10	<10
Bromomethane	5		<10	<10	<10	<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane	5		<10	<10	<10	<10	<10	<10
Methylene chloride	5		<10	<10	<10	<10	<10	<10
Acetone	50		<10	<10 J	<10 J	<10 J	<10 J	<10 J
Carbon disulfide	50		<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	5		<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	5		<10	<10	<10	<10	<10	<10
1,2-Dichloroethene (total)	5		<10	<10	<10	<10	<10	<10
Chloroform	7		<10	<10	<10	<10	<10	<10
1,2-Dichloroethane	5		<10	<10	<10	<10	<10	<10
2-Butanone	50		<10 J	<10 J	<10 J	<10 J	<10	<10 J
1,1,1-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Carbon tetrachloride	5		<10	<10	<10	<10	<10	<10
Bromodichloromethane	50		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Trichloroethene	5		**2 J**	**3 J**	<10	<10	<10	<10
Dibromochloromethane	5		<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Benzene	0.7		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Bromoform	50		<10	<10 J	<10	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10 J	<10	<10 J	<10	<10 J
2-Hexanone	50		<10	<10 J	<10	<10 J	<10	<10 J
Tetrachloroethene	5		<10	<10	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane	5		<10	<10 J	<10	<10 J	<10	<10 J
Toluene	5		<10	<10	<10	**0.3 J**	<10	<10
Chlorobenzene	5		<10	<10	<10	<10	<10	<10
Ethylbenzene	5		<10	<10	<10	<10	<10	<10
Styrene	5		<10	<10	<10	<10	<10	<10
Xylene (total)	5		<10	<10	<10	<10	<10	<10
Freon-113 *	5		**0.3 J**	<10	<10	<10	< 10	<10
Total VOCs			**2.3**	**3**	0	**0.3**	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated Standard Criteria and Guidance value.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-78S 78S 06/04/01	GM-78S GM-78S 09/27/01	HN-40S HN-40S 05/04/01	HN-40S HN-40S 10/05/01	HN-42S HN-42S 05/04/01
Chloromethane	5		<10 J	<10	<10 J	<10	<10 J
Bromomethane	5		<10	<10	<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2 J	<0.2	<0.2 J
Chloroethane	5		<10	<10	<10 J	<10	<10 J
Methylene chloride	5		<10	<10	<10	<10	<10
Acetone	50		<10 J	<10 J	<10	<10	<10
Carbon disulfide	50		<10	<10	<10	<10	<10
1,1-Dichloroethene	5		<10	<10	<10	<10	<10
1,1-Dichloroethane	5		<10	<10	<10	<10	<10
1,2-Dichloroethene (total)	5		<10	<10	<10	<10	<10
Chloroform	7		<10	<10	**0.5 J**	<10	<10
1,2-Dichloroethane	5		<10	<10	<10	<10	<10
2-Butanone	50		<10 J	<10 J	<10	<10	<10
1,1,1-Trichloroethane	5		<10	<10	<10	<10	<10
Carbon tetrachloride	5		<10	<10	<10 J	<10	<10 J
Bromodichloromethane	50		<10	<10	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10
Trichloroethene	5		**1 J**	**2 J**	<10	**3 J**	<10
Dibromochloromethane	5		<10	<10	<10	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10	<10	<10
Benzene	0.7		<10	<10	<10	**0.5 J**	<10
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10
Bromoform	50		<10	<10	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10 J	<10	<10	<10
2-Hexanone	50		<10	<10 J	<10	<10	<10
Tetrachloroethene	5		**0.4 J**	<10	<10	**1 J**	<10
1,1,2,2-Tetrachloroethane	5		<10	<10 J	<10	<10	<10
Toluene	5		<10	<10	<10	**0.9 J**	<10
Chlorobenzene	5		<10	<10	<10	**0.8 J**	<10
Ethylbenzene	5		<10	<10	<10	<10	<10
Styrene	5		<10	<10	<10	<10	<10
Xylene (total)	5		<10	<10	<10	<10	<10
Freon-113 *	5		<10	<10	<10	<10	<10
Total VOCs			**1.4**	**2**	**0.5**	**6.2**	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
Value exceeds associated Standard Criteria and Guidance value.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	HN-42S HN-42S 10/05/01	MW-03R MW-3R 05/08/01	MW-03R MW-3R 09/27/01
Chloromethane	5		<10	<10	<10
Bromomethane	5		<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2
Chloroethane	5		<10	<10	<10
Methylene chloride	5		<10	<10	<10
Acetone	50		<10	<10	<10 J
Carbon disulfide	50		<10	<10	<10
1,1-Dichloroethene	5		<10	<10	<10
1,1-Dichloroethane	5		<10	<10	<10
1,2-Dichloroethene (total)	5		<10	**1 J**	<10
Chloroform	7		<10	<10	<10
1,2-Dichloroethane	5		<10	<10	<10
2-Butanone	50		<10	<10	<10 J
1,1,1-Trichloroethane	5		<10	<10	<10
Carbon tetrachloride	5		<10	<10	<10
Bromodichloromethane	50		<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10
Trichloroethene	5		<10	**5 J**	**1 J**
Dibromochloromethane	5		<10	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10
Benzene	0.7		<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<10
Bromoform	50		<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10	<10 J
2-Hexanone	50		<10	<10	<10 J
Tetrachloroethene	5		<10	**0.4 J**	<10
1,1,2,2-Tetrachloroethane	5		<10	<10	<10 J
Toluene	5		<10	<10	<10
Chlorobenzene	5		<10	<10	<10
Ethylbenzene	5		<10	<10	<10
Styrene	5		<10	<10	<10
Xylene (total)	5		<10	<10	<10
Freon-113 *	5		<10	<10	<10
Total VOCs			0	**6.4**	**1**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated Standard Criteria and Guidance value.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-15I 15I 05/01/01	GM-15I GM-15I 10/08/01	GM-16I 16I 05/01/01	GM-16I GM-16I 10/03/01	GM-17I 17I 05/02/01	GM-17I GM-17I 10/02/01
Chloromethane	5		<10 J	<10 J	<10 J	<10	<10 J	<10
Bromomethane	5		<10	<10	<10	<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane	5		<10 J	<10	<10 J	<10	<10 J	<10
Methylene chloride	5		<10	<10	<10	<10	<10	<10
Acetone	50		<10	<10	<10	<10 J	<10	<10 J
Carbon disulfide	50		<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	5		<10	<10	**1 J**	<10	<10	<10
1,1-Dichloroethane	5		<10	<10	<10	<10	<10	<10
1,2-Dichloroethene (total)	5		**1 J**	**3 J**	**2 J**	**2 J**	<10	<10
Chloroform	7		<10	<10	<10	<10	<10	<10
1,2-Dichloroethane	5		<10	<10	<10	<10	<10	<10
2-Butanone	50		<10	<10	<10	<10 J	<10	<10 J
1,1,1-Trichloroethane	5		<10	**0.6 J**	<10	<10	<10	<10
Carbon tetrachloride	5		<10	<10	<10	<10	<10	<10
Bromodichloromethane	50		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Trichloroethene	5		**4 J**	**18**	**21**	**18**	<10	<10
Dibromochloromethane	5		<10	<10	<10	<10 J	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10	<10 J	<10	<10
Benzene	0.7		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Bromoform	50		<10	<10	<10	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10	<10	<10 J	<10	<10 J
2-Hexanone	50		<10	<10	<10	<10 J	<10	<10 J
Tetrachloroethene	5		<10	<10	**3 J**	**3 J**	<10	<10
1,1,2,2-Tetrachloroethane	5		<10	<10	<10	<10 J	<10	<10 J
Toluene	5		<10	<10	<10	<10	<10	<10
Chlorobenzene	5		<10	<10	<10	<10	<10	<10
Ethylbenzene	5		<10	<10	<10	<10	<10	<10
Styrene	5		<10	<10	<10	<10	<10	<10
Xylene (total)	5		<10	<10	<10	<10	<10	<10
Freon-113 *	5		<10	<10	**4 J**	**3 J**	<10	<10
Total VOCs			**5**	**21.6**	**31**	**26**	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
[ ] Value exceeds associated Standard Criteria and Guidance value.
+ Based on Field Logs and Historical Data, it appears that the bottleware for REP3 and GM-20I were switched; the corrected Ids are shown on their respective Site Ids.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-18I 18I 06/04/01	GM-18I GM-18I 09/28/01	GM-20I+ REP3 6/5/2001	GM-20I GM-20I 10/01/01	GM-21I 21I 05/30/01	GM-21I GM-21I 10/01/01
Chloromethane	5		<10	<10	<10 J	<10	<10 J	<10
Bromomethane	5		<10	<10	<10	<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane	5		<10	<10	<10	<10	<10	<10
Methylene chloride	5		<10	<10	<10	<10	<10	<10
Acetone	50		<10	<10 J	<10 J	<10 J	<10 J	<10 J
Carbon disulfide	50		<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	5		<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	5		<10	<10	<10	<10	<10	<10
1,2-Dichloroethene (total)	5		<10	<10	<10	<10	<10	<10
Chloroform	7		<10	<10	<10	<10	<10	<10
1,2-Dichloroethane	5		<10	<10	<10	<10	<10	<10
2-Butanone	50		<10	<10 J	<10 J	<10	<10 J	<10 J
1,1,1-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Carbon tetrachloride	5		<10	<10	<10	<10	<10	<10
Bromodichloromethane	50		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Trichloroethene	5		**0.4 J**	**0.7 J**	**1 J**	**0.8 J**	<10	<10
Dibromochloromethane	5		<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Benzene	0.7		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Bromoform	50		<10	<10 J	<10	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10 J	<10	<10	<10	<10 J
2-Hexanone	50		<10	<10 J	<10	<10	<10	<10 J
Tetrachloroethene	5		<10	<10	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane	5		<10	<10 J	<10	<10	<10	<10 J
Toluene	5		<10	<10	<10	<10	<10	<10
Chlorobenzene	5		<10	<10	<10	<10	<10	<10
Ethylbenzene	5		<10	<10	<10	<10	<10	<10
Styrene	5		<10	<10	<10	<10	<10	<10
Xylene (total)	5		<10	<10	<10	<10	<10	<10
Freon-113 *	5		<10	<10	< 10	<10	<10	<10
Total VOCs			**0.4**	**0.7**	1	**0.8**	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
[ ] Value exceeds associated Standard Criteria and Guidance value.
+ Based on Field Logs and Historical Data, it appears that the bottleware for REP3 and GM-20I were switched; the corrected Ids are shown on their respective Site Ids.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-23I GM-23I 2/15/2001	GM-23I GM-23I 10/02/01	GM-74I 74I 06/05/01	GM-74I GM-74I 10/09/01	GM-78I 78I 06/04/01	GM-78I GM-78I 09/27/01
Chloromethane	5		<10	<10	<10 J	<10 J	<10 J	<10
Bromomethane	5		<10	<10	<10	<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane	5		<10	<10	<10	<10	<10	<10
Methylene chloride	5		<10	<10	<10	<10	<10	<10
Acetone	50		<10 J	**11 J**	**3 J**	<10	<10 J	<10 J
Carbon disulfide	50		<10	<10	<10	**0.6 J**	<10	<10
1,1-Dichloroethene	5		<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	5		<10	<10	<10	<10	<10	<10
1,2-Dichloroethene (total)	5		**0.9 J**	**0.7 J**	<10	<10	<10	<10
Chloroform	7		<10	<10	<10	<10	<10	<10
1,2-Dichloroethane	5		<10	<10	<10	<10	<10	<10
2-Butanone	50		<10	<10 J	<10 J	<10	<10 J	<10 J
1,1,1-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Carbon tetrachloride	5		<10	<10	<10	<10	<10	<10
Bromodichloromethane	50		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Trichloroethene	5		**6 J**	**6 J**	<10	<10	**0.8 J**	**3 J**
Dibromochloromethane	5		<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Benzene	0.7		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Bromoform	50		<10	<10	<10	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10 J	<10	<10	<10	<10 J
2-Hexanone	50		<10	<10 J	<10	<10	<10	<10 J
Tetrachloroethene	5		**3 J**	**3 J**	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane	5		<10	<10 J	<10	<10	<10	<10 J
Toluene	5		<10	<10	<10	<10	<10	<10
Chlorobenzene	5		<10	<10	<10	<10	<10	<10
Ethylbenzene	5		<10	<10	<10	<10	<10	<10
Styrene	5		<10	<10	<10	<10	<10	<10
Xylene (total)	5		<10	<10	<10	<10	<10	<10
Freon-113 *	5		<10	<10	<10	<10	<10	<10
Total VOCs			**9.9**	**20.7**	**3**	**0.6**	**0.8**	**3**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
Value exceeds associated Standard Criteria and Guidance value.
+ Based on Field Logs and Historical Data, it appears that the bottleware for REP3 and GM-20I were switched; the corrected Ids are shown on their respective Site Ids.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-79I 79I 05/07/01	GM-79I GM-79I 10/11/01	HN-24I HN-24I 05/31/01	HN-24I HN-24I 10/04/01	HN-24I** REP2 10/04/01	HN-29I HN-29I 05/31/01
Chloromethane	5		<10 J	<10	<20 J	<10	<10	<10 J
Bromomethane	5		<10	<10	<20	<10	<10	<10
Vinyl Choride	2		<0.2 J	<0.2	<0.4	<0.2	<0.2	<0.2
Chloroethane	5		<10 J	<10	<20	<10	<10	<10
Methylene chloride	5		<10	<10	<20	<10	<10	<10
Acetone	50		<10	<10 J	<20 J	<10	<10 J	<10 J
Carbon disulfide	50		<10	<10	<20	<10	<10	<10
1,1-Dichloroethene	5		<10	<10	**11 J**	**10**	**9 J**	<10
1,1-Dichloroethane	5		**2 J**	**2 J**	**7 J**	**8 J**	**7 J**	**0.9 J**
1,2-Dichloroethene (total)	5		<10	<10	**11 J**	**12**	**12**	<10
Chloroform	7		<10	<10	**0.6 J**	**1 J**	**0.6 J**	<10
1,2-Dichloroethane	5		<10	<10	<20	<10	<10	<10
2-Butanone	50		<10	<10 J	<20 J	<10	<10	<10 J
1,1,1-Trichloroethane	5		<10	<10	**8 J**	**9 J**	**8 J**	**0.7 J**
Carbon tetrachloride	5		<10 J	<10	<20	<10	<10	<10
Bromodichloromethane	50		<10	<10	<20	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<20	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<20	<10	<10	<10
Trichloroethene	5		**3 J**	**2 J**	**180**	**160**	**150**	<10
Dibromochloromethane	5		<10	<10	<20	<10	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<20	<10	<10	<10
Benzene	0.7		<10	<10	<20	<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<20	<10	<10	<10
Bromoform	50		<10	<10	<20	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10	<20	<10	<10	<10
2-Hexanone	50		<10	<10	<20	<10	<10	<10
Tetrachloroethene	5		<10	<10	**8 J**	**8 J**	**7 J**	**0.9 J**
1,1,2,2-Tetrachloroethane	5		<10	<10	<20	<10	<10	<10
Toluene	5		<10	<10	<20	<10	<10	<10
Chlorobenzene	5		<10	<10	<20	<10	<10	<10
Ethylbenzene	5		<10	<10	<20	<10	<10	<10
Styrene	5		<10	<10	<20	<10	<10	<10
Xylene (total)	5		<10	<10	<20	<10	<10	<10
Freon-113 *	5		<10	<10	**18 J**	**31**	**29**	**0.4 J**
Total VOCs			**5**	**4**	**243.6**	**239**	**222.6**	**2.9**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
[ ] Value exceeds associated Standard Criteria and Guidance value.
+ Based on Field Logs and Historical Data, it appears that the bottleware for REP3 and GM-20I were switched; the corrected Ids are shown on their respective Site Ids.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	HN-29I HN-29I 10/04/01	HN-40I HN-40I 05/04/01	HN-40I HN-40I 10/05/01	HN-42I HN-42I 05/04/01	HN-42I HN-42I 10/05/01	MW-52S 52S 2/12/2001
Chloromethane	5		<10	<10 J	<10	<10 J	<10	<50
Bromomethane	5		<10	<10	<10	<10	<10	<50
Vinyl Choride	2		<0.2	<0.2 J	<0.2	<0.2 J	<0.2	470
Chloroethane	5		<10	<10 J	<10	<10 J	<10	<50
Methylene chloride	5		<10	<10	<10	<10	<10	<50
Acetone	50		<10 J	<10	<14	<10	<10	<50 J
Carbon disulfide	50		<10	<10	<10	<10	<10	<50
1,1-Dichloroethene	5		<10	<10	<10	<10	<10	<50
1,1-Dichloroethane	5		**0.7 J**	<10	<10	<10	<10	<50
1,2-Dichloroethene (total)	5		<10	<10	<10	<10	<10	<50
Chloroform	7		<10	<10	<10	<10	<10	<50
1,2-Dichloroethane	5		<10	<10	<10	<10	<10	<50
2-Butanone	50		<10	<10	<10	<10	<10	<50
1,1,1-Trichloroethane	5		**0.6 J**	<10	<10	<10	<10	<50
Carbon tetrachloride	5		<10	<10 J	<10	<10 J	<10	<50
Bromodichloromethane	50		<10	<10	<10	<10	<10	<50
1,2-Dichloropropane	5		<10	<10	<10	<10	<10	<50
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<50
Trichloroethene	5		**1 J**	**4 J**	**4 J**	**0.9 J**	**0.9 J**	<50
Dibromochloromethane	5		<10	<10	<10	<10	<10	<50
1,1,2-Trichloroethane	5		<10	<10	<10	<10	<10	<50
Benzene	0.7		<10	<10	<10	<10	<10	<50
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<50
Bromoform	50		<10	<10	<10	<10	<10	<50
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<50
2-Hexanone	50		<10	<10	<10	<10	<10	<50
Tetrachloroethene	5		<10	**0.6 J**	**1 J**	<10	<10	**6 J**
1,1,2,2-Tetrachloroethane	5		<10	<10	<10	<10	<10	<50
Toluene	5		<10	--	<10	<10	<10	<50
Chlorobenzene	5		<10	<10	<10	<10	<10	<50
Ethylbenzene	5		<10	<10	<10	<10	<10	<50
Styrene	5		<10	<10	<10	<10	<10	<50
Xylene (total)	5		<10	<10	<10	<10	<10	<50
Freon-113 *	5		<10	<10	<10	<10	<10	**2 J**
Total VOCs			**2.3**	**4.6**	**5**	**0.9**	**0.9**	**478**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
[ ] Value exceeds associated Standard Criteria and Guidance value.
+ Based on Field Logs and Historical Data, it appears that the bottleware for REP3 and GM-20I were switched; the corrected Ids are shown on their respective Site Ids.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values(1)	WELL: SAMPLE ID: DATE:	MW-52S MW-52S 10/03/01
Chloromethane	5		<40
Bromomethane	5		<40
Vinyl Chloride	2		**320**
Chloroethane	5		<40
Methylene chloride	5		<40
Acetone	50		<63 J
Carbon disulfide	50		<40
1,1-Dichloroethene	5		<40
1,1-Dichloroethane	5		<40
1,2-Dichloroethene (total)	5		<40
Chloroform	7		<40
1,2-Dichloroethane	5		<40
2-Butanone	50		<40 J
1,1,1-Trichloroethane	5		<40
Carbon tetrachloride	5		<40
Bromodichloromethane	50		<40
1,2-Dichloropropane	5		<40
cis-1,3-Dichloropropene	5		<40
Trichloroethene	5		<40
Dibromochloromethane	5		<40 J
1,1,2-Trichloroethane	5		<40 J
Benzene	0.7		<40
trans-1,3-Dichloropropene	5		<40
Bromoform	50		<40
4-Methyl-2-pentanone	50		<40 J
2-Hexanone	50		<40 J
Tetrachloroethene	5		**8 J**
1,1,2,2-Tetrachloroethane	5		<40 J
Toluene	5		<40
Chlorobenzene	5		<40
Ethylbenzene	5		<40
Styrene	5		<40
Xylene (total)	5		<40
Freon-113 *	5		**3 J**
Total VOCs			**331**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
[ ] Value exceeds associated Standard Criteria and Guidance value.
+ Based on Field Logs and Historical Data, it appears that the bottleware for REP3 and GM-20I were switched; the corrected Ids are shown on their respective Site Ids.

ARCADIS

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Second and Third Quarters 2001, 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 06/06/01	10627 N-10627 10/10/01	GM-13D 13D 06/06/01	GM-13D GM-13D 10/11/01	GM-15D 15D 04/30/01	GM-15D GM-15D 10/08/01
Chloromethane	5		<10	<10	<50	<50	<10 J	<10
Bromomethane	5		<10	<10	<50	<50	<10	<10
Vinyl Choride	2		<0.2	<0.2	<1	<1	<0.2	<0.2
Chloroethane	5		<10	<10	<50	<50	<10 J	<10
Methylene chloride	5		<10	<10	<50	<50	<10	<10
Acetone	50		**3 J**	<10	<50	<50 J	<10	<10
Carbon disulfide	50		<10	<10	<50	<50	<10	<10
1,1-Dichloroethene	5		<10	<10	**83**	**97**	**4 J**	**6 J**
1,1-Dichloroethane	5		<10	<10	**64**	**65**	**7 J**	**11**
1,2-Dichloroethene (total)	5		<10	<10	**200**	**200**	**2 J**	**1 J**
Chloroform	7		<10	<10	<50	<50	**0.7 J**	**0.6 J**
1,2-Dichloroethane	5		<10	<10	<50	<50	<10	<10
2-Butanone	50		<10 J	<10	<50 J	<50 J	<10	<10
1,1,1-Trichloroethane	5		<10	<10	**100**	**130**	**3 J**	**4 J**
Carbon tetrachloride	5		<10	<10	<50	<50	<10	<10
Bromodichloromethane	50		<10	<10	<50	<50	<10	<10
1,2-Dichloropropane	5		<10	<10	<50	<50	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<50	<50	<10	<10
Trichloroethene	5		**7 J**	**4 J**	**330**	**320**	**12**	**10**
Dibromochloromethane	5		<10	<10	<50	<50	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<50	<50	<10	<10
Benzene	0.7		<10	<10	<50	<50	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<50	<50	<10	<10
Bromoform	50		<10	<10 J	<50	<50	<10	<10
4-Methyl-2-pentanone	50		<10	<10	<50	<50	<10	<10
2-Hexanone	50		<10 J	<10	<50 J	<50	<10	<10
Tetrachloroethene	5		<10	<10	**650**	**860**	**5 J**	**7 J**
1,1,2,2-Tetrachloroethane	5		<10	<10	<50	<50	<10	<10
Toluene	5		<10	<10	<50	<50	<10	**0.3 J**
Chlorobenzene	5		<10	<10	<50	<50	<10	<10
Ethylbenzene	5		<10	<10	<50	<50	<10	<10
Styrene	5		<10	<10	<50	<50	<10	<10
Xylene (total)	5		<10	<10	<50	<50	<10	<10
Freon-113 *	5		<10	<10	**14 J**	**17 J**	**0.4 J**	<10
Total VOCs			**10**	**4**	**1,441**	**1,689**	**34.1**	**39.9**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
Value exceeds associated Standard Criteria and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-34D 34D 05/03/01	GM-34D GM-34D 10/10/01	GM-36D 36D 06/07/01	GM-36D GM-36D 09/19/01	GM-37D 37D 06/01/01	GM-37D GM-37D 09/26/01
Chloromethane	5		<10 J	<10 J	<10	<10	<10 J	<10
Bromomethane	5		<10	<10	<10	<10	<10	<10
Vinyl Choride	2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane	5		<10 J	<10	<10	<10	<10	<10
Methylene chloride	5		<10	<10	<10	<10	<10	<10
Acetone	50		<10	<10	<10	<10 J	<10	<10 J
Carbon disulfide	50		<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	5		**5 J**	**4 J**	<10	<10	**3 J**	**3 J**
1,1-Dichloroethane	5		**4 J**	**3 J**	<10	<10	**7 J**	**6 J**
1,2-Dichloroethene (total)	5		**4 J**	**4 J**	<10	**0.3 J**	<10	<10
Chloroform	7		**0.7 J**	**0.6 J**	<10	<10	**1 J**	**1 J**
1,2-Dichloroethane	5		<10	<10	<10	<10	<10	<10
2-Butanone	50		<10	<10	<10 J	<10	<10 J	<10 J
1,1,1-Trichloroethane	5		<10	**0.6 J**	<10	<10	**4 J**	**3 J**
Carbon tetrachloride	5		<10	<10	<10	<10	<10	<10
Bromodichloromethane	50		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane	5		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Trichloroethene	5		**110**	**140**	**22**	**16**	**0.8 J**	**0.5 J**
Dibromochloromethane	5		<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	5		<10	<10	<10	<10	<10	<10
Benzene	0.7		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<10	<10	<10	<10
Bromoform	50		<10	<10	<10	<10	<10	<10
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10 J
2-Hexanone	50		<10	<10	<10 J	<10	<10	<10 J
Tetrachloroethene	5		**4 J**	**5 J**	**1 J**	**2 J**	**2 J**	**1 J**
1,1,2,2-Tetrachloroethane	5		<10	<10	<10	<10	<10	<10 J
Toluene	5		<10	<10	<10	<10	<10	<10
Chlorobenzene	5		<10	<10	<10	<10	<10	<10
Ethylbenzene	5		<10	<10	<10	<10	<10	<10
Styrene	5		<10	<10	<10	<10	<10	<10
Xylene (total)	5		**0.8 J**	<10	<10	**1 J**	**0.5 J**	<10
Freon-113 *	5		**22**	**28**	<10	<10	<10	<10
Total VOCs			**150.5**	**185.2**	**23**	**19.3**	**18.3**	**14.5**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
[ ] Value exceeds associated Standard Criteria and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-38D	GM-38D	GM-74D	GM-74D	GM-79D	GM-79D
		SAMPLE ID:	38D	GM-38D	74D	GM-74D	79D	GM-79D
		DATE:	05/11/01	09/18/01	06/05/01	10/09/01	05/03/01	10/11/01
Chloromethane	5		<50	<50	<10 J	<10 J	<10 J	<10
Bromomethane	5		<50	<50	<10	<10	<10	<10
Vinyl Choride	2		<1	<1	<0.2	<0.2	<0.2	<0.2
Chloroethane	5		<50 J	<50	<10	<10	<10 J	<10
Methylene chloride	5		<50	<50	<10	<10	<10	<10
Acetone	50		<50	<50 J	**7 J**	<10	<10	<10
Carbon disulfide	50		<50	<50	<10	<10	<10	<10
1,1-Dichloroethene	5		**6 J**	**6 J**	**0.8 J**	<10	**1 J**	**2 J**
1,1-Dichloroethane	5		<50	**2 J**	<10	<10	**0.9 J**	**1 J**
1,2-Dichloroethene (total)	5		**3 J**	<50	**1 J**	<10	**1 J**	**1 J**
Chloroform	7		**1 J**	<50	<10	<10	<10	<10
1,2-Dichloroethane	5		<50	<50	<10	<10	<10	<10
2-Butanone	50		<50	<50	<10 J	<10	<10	<10
1,1,1-Trichloroethane	5		**4 J**	<50	<10	<10	**1 J**	**1 J**
Carbon tetrachloride	5		<50	<50	<10	<10	<10	<10
Bromodichloromethane	50		<50	<50	<10	<10	<10	<10
1,2-Dichloropropane	5		<50	<50	<10	<10	<10	<10
cis-1,3-Dichloropropene	5		<50	<50	<10	<10	<10	<10
Trichloroethene	5		**660**	**810**	**63**	**35**	**49**	**63**
Dibromochloromethane	5		<50	<50	<10	<10	<10	<10
1,1,2-Trichloroethane	5		<50	<50	<10	<10	<10	<10
Benzene	0.7		<50	<50	<10	<10	<10	<10
trans-1,3-Dichloropropene	5		<50	<50	<10	<10	<10	<10
Bromoform	50		<50	<50	<10	<10	<10	<10 J
4-Methyl-2-pentanone	50		<50	<50	<10	<10	<10	<10
2-Hexanone	50		<50	<50	<10	<10	<10	<10
Tetrachloroethene	5		**1 J**	**2 J**	**4 J**	**2 J**	**0.4 J**	**2 J**
1,1,2,2-Tetrachloroethane	5		<50	<50	<10	<10	<10	<10
Toluene	5		<50	<50	<10	<10	<10	<10
Chlorobenzene	5		<50	**7 J**	<10	<10	<10	<10
Ethylbenzene	5		<50	<50	<10	<10	<10	<10
Styrene	5		<50	<50	<10	<10	<10	<10
Xylene (total)	5		<50	<50	<10	<10	<10	<10
Freon-113 *	5		<50	<50	**2 J**	**0.9 J**	**0.5 J**	**0.8 J**
Total VOCs			**675**	**827**	**77.8**	**37.9**	**53.8**	**70.8**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
Value exceeds associated Standard Criteria and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	HN-29D HN-29D 05/31/01	HN-29D HN-29D 10/04/01	MW-52I 52I 2/12/2001	MW-52I MW-52I 10/03/01	MW-52D 52D 2/12/2001	MW-52D MW-52D 10/03/01
Chloromethane	5		<10 J	<10	<200	<200	<10	<10
Bromomethane	5		<10	<10	<200	<200	<10	<10
Vinyl Choride	2		<0.2	<0.2	**1900**	**1700**	<0.2	<0.2
Chloroethane	5		<10	<10	<200	<200	<10	<10
Methylene chloride	5		<10	<10	<200	<260	<10	<10
Acetone	50		<10 J	<10 J	<200 J	<1800J	10	<10 J
Carbon disulfide	50		<10	<10	<200	<200	10	<10
1,1-Dichloroethene	5		<10	<10	<200	<200	**0.9 J**	**0.6 J**
1,1-Dichloroethane	5		<10	<10	<200	<200	**2 J**	<10
1,2-Dichloroethene (total)	5		<10	<10	**36 J**	**30 J**	**4 J**	**5 J**
Chloroform	**7**		<10	<10	<200	<200	<10	<10
1,2-Dichloroethane	5		<10	<10	<200	<200	<10	<10
2-Butanone	50		<10 J	<10	<200	<200 J	<10	<10 J
1,1,1-Trichloroethane	5		<10	<10	<200	<200	<10	<10
Carbon tetrachloride	5		<10	<10	<200	<200	<10	<10
Bromodichloromethane	50		<10	<10	<200	<200	<10	<10
1,2-Dichloropropane	5		<10	<10	<200	<200	<10	<10
cis-1,3-Dichloropropene	5		<10	<10	<200	<200	<10	<10
Trichloroethene	5		<10	**2 J**	**45 J**	**21 J**	**30**	**33**
Dibromochloromethane	5		<10	<10	<200	<200 J	<10	<10 J
1,1,2-Trichloroethane	5		<10	<10	<200	<200 J	<10	<10 J
Benzene	0.7		<10	<10	<200	<200	<10	<10
trans-1,3-Dichloropropene	5		<10	<10	<200	<200	<10	<10
Bromoform	50		<10	<10	<200	<200	<10	<10
4-Methyl-2-pentanone	50		<10	<10	<200	<200 J	<10	<10 J
2-Hexanone	50		<10	<10	<200	<200 J	<10	<10 J
Tetrachloroethene	5		**0.2 J**	**1 J**	**42 J**	**32 J**	**15**	**20**
1,1,2,2-Tetrachloroethane	5		<10	<10	<200	<200 J	<10	<10 J
Toluene	5		<10	<10	<200	<200	**1 J**	<10
Chlorobenzene	5		<10	<10	<200	<200	<10	<10
Ethylbenzene	5		<10	<10	<200	<200	<10	<10
Styrene	5		<10	<10	<200	<200	<10	<10
Xylene (total)	5		<10	<10	<200	<200	<10	<10
Freon-113 *	5		<10	<10	< 200	<200	< 10	<10
Total VOCs			**0.2**	**3**	**2,023**	**1783**	**52.9**	**58.6**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
Value exceeds associated Standard Criteria and Guidance value.

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Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-15D2 15D2 04/30/01	GM-15D2 GM-15DZ 10/08/01	GM-33D2 33D2 06/06/01	GM-33D2 GM-33D2 09/28/01
Chloromethane	5		<10 J	<10	<50	<40
Bromomethane	5		<10	<10	<50	<40
Vinyl Choride	2		<0.2	<0.2	<1	<0.8
Chloroethane	5		<10 J	<10	<50	<40
Methylene chloride	5		<10	<10	<50	<40
Acetone	50		<10	<10	**36 J**	<40 J
Carbon disulfide	50		<10	<10	<50	<40
1,1-Dichloroethene	5		**1 J**	**2 J**	<50	<40
1,1-Dichloroethane	5		<10	<10	<50	<40
1,2-Dichloroethene (total)	5		**0.8 J**	**1 J**	<50	**2 J**
Chloroform	7		<10	<10	<50	<40
1,2-Dichloroethane	5		<10	<10	<50	<40
2-Butanone	50		<10	<10	<50 J	<40
1,1,1-Trichloroethane	5		<10	<10	<50	<40
Carbon tetrachloride	5		<10	<10	<50	<40
Bromodichloromethane	50		<10	<10	<50	<40
1,2-Dichloropropane	5		<10	<10	<50	<40
cis-1,3-Dichloropropene	5		<10	<10	<50	<40
Trichloroethene	5		**13**	**16**	**500**	**450**
Dibromochloromethane	5		<10	<10	<50	<40
1,1,2-Trichloroethane	5		<10	<10	<50	<40
Benzene	0.7		<10	<10	<50	<40
trans-1,3-Dichloropropene	5		<10	<10	<50	<40
Bromoform	50		<10	<10	<50	<40
4-Methyl-2-pentanone	50		<10	<10	<50	<40
2-Hexanone	50		<10	<10	<50 J	<40
Tetrachloroethene	5		**7 J**	**12**	**12 J**	**13 J**
1,1,2,2-Tetrachloroethane	5		<10	<10	<50	<40
Toluene	5		<10	<10	<50	<40
Chlorobenzene	5		<10	<10	<50	<40
Ethylbenzene	5		<10	<10	<50	<40
Styrene	5		<10	<10	<50	<40
Xylene (total)	5		<10	<10	<50	<40
Freon-113 *	5		**0.8 J**	<10	**4 J**	**2 J**
Total VOCs			**22.6**	**31**	**552**	**467**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
Value exceeds associated Standard Criteria and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in D2 Wells, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-75D2 GM-75D2 10/10/01	GM-75D2** REP3 10/10/01	GP-1 GP-1 06/21/01	GP-1 GP-1 10/12/01
Chloromethane	5		<100	<100	<50	<50
Bromomethane	5		<100	<100	<50	<50
Vinyl Choride	2		<2	<2	<1	<1
Chloroethane	5		<100	<100	<50	<50
Methylene chloride	5		<100	<100	<50	<50
Acetone	50		<100 J	<100 J	<50	<50
Carbon disulfide	50		<100	<100	<50	<50
1,1-Dichloroethene	5		**57 J**	**55 J**	**5 J**	**8 J**
1,1-Dichloroethane	5		**6 J**	**5 J**	<50	<50
1,2-Dichloroethene (total)	5		**6 J**	<100	**10 J**	**10 J**
Chloroform	7		<100	<100	<50	<50
1,2-Dichloroethane	5		<100	<100	<50	<50
2-Butanone	50		<100 J	<100 J	<50	<50
1,1,1-Trichloroethane	5		**13 J**	**12 J**	<50	<50
Carbon tetrachloride	5		<100	<100	<50	<50
Bromodichloromethane	50		<100	<100	<50	<50
1,2-Dichloropropane	5		<100	<100	<50	<50
cis-1,3-Dichloropropene	5		<100	<100	<50	<50
Trichloroethene	5		**1400**	**1400**	**500**	**490**
Dibromochloromethane	5		<100	<100	<50	<50
1,1,2-Trichloroethane	5		<100	<100	<50	<50
Benzene	0.7		<100	<100	<50	<50
trans-1,3-Dichloropropene	5		<100	<100	<50	<50
Bromoform	50		<100	<100	<50	<50
4-Methyl-2-pentanone	50		<100	<100	<50	<50
2-Hexanone	50		<100	<100	<50	<50
Tetrachloroethene	5		**12 J**	**8 J**	**71**	**71**
1,1,2,2-Tetrachloroethane	5		<100	<100	<50	<50
Toluene	5		<100	<100	<50	<50
Chlorobenzene	5		<100	<100	<50	<50
Ethylbenzene	5		<100	<100	<50	<50
Styrene	5		<100	<100	<50	<50
Xylene (total)	5		<100	<100	<50	<50
Freon-113 *	5		**10 J**	**10 J**	**9 J**	**7 J**
Total VOCs			**1,504**	**1,490**	**595**	**586**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards Criteria and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000).
Value exceeds associated Standard Criteria and Guidance value.

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Table 11. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater Samples, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	WELL:	GM-23S	HN42S
	SAMPLE ID:	23S	HN42S
	DATE:	10/2/2001	10/5/2001
Propane, 2-methoxy-2-methyl- (MTBE)		52JN	--
Hexane		--	5JN

ug/L Micrograms per liter.
J Estimated value.
-- Not Detected.
N TICs are identified based on review of mass spectrometry results via a comprehensive library search of all organic compounds. However calibrations were not run for there constituents, therefore the results should be used for qualitative purposes only.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	TRIP BLANK TB091801 09/18/01	TRIP BLANK TB091901 09/19/01	TRIP BLANK TB092001 09/20/01	TRIP BLANK TB092401 09/24/01	TRIP BLANK TB092601 09/26/01	TRIP BLANK TB092701 09/27/01
Chloromethane		<10	<10	<10	<10	<10	<10
Bromomethane		<10	<10	<10	<10	<10	<10
Vinyl Choride		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane		<10	<10	<10	<10	<10	<10
Methylene chloride		1 JB	2 JB	0.9 J	1 J	0.8 JB	1 J
Acetone		<10 J	<10 J	4 JB	12 B	3 J	<10 J
Carbon disulfide		<10	<10	<10	<10	<10	<10
1,1-Dichloroethene		<10	<10	<10	<10	<10	<10
1,1-Dichloroethane		<10	<10	<10	<10	<10	<10
1,2-Dichloroethene (total)		<10	<10	<10	<10	<10	<10
Chloroform		<10	<10	<10	<10	<10	<10
1,2-Dichloroethane		<10	<10	<10	<10	<10	<10
2-Butanone		<10	<10	2 JB	5 JB	<10 J	<10 J
1,1,1-Trichloroethane		<10	<10	<10	<10	<10	<10
Carbon tetrachloride		<10	<10	<10	<10	<10	<10
Bromodichloromethane		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene		<10	<10	<10	<10	<10	<10
Trichloroethene		<10	<10	<10	<10	<10	<10
Dibromochloromethane		<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane		<10	<10	<10	<10	<10	<10
Benzene		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene		<10	<10	<10	<10	<10	<10
Bromoform		<10	<10	<10	<10	<10 J	<10
4-Methyl-2-pentanone		<10	<10	<10	<10	<10 J	<10 J
2-Hexanone		<10	<10	<10	<10	<10 J	<10 J
Tetrachloroethene		<10	<10	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane		<10	<10	<10	<10	<10 J	<10 J
Toluene		<10	0.1 J	<10	<10	<10	<10
Chlorobenzene		<10	<10	<10	<10	<10	<10
Ethylbenzene		<10	<10	<10	<10	<10	<10
Styrene		<10	<10	<10	<10	<10	<10
Xylene (total)		<10	<10	<10	<10	<10	<10
Vinyl Acetate		<10	<10	<10	<10	<10 J	<10
2-Chloroethylvinylether		<10	<10	<10 J	<10 J	<10 J	<10 J
Freon 113 *		<10	<10	<10	<10	<10	<10
Total VOCs		1	2.1	6.9	18	3.8	1

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

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	TRIP BLANK TB092801 09/28/01	TRIP BLANK TB100101 10/01/01	TRIP BLANK TB100201 10/02/01	TRIP BLANK TB100301 10/03/01	TRIP BLANK TB100401 10/04/01	TRIP BLANK TB100501 10/05/01
Chloromethane		<10	<10	<10	<10	<10	<10
Bromomethane		<10	<10	<10	<10	<10	<10
Vinyl Choride		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane		<10	<10	<10	<10	<10	<10
Methylene chloride		0.8 JB	1 J	4 J	12	1 J	1 J
Acetone		<10 J	<10 J	<10 J	22 JB	5 JB	5 JB
Carbon disulfide		<10	<10	<10	<10	<10	<10
1,1-Dichloroethene		<10	<10	<10	<10	<10	<10
1,1-Dichloroethane		<10	<10	<10	<10	<10	<10
1,2-Dichloroethene (total)		<10	<10	<10	<10	<10	<10
Chloroform		<10	<10	<10	<10	<10	<10
1,2-Dichloroethane		<10	<10	<10	<10	<10	<10
2-Butanone		<10 J	<10	<10 J	<10 J	<10	<10
1,1,1-Trichloroethane		<10	<10	<10	<10	<10	<10
Carbon tetrachloride		<10	<10	<10	<10	<10	<10
Bromodichloromethane		<10	<10	<10	<10	<10	<10
1,2-Dichloropropane		<10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene		<10	<10	<10	<10	<10	<10
Trichloroethene		<10	<10	<10	<10	<10	<10
Dibromochloromethane		<10	<10	<10	<10 J	<10	<10
1,1,2-Trichloroethane		<10	<10	<10	<10 J	<10	<10
Benzene		<10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene		<10	<10	<10	<10	<10	<10
Bromoform		<10 J	<10	<10	<10	<10	<10
4-Methyl-2-pentanone		<10 J	<10	<10 J	<10 J	<10	<10
2-Hexanone		<10 J	<10	<10 J	<10 J	<10	<10
Tetrachloroethene		<10	<10	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane		<10 J	<10	<10 J	<10 J	<10	<10
Toluene		<10	<10	<10	0.3 J	<10	<10
Chlorobenzene		<10	<10	<10	<10	<10	<10
Ethylbenzene		<10	<10	<10	<10	<10	<10
Styrene		<10	<10	<10	<10	<10	<10
Xylene (total)		<10	<10	<10	<10	<10	<10
Vinyl Acetate		<10 J	<10	<10	<10	<10	<10
2-Chloroethylvinylether		<10 J	<10 J	<10 J	<10	<10	<10
Freon 113 *		<10	<10	<10	<10	<10	<10
Total VOCs		0.8	1	4	34.3	6	6

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

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	TRIP BLANK TB100801 10/08/01	TRIP BLANK TB100901 10/09/01	TRIP BLANK TB101001 10/10/01	TRIP BLANK TB101101 10/11/01	TRIP BLANK TB101201 10/12/01
Chloromethane		<10	<10 J	<10	<10	<10
Bromomethane		<10	<10	<10	<10	<10
Vinyl Choride		<0.2	<0.2	<0.2	<0.2	<0.2
Chloroethane		<10	<10	<10	<10	<10
Methylene chloride		2 J	0.9 JB	1 J	0.8 J	1 JB
Acetone		10 B	5 JB	8 JB	8 JB	6 JB
Carbon disulfide		<10	<10	<10	<10	<10
1,1-Dichloroethene		<10	<10	<10	<10	<10
1,1-Dichloroethane		<10	<10	<10	<10	<10
1,2-Dichloroethene (total)		<10	<10	<10	<10	<10
Chloroform		<10	<10	<10	<10	<10
1,2-Dichloroethane		<10	<10	<10	<10	<10
2-Butanone		2 J	<10	<10	2 J	3 J
1,1,1-Trichloroethane		<10	<10	<10	<10	<10
Carbon tetrachloride		<10	<10	<10	<10	<10
Bromodichloromethane		<10	<10	<10	<10	<10
1,2-Dichloropropane		<10	<10	<10	<10	<10
cis-1,3-Dichloropropene		<10	<10	<10	<10	<10
Trichloroethene		<10	<10	<10	<10	<10
Dibromochloromethane		<10	<10	<10	<10	<10
1,1,2-Trichloroethane		<10	<10	<10	<10	<10
Benzene		<10	<10	<10	<10	<10
trans-1,3-Dichloropropene		<10	<10	<10	<10	<10
Bromoform		<10	<10	<10 J	<10 J	<10
4-Methyl-2-pentanone		<10	<10	<10	<10	2 J
2-Hexanone		<10	<10	<10	<10	<10
Tetrachloroethene		<10	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane		<10	<10	<10	<10	0.7 J
Toluene		<10	<10	<10	<10	<10
Chlorobenzene		<10	<10	<10	<10	<10
Ethylbenzene		<10	<10	<10	<10	<10
Styrene		<10	<10	<10	<10	<10
Xylene (total)		<10	<10	<10	<10	<10
Vinyl Acetate		<10	<10	<10	<10	<10
2-Chloroethylvinylether		<10	<10	<10	<10	<10
Freon 113 *		<10	<10	<10	<10	<10
Total VOCs		14	5.9	9	10.8	12.7

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

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB092701 09/27/01	WATER EQ.BLANK FB092801 09/28/01	WATER EQ.BLANK FB100201 10/02/01	WATER EQ.BLANK FB100301 10/03/01
Chloromethane		<10	<10	<10	<10
Bromomethane		<10	<10	<10	<10
Vinyl Choride		<0.2	<0.2	<0.2	<0.2
Chloroethane		<10	<10	<10	<10
Methylene chloride		2 J	1 JB	5 J	1 J
Acetone		<10 J	<10 J	<10 J	<10 J
Carbon disulfide		<10	<10	<10	<10
1,1-Dichloroethene		<10	<10	<10	<10
1,1-Dichloroethane		<10	<10	<10	<10
1,2-Dichloroethene (total)		<10	<10	<10	<10
Chloroform		<10	<10	<10	<10
1,2-Dichloroethane		<10	<10	<10	<10
2-Butanone		<10 J	<10 J	<10 J	<10 J
1,1,1-Trichloroethane		<10	<10	<10	<10
Carbon tetrachloride		<10	<10	<10	<10
Bromodichloromethane		<10	<10	<10	<10
1,2-Dichloropropane		<10	<10	<10	<10
cis-1,3-Dichloropropene		<10	<10	<10	<10
Trichloroethene		<10	<10	<10	<10
Dibromochloromethane		<10	<10	<10	<10 J
1,1,2-Trichloroethane		<10	<10	<10	<10 J
Benzene		<10	<10	<10	<10
trans-1,3-Dichloropropene		<10	<10	<10	<10
Bromoform		<10	<10 J	<10	<10
4-Methyl-2-pentanone		<10 J	<10 J	<10 J	<10 J
2-Hexanone		<10 J	<10 J	<10 J	<10 J
Tetrachloroethene		<10	<10	<10	<10
1,1,2,2-Tetrachloroethane		<10 J	<10 J	<10 J	<10 J
Toluene		<10	<10	<10	<10
Chlorobenzene		<10	<10	<10	<10
Ethylbenzene		<10	<10	<10	<10
Styrene		<10	<10	<10	<10
Xylene (total)		<10	<10	<10	<10
Vinyl Acetate		<10	<10 J	<10	<10
2-Chloroethylvinylether		<10 J	<10 J	<10 J	<10
Freon 113 *		<10	<10	<10	<10
Total VOCs		2	1	5	1

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

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB100401 10/04/01	WATER EQ.BLANK FB100501 10/05/01	WATER EQ.BLANK FB100801 10/08/01	WATER EQ.BLANK FB100901 10/09/01
Chloromethane		<10	<10	<10	<10 J
Bromomethane		<10	<10	<10	<10
Vinyl Choride		<0.2	<0.2	<0.2	<0.2
Chloroethane		<10	<10	<10	<10
Methylene chloride		1 J	1 J	1 J	1 JB
Acetone		6 JB	7 JB	6 JB	6 JB
Carbon disulfide		<10	<10	<10	<10
1,1-Dichloroethene		<10	<10	<10	<10
1,1-Dichloroethane		<10	<10	<10	<10
1,2-Dichloroethene (total)		<10	<10	<10	<10
Chloroform		<10	<10	<10	<10
1,2-Dichloroethane		<10	<10	<10	<10
2-Butanone		<10	<10	2 J	<10
1,1,1-Trichloroethane		<10	<10	<10	<10
Carbon tetrachloride		<10	<10	<10	<10
Bromodichloromethane		<10	<10	<10	<10
1,2-Dichloropropane		<10	<10	<10	<10
cis-1,3-Dichloropropene		<10	<10	<10	<10
Trichloroethene		<10	<10	<10	<10
Dibromochloromethane		<10	<10	<10	<10
1,1,2-Trichloroethane		<10	<10	<10	<10
Benzene		<10	<10	<10	<10
trans-1,3-Dichloropropene		<10	<10	<10	<10
Bromoform		<10	<10	<10	<10
4-Methyl-2-pentanone		<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10
Tetrachloroethene		<10	<10	<10	<10
1,1,2,2-Tetrachloroethane		<10	<10	<10	<10
Toluene		<10	<10	<10	<10
Chlorobenzene		<10	<10	<10	<10
Ethylbenzene		<10	<10	<10	<10
Styrene		<10	<10	<10	<10
Xylene (total)		<10	<10	<10	<10
Vinyl Acetate		<10	<10	<10	<10
2-Chloroethylvinylether		<10	<10	<10	<10
Freon 113 *		<10	<10	<10	<10
Total VOCs		7	8	9	7

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

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Third Quarter 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB101001 10/10/01	WATER EQ.BLANK FB101101 10/11/01
Chloromethane		<10	<10
Bromomethane		<10	<10
Vinyl Choride		<0.2	<0.2
Chloroethane		<10	<10
Methylene chloride		1 J	1 J
Acetone		4 JB	6 JB
Carbon disulfide		<10	<10
1,1-Dichloroethene		<10	<10
1,1-Dichloroethane		<10	<10
1,2-Dichloroethene (total)		<10	<10
Chloroform		<10	<10
1,2-Dichloroethane		<10	<10
2-Butanone		<10	2 J
1,1,1-Trichloroethane		<10	<10
Carbon tetrachloride		<10	<10
Bromodichloromethane		<10	<10
1,2-Dichloropropane		<10	<10
cis-1,3-Dichloropropene		<10	<10
Trichloroethene		<10	<10
Dibromochloromethane		<10	<10
1,1,2-Trichloroethane		<10	<10
Benzene		<10	<10
trans-1,3-Dichloropropene		<10	<10
Bromoform		<10 J	<10 J
4-Methyl-2-pentanone		<10	<10
2-Hexanone		<10	<10
Tetrachloroethene		<10	<10
1,1,2,2-Tetrachloroethane		<10	<10
Toluene		<10	<10
Chlorobenzene		<10	<10
Ethylbenzene		<10	<10
Styrene		<10	<10
Xylene (total)		<10	<10
Vinyl Acetate		<10	<10
2-Chloroethylvinylether		<10	<10
Freon 113 *		<10	<10
Total VOCs		5	9

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

ARCADIS

Table 13. Total Cadmium and Chromium Detected in Groundwater Samples, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC SCGs [1]	SITE: / SAMPLE ID: / DATE:	10631 N-10631 05/08/01	10631 N-10631 09/27/01	GM-16SR GM-16SR 05/08/01	GM-16SR GM-16SR 10/03/01	GM-37D GM-37D 09/26/01	GM-37D2 GM-37D2 09/26/01	GM-78S 78S 06/04/01	GM-78S GM-78S 09/27/01	GM-78I 78I 06/04/01	GM-78I GM-78I 09/27/01	MW-03R MW-3R 05/08/01	MW-03R MW-3R 09/27/01
Cadmium	5		**2.5 B**	**4.4**	<0.80	<0.80	<0.80	<0.80	<0.90	**1.3**	<0.90	<0.80	**27.6**	**25.0**
Chromium	50		**50.0**	**46.4**	**2.9 B**	<1.6	<2.5	<1.1	**0.80 B**	**7.4**	**2.6 B**	<3.4	**69.7**	**53.4**

(1)	Standards, Criteria, and Guidance Values.
ug/L	Micrograms per liter.
B	Detected between the IDL and CRDL.
IDL	Instrument detection limit.
CRDL	Contract required detection limit.
J	Estimated value.
NYSDEC	New York State Department of Environmental Conservation.
EQ	Equipment.
	Value exceeds associated SCG value.
*	Replicate sample.
Bold	Constituent Detected above CRDL

ARCADIS

Table 13. Total Cadmium and Chromium Detected in Groundwater Samples, Second and Third Quarters 2001, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC SCGs [1]	SITE: / SAMPLE ID: / DATE:	WATER EQ.BLANK FB092701 09/27/01	WATER EQ.BLANK FB100301 10/03/01
Cadmium	5		<0.80	<0.80
Chromium	50		**1.1**	**1.8**

(1)	Standards, Criteria, and Guidance Values.
ug/L	Micrograms per liter.
B	Detected between the IDL and CRDL.
IDL	Instrument detection limit.
CRDL	Contract required detection limit.
J	Estimated value.
NYSDEC	New York State Department of Environmental Conservation.
EQ	Equipment.
	Value exceeds associated SCG value.
*	Replicate sample.
Bold	Constituent Detected above CRDL

NWIRP SITE

RUCO POLYMER SITE

PLANT 12 AREA

U.S. NAVY SITE

PLANT 3

PLANT 2

PLANT 5 BASINS

OU2 TREATMENT SYSTEMS

NORTHROP GRUMMAN SITE

SOUTH BASINS

CADMIUM/CHROMIUM MONITORING AREA

PLANT 1 FUEL DEPOT AREA

BWD SUPPLY WELLS (PLANT 4)

BWD SUPPLY WELLS (PLANT 6)

BWD SUPPLY WELL (PLANT 5)

FARMERS AVENUE

(PLAINVIEW ROAD)

BROADWAY

GRUMMAN ROAD

LONG ISLAND RAILROAD

CENTRAL AVENUE

BLOOMINGDALE ROAD

NORTH WANTAGH AVE.

HICKSVILLE ROAD

STEWART AVENUE

SEAFORD - OYSTER BAY EXPRESSWAY

HEMPSTEAD TURNPIKE

N

EXPLANATION

- INDUSTRIAL SUPPLY WELL
- IRM WELL
- EXISTING WELL/CLUSTER
- PROPOSED WELL/CLUSTER
- PROPERTY BOUNDARY OF THE RUCO POLYMER SITE
- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF NWIRP SITE
- NWIRP — NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- IRM — INTERIM REMEDIAL MEASURE
- BWD — BETHPAGE WATER DISTRICT
- AREAS OWNED BY NORTHROP GRUMMAN

0' 1000' 2000'

SCALE: 1" = 1000'

G:\APROJECT\NORTHROP GRUMMAN\CADD\OU2SYS_LOCATION.DWG 1=1000

ARCADIS GERAGHTY & MILLER

NORTHROP GRUMMAN CORPORATION

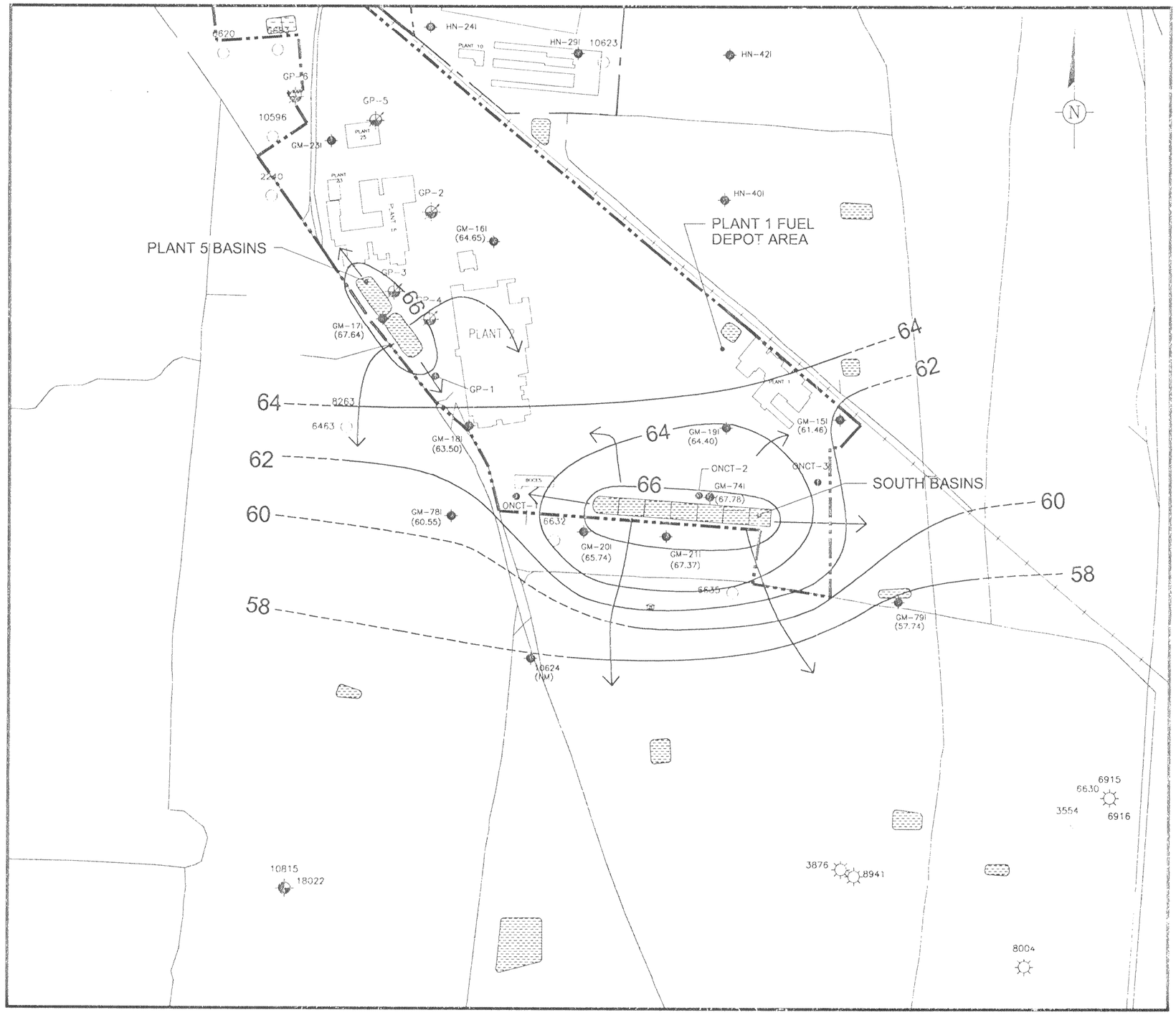
BETHPAGE, NEW YORK

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
A.G.	2/27/01	CSG	
		LEAD DESIGN PROF.	CHECKED D.S.

SITE PLAN AND OU2 TREATMENT SYSTEMS AND WELL LOCATIONS

PROJECT NUMBER: NY008.0210

DRAWING NUMBER: 1



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-15I (61.46) — 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)
- 9667 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-16 — 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
- NM — NOT MEASURED

NOTES:

1. WELL INVENTORY REVISED BETWEEN AUGUST 4 AND AUGUST 23, 1995. WELL DATA OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY, NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS, NASSAU COUNTY DEPARTMENT OF HEALTH, AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
2. OU2 WELLS ONCT-1, ONCT-2, ONCT-3, AND GP-1 ARE SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.

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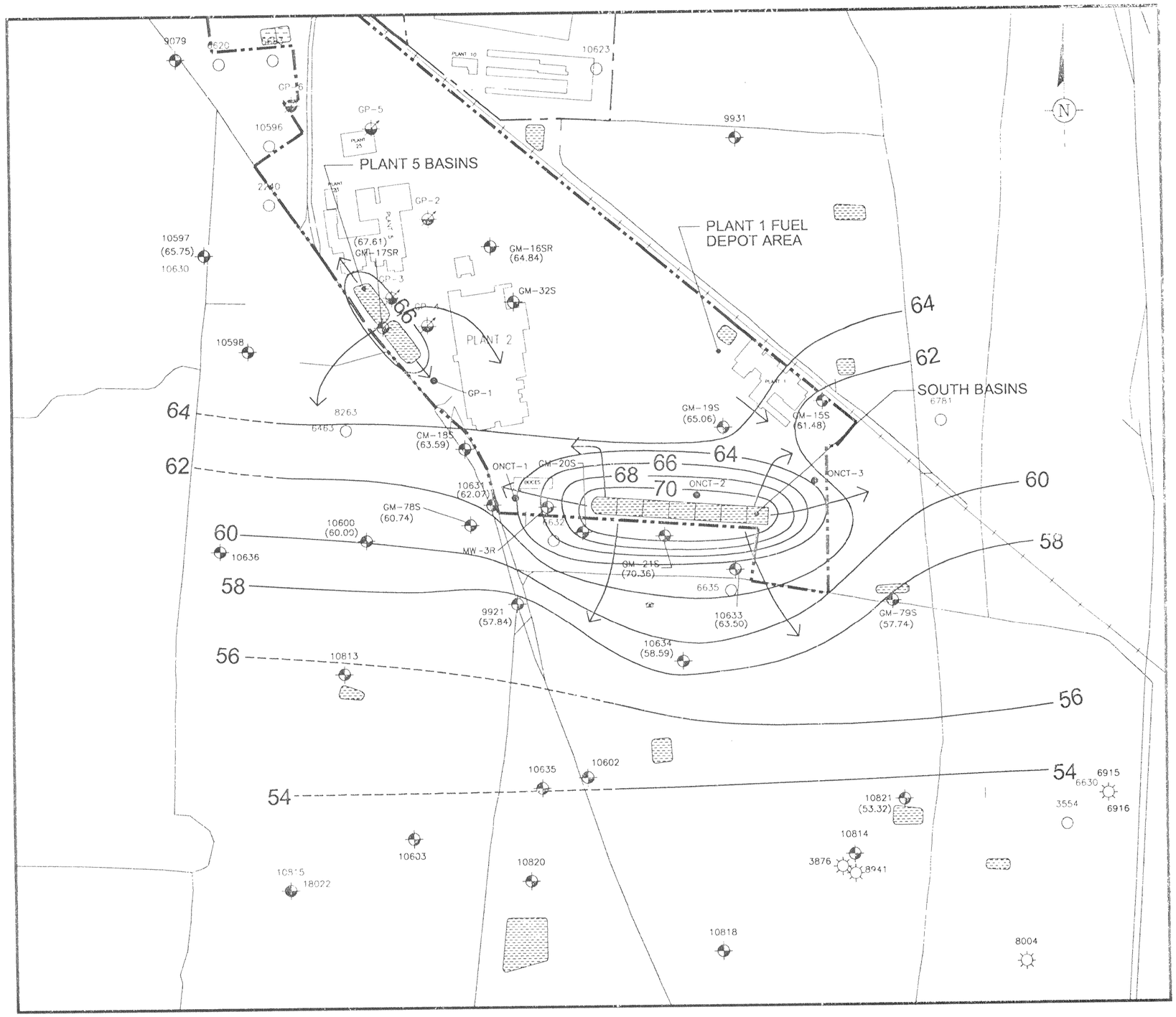
NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE INTERMEDIATE ZONE
OCTOBER 12, 2001

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	1/17/02	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001321.002	3



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EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-19S (64.41) — 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)
- 9667 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-36 — 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

NOTES:

1. WELL INVENTORY REVISED BETWEEN AUGUST 4 AND AUGUST 23, 1995; WELL DATA OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY, NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS, NASSAU COUNTY DEPARTMENT OF HEALTH, AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
2. OU2 WELLS ONCT-1, ONCT-2, ONCT-3, AND GP-1 ARE SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.

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NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

WATER-TABLE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE SHALLOW ZONE
OCTOBER 12, 2001

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	1/17/02	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001321.002	2

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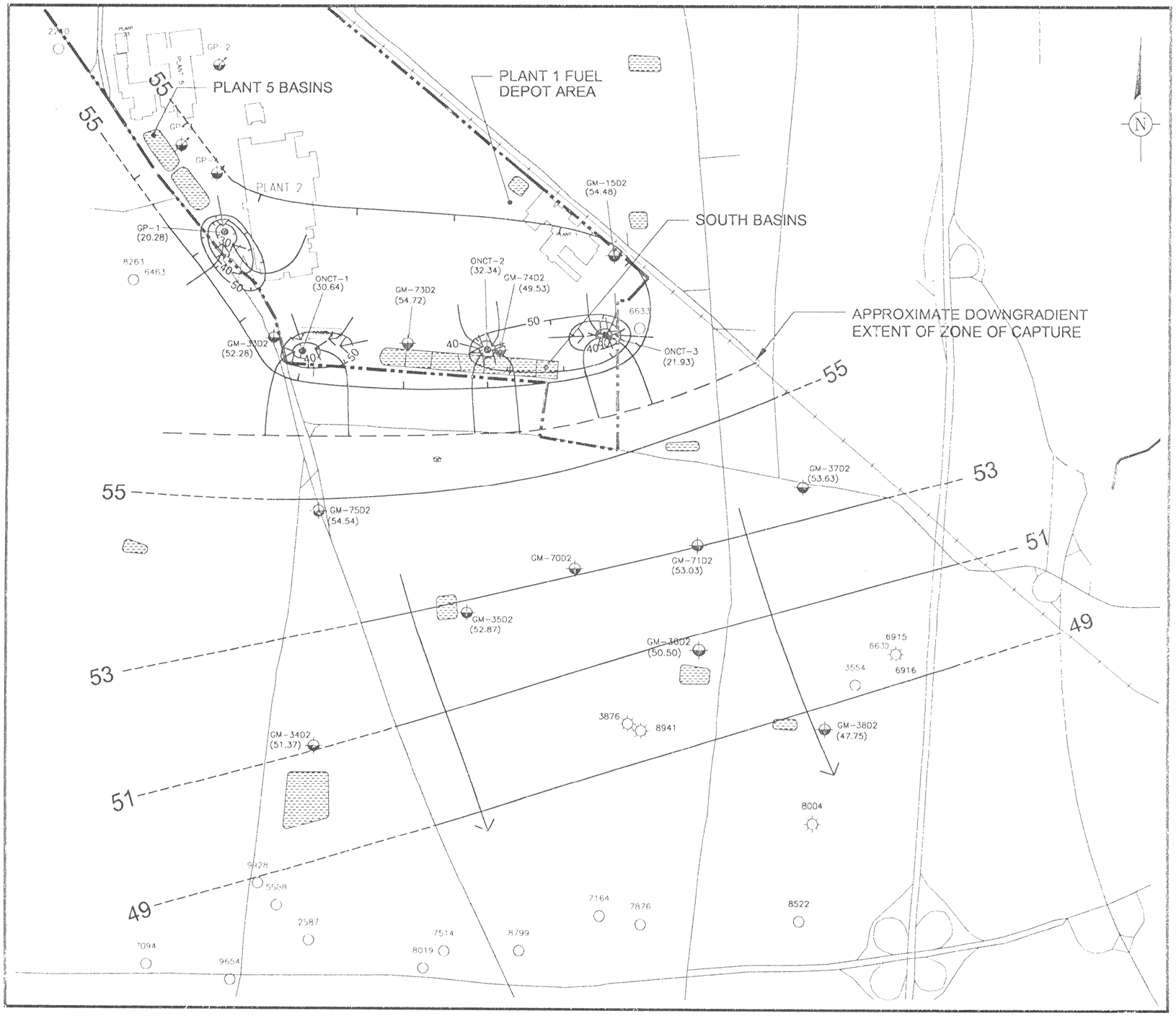

EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- RECHARGE BASIN
- GM-36D2 (50.50) — 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
- 9667 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-16 — LOCATION AND DESIGNATION OF GRUMMAN PRODUCTION WELL
- ONCT-3 (21.93) — 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 (FT. MSL.) (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

NOTES:

1. WELL INVENTORY REVISED BETWEEN AUGUST 4 AND AUGUST 23, 1995; WELL DATA OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY, NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS, NASSAU COUNTY DEPARTMENT OF HEALTH, AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
2. OU2 REMEDIAL WELLS GP-1, ONCT-1, ONCT-2, AND ONCT-3 ARE SCREENED IN THE D2 ZONE AND WERE PUMPING AT 1,180 GPM, 1,135 GPM, 906 GPM, AND 1,278 GPM, RESPECTIVELY AT THE TIME OF MEASUREMENT.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.
5. INDUSTRIAL SUPPLY WELL GP-3 IS SCREENED IN THE D2 ZONE AND WAS PUMPING AT AN AVERAGE RATE OF 577 GPM DURING THE THIRD QUARTER OF 2001.

ARCADIS G&M
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NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE D2 ZONE
OCTOBER 12, 2001

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	1/17/02	CGS	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001321.002	4

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Appendix A

Water-Level Measurement Logs

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Project NY001321.0001.00002 Well _____ Site GRUMMAN

Screen Setting _____ Measuring Point Description T.O.C. Height Above Ground Surface _____

Static Water Level _____ Measured With M SCOPE Date/Time 10/2/01

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

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

Date & Time	Well ID t (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
	GM-7AL			39.64							
	GM-7AD			48.01							
	GM-7ADL			57.83							
	ONGT-2			77.16					9106		
	GM-7BD2			49.90							
	MW-3R			37.10							
	ONGT-1			73.46					1135		
	GM-18D			48.74							
	GM-18I			45.58							
	GP-1			96.50					1180		
	GM-17D			52.64							
	GM-17I			48.19	?						
	GM-17SR			48.18	?						
	GP-3			—					520		
	GM-13D			50.18							
	ONGT-3			86.77					1278		
	GM-15D			50.94							
	GM-15D2			56.11							
	GM-15S			47.87							
	GM-15I			47.67							
	GM-19S			44.80							
	GM-19I			45.46							
	GM-16R			51.02							
	GM-16I			51.16							
	GM-34D2			19.82							
	GM-34D			17.92							

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

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Project NY001321.0001.00002 Well _____ Site GRUMMAN

Screen Setting _____ Measuring Point Description T.O.C. Height Above Ground Surface _____

Static Water Level _____ Measured With M SCOPE Date/Time 12 OCT 20

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

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

Date & Time	Well Q t (mins)	Head (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (lb)	Remarks 3)
	N-10627			35.56							
	GM-75D2			39.09							
	GM-35D2			43.41							
	N-10634			42.6							
	GM-71D2			45.42							
	GM-37D			42.78							
	GM-37D2			43.54							
	GM-38D			41.79							
	GM-38D2			43.81							
	GM-36D2			41.10							
	GM-36D			38.60							
	N-10821			38.26							
	GM-70D2			44.38							
	GM-79I			43.35							
	GM-79D			44.98							
	GM-79S			43.14							
	N-10633			[illegible]	40.30	(NS)					
	GM-21S			35.45							
	GM-21I			38.35							
	GM-20I			38.14							
	GM-20D			40.62							
	N-10631			41.40							
	GM-33D2			53.97							
	GM-18S			44.01							
	N-10597			44.10							
	N-9921			35.49							

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

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Project NY001321.0001.00002 Well _____ Site GRUMMAN

Screen Setting _____ Measuring Point Description T.O.C. Height Above Ground Surface _____

Static Water Level _____ Measured With M SCOPE Date/Time 12 OCT 2001

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

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

Date & Time	Well Or t (mins)	Head (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
	NE-10600			42.41							
	GM-78S			44.20							
	GM-78I			44.51							

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

ARCADIS

Appendix B

Groundwater Sampling Logs

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. NH001321.0001.00002 | Page 1 of ____

Site Location: BETHPAGE, NY | Date: 18 SEP 2001

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

Weather: 70° SUNNY | Sampling Time: Begin 1150 | End 1155

Evacuation Data

Measuring Point	____
MP Elevation (ft)	____
Land Surface Elevation (ft)	____
Sounded Well Depth (ft bmp)	~~1195.00~~ 1195.00'
Depth to Water (ft bmp) /PACKER	415.21 / 472.00'
Water-Level Elevation (ft)	____
Water Column in Well (ft)	23.00'
Casing Diameter/Type	4"
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45.00
~~Sample Pump Intake~~ Pressure Setting (ft bmp)	220 PSI
Purge Time	begin 1150 end 1200
Pumping Rate (gpm)	4150mL/min
Evacuation Method	DED BLADDER PUMP

Field Parameters

Field Parameters	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	5.53	5.51	5.71	5.71
Conductivity (mS/cm)	126.8	758	746	760
(µmhos/cm)				
Turbidity (NTU)				<50
Temperature (°C)	68°F	64.7°F	64.2°F	62.7°F
Dissolved Oxygen (mg/L)				

Salinity (%): ____

Sampling Method: ____

Remarks: 5 GAL PAILS: IIII IIII

SPLIT W/ HZM

Constituents Sampled	Container Description	Number	Preservative
SEE COC			
BILL WEST FROM BND STOPPED BY			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 18 SEPT 2001

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

Weather: 75° SUNNY | Sampling Time: Begin 1230 End 1425

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	340'
Depth to ~~Water~~ (ft bmp) PACKER	317'
Water-Level Elevation (ft)	
Water Column in Well (ft)	23'
Casing Diameter/Type	4"
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
Sample Pump Intake ~~Setting~~ Pressure (ft bmp)	145 PSI
Purge Time	begin 1230 end 1430
Pumping Rate (gpm)	
Evacuation Method	DED. BLADDER

Field Parameters

Field Parameters	I	IV	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	6.74	6.50	6.78	6.80
Conductivity (mS/cm)				
(µmhos/cm)	9660	964	973	983
Turbidity (NTU)				17.7
Temperature (°C)	66.5°F	69.5°F	70.8°F	71.3°F
Dissolved Oxygen (mg/L)				

Salinity (%):

Sampling Method:

Remarks: 5 GAL. PAILS: IIII IIII

SPLIT W/ HZM

Constituents Sampled	Container Description	Number	Preservative
SEE COC			
TCN 41.90			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. NY001321.0001.00002 | Page 1 of

Site Location: BETHPAGE, NY | Date: 19 SEPT 2001

Site/Well No.: GM-36D2 | Replicate No. | Code No.

Weather: 70° SUNNY | Sampling Time: Begin 0930 End 11:10

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	540'
Depth to Water (ft bmp)	518'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	4"
Gallons in Well	14.3
Gallons Pumped/Bailed Prior to Sampling	45
~~Sample Pump Intake~~ Setting (ft bmp)	PACKER PRESSURE 235 PSI
Purge Time	begin 0930 end 1115
Pumping Rate (gpm)	
Evacuation Method	DED. BLADDER

Field Parameters

Field Parameters	I	IV	2V	
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	9.53	11.24	10.41	10.26
Conductivity (mS/cm)				
(µmhos/cm)	955	1084	1283	1173
Turbidity (NTU)				18.4
Temperature (°C)	64.5°F	69.5°F	73.6°F	73.8°F
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				

Remarks: 5 GAL PAILS: IIII IIII

SPLIT w/ H2M

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW 42.35'			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. N400132I.0001.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 19 SEPT 2001

Site/Well No.: GM-36D | Replicate No. | Code No.

Weather: 75° SUNNY | Sampling Time: Begin 1140 End 1340

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	214'
Depth to Water (ft bmp) PACKER	202'
Water-Level Elevation (ft)	
Water Column in Well (ft)	12'
Casing Diameter/Type	4"
Gallons in Well	7.8 (~8)
Gallons Pumped/Bailed Prior to Sampling	24
~~Sample Pump Intake Setting (ft bmp)~~ PACKER PRESSURE	110 PSI
Purge Time	begin 1140 end 1340
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER PUMP

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	7.55	7.20	7.19	7.26
Conductivity (mS/cm)				
(µmhos/cm)	914	922	893	922
Turbidity (NTU)				16.3
Temperature (°C)	70.2°F	69.2°F	70.1°F	71.7°F
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks	5 GAL PAILS: NN			
	SPLIT W/ HZM			

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW: 38.34'			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. N400 1321.0001.00002 | Page 1 of ____

Site Location: BETHPAGE, NY | Date: 20 SEPT 2001

Site/Well No.: GM-71D2 | Replicate No. ____ | Code No. ____

Weather: 70° CLOUDY | Sampling Time: Begin 0900 End 10:40

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point	____	Color				colorless
MP Elevation (ft)	____	Odor				odorless
Land Surface Elevation (ft)	____	Appearance				clear
Sounded Well Depth (ft bmp)	464'	pH (s.u.)	7.44	6.49	6.64	6.44
Depth to ~~Water~~ (ft bmp) PACKER	~~464'~~ 442'	Conductivity (mS/cm)	931	908	962	946
Water-Level Elevation (ft)	~~DTW~~	(µmhos/cm)				
Water Column in Well (ft)	22'	Turbidity (NTU)				6.2
Casing Diameter/Type	4"	Temperature (°C)	68.3°F	67.5°F	69.7°F	68.7°F
Gallons in Well	15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45	Salinity (%)				
Sample ~~Pump~~ Intake Setting (ft bmp) PACKER PRESSURE	230 PSI	Sampling Method				
Purge Time	begin 0900 end 1040	Remarks	5 GAL PAILS: IIII IIII			
Pumping Rate (gpm)	____					
Evacuation Method	DED BLADDER PUMP		SPLIT W/ HZM			

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW 45.61'			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. NY001321.0001.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 24 SEPT 2001

Site/Well No.: 6M-70D2 | Replicate No. | Code No.

Weather: 75° CLOUDY | Sampling Time: Begin 1130 End 1315

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	330'
Depth to Water (ft bmp)	308'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	4"
Gallons in Well	14.3
Gallons Pumped/Bailed Prior to Sampling	45
~~Sample Pump Intake~~ PACKER ~~Setting (ft bmp)~~ PRESSURE	150 PSI
Purge Time	begin 1130 end 1315
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER PUMP

Field Parameters

	I	IV	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	6.57	6.28	6.45	6.36
Conductivity (mS/cm)				
(µmhos/cm)	891	957	907	944
Turbidity (NTU)				17.2
Temperature (°C)	79°F	75.8°F	75.3°F	75.4°F
Dissolved Oxygen (mg/L)				

Salinity (%):

Sampling Method:

Remarks: 5 GAL PAILS: NH, III

SPLIT W/ H2M

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW 44.40'			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. N400152.0001.00004 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 24 SEPT 2001

Site/Well No.: GM-35D2 | Replicate No.: | Code No.:

Weather: 70° CLOUDY | Sampling Time: Begin 0900 End 1055

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color			colorless	
MP Elevation (ft)		Odor			odorless	
Land Surface Elevation (ft)		Appearance			clear	
Sounded Well Depth (ft bmp)	530'	pH (s.u.)	6.60	6.47	6.14	6.32
Depth to ~~Water~~ (ft bmp) PACKER	507'	Conductivity (mS/cm)	1006	987	1033	1055
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	23'	Turbidity (NTU)				12.7
Casing Diameter/Type	4"	Temperature (°C)	81.7°F	79.40F	76.20F	76.3°F
Gallons in Well	15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45	Salinity (%)				
~~Sample Pump Intake~~ Setting (ft bmp) PACKER PRESSURE	225 PSI	Sampling Method				
Purge Time	begin 0900 end 1055	Remarks	5 GAL PAILS: NN III			
Pumping Rate (gpm)						
Evacuation Method	DED BLADDER PUMP		SPLIT W/ HZM			

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW 44.07'			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: N4001321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 26 SEPT 2001

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

Weather: 70° SUNNY | Sampling Time: Begin 1200 End 1540

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	340'
Sounded Well Depth (ft bmp)	367'
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	23'
Casing Diameter/Type	4"
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
~~Sample Pump Intake~~ Setting (ft bmp)	180 PSI
PACKER PRESSURE	
Purge Time	begin 1200 end 1540
Pumping Rate (gpm)	
Evacuation Method	DED. BLADDER PUMP

Field Parameters

	I	IV	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	6.30	6.46	6.40	6.43
Conductivity (mS/cm)	215	197	195	195
(µmhos/cm)				
Turbidity (NTU)	44.6	7.8	4.4	4.4
Temperature (°C)	15.6°C	17.2°C	17.6	17.2
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method:

Remarks: 5 GAL PAILS : ~~IV~~ IIII

SPLIT W/ HZM

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW: 43.82'			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 26 SEPT 2001

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

Weather: 65° SUNNY | Sampling Time: Begin 0915 End 1200

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	262'
Depth to ~~Water~~ (ft bmp) PACKER	240'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	4"
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
~~Sample Pump Intake~~ Setting (ft bmp) PACKER PRESSURE	110 PSI
Purge Time	begin 0915 end 1200
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER PUMP

Field Parameters

	I	IV	2V	
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	8.52	6.91	6.64	6.24
Conductivity (mS/cm)				
(µmhos/cm)	196	212	208	207
Turbidity (NTU)		28	24	27
Temperature (°C)	14.6°C	14.9°C	15.6°C	15.8°C
Dissolved Oxygen (mg/L)				

Salinity (%):

Sampling Method:

Remarks: 5 GAL PAILS: MW 11

SPLIT W | HZM

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW: 42.76'			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 07 SEPT 2001

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

Weather: 70° P. CLOUDY | Sampling Time: Begin 1335 End 1420

Evacuation Data

Measuring Point	T.O.C.
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	127'
Depth to Water (ft bmp)	110.96
Water-Level Elevation (ft)	
Water Column in Well (ft)	26
Casing Diameter/Type	2"
Gallons in Well	5
Gallons Pumped/Bailed Prior to Sampling	~~15~~ 20
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1400 end 1420
Pumping Rate (gpm)	1.5 gpm
Evacuation Method	redi flow sub.

Field Parameters

Field Parameters	1	1V	2V	3V	4V
Color				brown	
Odor				slight	
Appearance				clear	
pH (s.u.)	7.06	7.18	7.06	7.04	6.97
Conductivity (mS/cm)					
(µmhos/cm)	254	195.4	174.3	169.4	169
Turbidity (NTU)	—	—	90	70	21
Temperature (°C)	16.7	16.2	16.4	16.3	16.2
Dissolved Oxygen (mg/L)					
~~Salinity~~ (%) TIME	1400	1403	1407	1410	1413

Sampling Method:

Remarks:

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: MS, 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	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

Water Sampling Log

Project: GRUMMAN | Project No. NY001321.0001.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 27 SEPT 2001

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

Weather: 70° SUNNY | Sampling Time: Begin 1140 End 1205

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	55'
Depth to Water (ft bmp)	37.00'
Water-Level Elevation (ft)	
Water Column in Well (ft)	18'
Casing Diameter/Type	2"
Gallons in Well	3 gal
Gallons Pumped/Bailed Prior to Sampling	15X gal
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1147 end 1205
Pumping Rate (gpm)	1 GPM
Evacuation Method	Redi-flow sub.

Field Parameters

Field Parameters	I	IV	2V	3V	4V
Color			colorless		
Odor			colorless		
Appearance			clear		
pH (s.u.)	7.47	7.21	7.05	7.01	6.93
Conductivity (mS/cm)					
(µmhos/cm)	122	119.8	118.2	118.8	118.9
Turbidity (NTU)	—	—	110	10	10
Temperature (°C)	14.9	14.2	14.4	14.4	14.4
Dissolved Oxygen (mg/L)					
~~Salinity (%)~~ TIME	1147	1150	1153	1156	1159
Sampling Method	3 well vol				
Remarks					

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.	5V 1202		
	pH 6.96		
	(µmhos/cm) COND 118.5		
	TURB 7.5		
	TEMP 14.4		

Sampling Personnel: MS, 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: NY001321.0001.00002 Task: _____ Well ID: GM-78S
Date: 27 SEPT 2001 Sampled By: MS GW
Sampling Time: 1540 Recorded By: MS
Weather: 65° P. CLOUDY Coded Replicate No.: ~~REP-1~~

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow sub.
Casing Diameter: 4" Purge Rate: 500 mL/min
Total Depth: 70' Total Volume Purged: 7 gal
Depth to Water: 44.02' Pump Intake Depth 65'
Water Column: _____ Pump on: 1505 Off: 1545
Gallons/Foot: _____ Parameters Sampled: 5
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
1510	500		110	243	6.86	535	18.1	44.02	8.4	
1515			30	250	6.84	535	17.5		7.2	
1520			19	252	6.83	530	17.8	44.06	6.8	
1525			15	254	6.83	526	18.1		6.5	
1530			15	256	6.82	527	18.5	44.06	6.4	
1535			10.0	257	6.80	527	18.5		6.3	
1540			8.2	258	6.80	527	18.5	44.06	6.2	

Well Secure: yes Purge Water Disposal: contained → NCS
Color: colorless odorless Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: GM-78I
Date: 27 SEPT 2001 Sampled By: MS / GW
Sampling Time: 1440 Recorded By: MS
Weather: 65° P. CLOUDY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow sub.
Casing Diameter: 4" Purge Rate: 400 mL/min
Total Depth: 110' Total Volume Purged: 4 gal
Depth to Water: 44.33' Pump Intake Depth 105'
Water Column: Pump on: 1555 Off: 1435
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
1600	400		4.0	256	6.99	442	17	44.33	6.9	
1605			3.0	257	6.96	451	17		6.2	
1610			2.3	258	7.00	456	17.3	44.36	5.9	
1615			2.2	259	7.01	458	17.2		5.8	
1620			2.3	259	7.00	458	17.2	44.36	5.8	
1625			1.2	259	7.00	458	17.1		5.8	
1630		4	1.2	260	6.99	457	17.2	44.36	5.7	

Well Secure: yes Purge Water Disposal: → NC Sewer
Color: colorless Turbidity(qualitative): clear
odorless

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. NY000132I.0001.00002 | Page 1 of 1

Site Location: | Date: 27 SEPT 2001

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

Weather: 70° P. CLOUDY | Sampling Time: Begin 1230 End 1300

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67'
Depth to Water (ft bmp)	34.90'
Water-Level Elevation (ft)	
Water Column in Well (ft)	32.1
Casing Diameter/Type	2" (.16)
Gallons in Well	5.1
Gallons Pumped/Bailed Prior to Sampling	16
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1247 end 1300
Pumping Rate (gpm)	1.5 GPM
Evacuation Method	redi-flo sub.

Field Parameters

Field Parameters	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	7.33	7.01	7.16	7.17
Conductivity (mS/cm)				
(µmhos/cm)	111.4	110.6	110.1	109.7
Turbidity (NTU)				
Temperature (°C)	17.9	17.9	17.9	17.9
Dissolved Oxygen (mg/L)				
~~Salinity~~ (%) TIME	1247	1250	1254	1257

Sampling Method:

Remarks:

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: MS 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: NY001321.0001 Task: 00002 Well ID: GM-33D2
Date: 28 SEPT 2001 Sampled By: MS GW
Sampling Time: 1210 Recorded By: MS
Weather: 60° SUNNY Coded Replicate No.: REP 1

WELL IMFORMATION

Casing Material: PVC Purge Method: DED BLADDER / LOW FLOW
Casing Diameter: 4" Purge Rate: 450 mL/min
Total Depth: 520' Total Volume Purged: 10 gal
Depth to Water: 535Z' Pump Intake Depth
Water Column: Pump on: 1100 Off: 1215
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
1105	450			233	7.47	112	17.9	53.52	6.4	
1110				228	7.79	88.7	18.1		5.0	
1115				226	7.40	88.5	18.3		4.5	
1120				222	7.64	107.5	18.2	53.53	4.5	
1125				221	7.53	107.8	18.1		4.7	
1130				221	7.47	107.2	18.1	53.54	4.7	
1135				223	7.35	107.1	18.2	~~53.64~~	5.3	
1140				224	7.48	107.5	18.1	53.54	5.4	
1145				244	7.22	107.0	18.1	~~53.80~~	6.4	
1150				266	6.79	106.8	17.8		7.0	
1155				274	6.67	106.4	17.8	53.54	7.0	
1200				278	6.67	106.2	17.8		6.9	
1205		10 gal	7.9	282	6.62	106.2	17.6	53.55	7.0	

Well Secure:
Color: colorless ; odorless
PID: 10 ppm

Purge Water Disposal: →NC Sewer
Turbidity(qualitative): ~~→NC Sewer~~ clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 28 SEPT 2001

Site/Well No.: GM-18S | Replicate No.: MS/MSD | Code No.:

Weather: 60° SUNNY | Sampling Time: Begin 1240 End 1305

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	65.75'
Depth to Water (ft bmp)	43.95'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22'
Casing Diameter/Type	2"
Gallons in Well	3.5
Gallons Pumped/Bailed Prior to Sampling	11
Sample Pump Intake Setting (ft bmp)	60'
Purge Time	begin 1250 end 1305
Pumping Rate (gpm)	Q= 1 gpm ; T= 3.5 MIN
Evacuation Method	

Field Parameters

Field Parameters	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	6.75	7.43	7.18	7.02
Conductivity (mS/cm)				
(µmhos/cm)	209	173.8	165.6	164.7
Turbidity (NTU)				11
Temperature (°C)	17.5	17.5	17.7	17.6
Dissolved Oxygen (mg/L)				
~~Salinity~~ TIME (%)	1250	1263	1267	1301

Sampling Method:

Remarks:

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: MS, 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.: NY001321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 28 SEPT 01

Site/Well No.: GM-18I | Replicate No.: | Code No.:

Weather: 65° SUNNY | Sampling Time: Begin 1410 End 1510

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	105'
Depth to Water (ft bmp)	94'
Water-Level Elevation (ft)	
Water Column in Well (ft)	11'
Casing Diameter/Type	4"
Gallons in Well	7.2
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ Setting (ft bmp) PACKER PRESSURE	90 PSI
Purge Time	begin 1410 end 1510
Pumping Rate (gpm)	
Evacuation Method	ded. bladder pump

Field Parameters

Field Parameters	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	7.14	6.97	6.88	6.91
Conductivity (mS/cm)				
(µmhos/cm)	114.7	110.4	114.5	113.1
Turbidity (NTU)				5.8
Temperature (°C)	18.6	17.5	16.6	17.2
Dissolved Oxygen (mg/L)				

Salinity (%):

Sampling Method:

Remarks: 5 GAL PAILS: 11 1/2

DTW: 45.31'

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: MS, 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: N4001321.0001 Task: 00002 Well ID: GM-18D
Date: 28 SEPT 2001 Sampled By: MS GW
Sampling Time: 1710 Recorded By: MS
Weather: 65° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate: 450 mL/min
Total Depth: 300' Total Volume Purged: 12 gal
Depth to Water: 49.00 Pump Intake Depth
Water Column: Pump on: 1535 Off: 1710
Gallons/Foot: Parameters Sampled: SEE COC.
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1540	450			216	6.85	217	16.9	49.00	7.10	
1545				271	6.86	212	16.8		7.2	
1550				257	6.93	115	17.1		6.6	
1555				227	7.02	113.3	17.2	49.01	7.10	
1600				218	7.00	112.4	17.3		6.5	
1605				221	6.92	111.7	17.3		7.1	
1610				227	6.86	111.5	17.2	49.01	7.3	
1615				236	6.72	111.1	17.2		6.8	
1620				240	6.74	110.9	17.3		7.0	
1625				244	6.70	110.9	17.2	49.02	7.0	
1630			220	241	6.68	110.8	17.10		7.1	
1635			170	249	6.70	110.9	16.9		7.1	
1640			140	250	6.70	110.8	16.9	49.02	7.1	
1645			110	251	6.68	110.8	16.9		7.2	
1650			90	261	6.66	110.8	16.9		7.2	
1655			70	251	6.66	110.0	16.8	49.02	7.1	
1700			55	251	6.66	110.2	16.8		7.2	
1705			45	252	6.65	110.2	16.8		7.2	

Well Secure: Purge Water Disposal: → NC Sewer
Color: colorless ; odorless Turbidity(qualitative): slight

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 1 OCT 2001

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

Weather: 50° RAINY | Sampling Time: Begin 0915 End 1040

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	140'
Depth to Water (ft bmp)	129'
Water-Level Elevation (ft)	
Water Column in Well (ft)	11'
Casing Diameter/Type	4"
Gallons in Well	7.2
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ PACKER ~~Setting (ft bmp)~~ PRESSURE	90 PSI
Purge Time	begin 0930 end 1040
Pumping Rate (gpm)	
Evacuation Method	DED. BLADDER PUMP

Field Parameters

	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	8.00	9.59	9.85	10.07
Conductivity (mS/cm)				
(µmhos/cm)	134.7	237	154.2	148.4
Turbidity (NTU)				9.7
Temperature (°C)	15.8	15.5	14.8	15.3
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: PUMP DISCHARGE

Remarks: 5 GAL PAILS: 1111 1/2

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW: 37.96'			

Sampling Personnel: M.S.

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.: N4001321.0001.0002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 1 OCT 2001

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

Weather: 60° RAINY | Sampling Time: Begin 1155 End 1310

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	105'
Depth to Water (ft bmp)	94'
Water-Level Elevation (ft)	
Water Column in Well (ft)	11'
Casing Diameter/Type	4"
Gallons in Well	7.2
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ Setting (ft bmp)	PACKER PRESSURE [redacted] 70 PSI
Purge Time	begin 1200 end 1310
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER PUMP

Field Parameters

	I	1V	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	10.81	10.96	11.41	11.54
Conductivity (mS/cm)				
(µmhos/cm)	221	348	389	414
Turbidity (NTU)				13
Temperature (°C)	16.5	15.2	15.2	15.2
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method:

Remarks: 5 GAL PAILS: 1111 1/2

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW 37.66			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: N000321.0004.00002 | Page: 1 of ____

Site Location: ____ | Date: 1 OCT 2001

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

Weather: 60° RAINY | Sampling Time: Begin 1320 End 1445

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	226'
Depth to Water (ft bmp)	215'
Water-Level Elevation (ft)	
Water Column in Well (ft)	11
Casing Diameter/Type	~~2"~~
Gallons in Well	~~22~~ 7.2
Gallons Pumped/Bailed Prior to Sampling	~~[illegible] 25~~ 22
Sample Pump Intake Setting (ft bmp)	105 PSI
Purge Time	begin 1325 end 1440
Pumping Rate (gpm)	
Evacuation Method	DED BLADDER PUMP

Field Parameters

Field Parameters	I	1V	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	10.36	10.01	9.92	9.87
Conductivity (mS/cm)	~~120.0~~			
(µmhos/cm)	120	1147	1639	1623
Turbidity (NTU)				1.1
Temperature (°C)	16.2	13.8	13.2	13.1
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: ____

Remarks: 5 GAL PAILS: 1 1/2

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
DTW 40.25			

Sampling Personnel: MS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: GM-23S

Date: 2 OCT 2001 Sampled By: MS GW

Sampling Time: 1650 Recorded By: MS

Weather: 75° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Redi flow

Casing Diameter: 4" Purge Rate: 400 mL/min

Total Depth: 55.65 Total Volume Purged: 4 gal

Depth to Water: 53.40 Pump Intake Depth

Water Column: Pump on: 1615 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
1615	400		21.7	258	5.66	216.2	19.5	53.40	7.68	
1620			12.9	252	5.64	220.5	19.1	53.51	7.57	
1625			1.1	243	5.65	224.5	19.9	53.52	7.54	
1630			0.0	236	5.65	229.1	21.1	53.54	7.12	
1635			0.0	231	5.66	232.1	22.0	53.54	6.96	
1640			0.0	229	5.67	234.3	22.7	53.56	6.83	
1646			0.0	228	5.67	235.6	23.0	53.56	6.86	

Well Secure: Purge Water Disposal: → DPW sewer

Color: Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: NY001321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 2 OCT 2001

Site/Well No.: GM-23I | Replicate No.: | Code No.:

Weather: 70° SUNNY | Sampling Time: Begin 1400 End 1530

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	120'
Depth to Water (ft bmp)	109'
Water-Level Elevation (ft)	
Water Column in Well (ft)	11
Casing Diameter/Type	4"
Gallons in Well	7.2
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ PACKER Setting (ft bmp) PRESSURE	70 PSI
Purge Time	begin 1430 end 1530
Pumping Rate (gpm)	
Evacuation Method	DEDICATED BLADDER

Field Parameters

Field Parameters	I	1V	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	5.58	5.16	5.06	5.10
Conductivity (mS/cm)				
(µmhos/cm)	273	273	278	261
Turbidity (NTU)				0.95
Temperature (°C)	21	22	21.5	22
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method:

Remarks: 5 GAL PAILS: 1111 ½

DTW: 53.03'

CRA TOOK BIO/GEO SAMPLES

Constituents Sampled	Container Description	Number	Preservative
SEE COC			

Sampling Personnel: MS 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. N4001321.0001.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 2 OCT 2001

Site/Well No.: GM-17SR | Replicate No.: | Code No.:

Weather: 60° SUNNY | Sampling Time: Begin 0900 End 1020

Evacuation Data	
Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	70'
Depth to Water (ft bmp)	47.70
Water-Level Elevation (ft)	
Water Column in Well (ft)	22.3'
Casing Diameter/Type	4"
Gallons in Well	15
Gallons Pumped/Bailed Prior to Sampling	45
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 0925 end 1015
Pumping Rate (gpm)	Q = 1 gpm ; T = 15 min
Evacuation Method	Redi flo sub.

Field Parameters	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	6.98	6.61	6.74	6.37
Conductivity (mS/cm)	222	227	229	230
(µmhos/cm)				
Turbidity (NTU)				1.1
Temperature (°C)	—	19	20.5	20.5
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ TIME	0925	0939	0955	1010

Sampling Method:

Remarks: CRA TOOK BIO/GEO SAMPLES AFTER AGM SAMPLING

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: MS 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: NM001321.0001 Task: 00002 Well ID: GM-17I
Date: 2 OCT 2001 Sampled By: MS | GW
Sampling Time: 1130 Recorded By: MS
Weather: 65° SUNNY Coded Replicate No.:
CRA TOOK BIO/GEO SAMPLES AFTER AGM SAMPLING

WELL IMFORMATION

Casing Material: PVC Purge Method: Redi flow
Casing Diameter: 4" Purge Rate: 360 mL/min
Total Depth: 120' Total Volume Purged: 7 gal
Depth to Water: 47.75 Pump Intake Depth 115'
Water Column: Pump on: 1050 Off: 1135
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
1055	360		16.2	178	5.93	83.9	21.1	47.75	6.92	
1100			32.8	183	5.84	87.2	21.4	48.13	6.62	
1105			17.3	184	5.80	87.7	22.2	47.90	6.09	
1110			5.4	186	5.79	87.8	22.3		6.48	
1115			10.2	188	5.78	87.7	22.4	48.20	6.55	
1120			4.5	190	5.77	87.9	22.6	47.80	6.41	
1125		7	1.7	193	5.76	87.6	22.6	47.89	6.43	

Well Secure:
Color: colorless
odorless
Purge Water Disposal: → NC Sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: GM-17D
Date: 2 OCT 2001 Sampled By: MS GW
Sampling Time: 1240 Recorded By: MS
Weather: 70° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate: 400 mL/min
Total Depth: ~~[illegible]~~ 298' Total Volume Purged: 7 gal
Depth to Water: 51.91 Pump Intake Depth 288'
Water Column: Pump on: 1150 Off: 1250
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
1155	450		4.6	213	5.65	89.7	22.0	51.91	4.70	
1200			0	215	5.56	80.9	22.0	51.93	2.66	
1205			0	237	5.02	73.7	21.7	~~51.93~~	3.48	
1210				222	5.15	79.9	21.8	51.93	6.67	
1215			40.8	214	5.24	80.9	21.9		7.67	
1220			15.7	234	4.94	80.3	21.9	51.95	7.07	
1225			1.2	248	4.90	80.4	21.9		7.42	
1230			7.2	252	4.95	80.6	21.8	51.96	7.41	
1235			0	259	4.91	80.7	21.8		6.74	
1240		7 gal	0	262	4.89	80.4	21.9	51.97	7.58	

Well Secure:
Color: colorless
colorless

Purge Water Disposal: DPW sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N00321.0001 Task: 000023 (VCM) Well ID: MW-525
Date: 3 OCT 2001 Sampled By: MS GN
Sampling Time: 1655 Recorded By: MS
Weather: 75° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: Purge Method: low flow
Casing Diameter: 2" Purge Rate: 500 mL/min
Total Depth: Total Volume Purged: 7 gal
Depth to Water: 58.52 Pump Intake Depth
Water Column: Pump on: 1620 Off: 1700
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
1620	500		572.4	+92	6.21	9.5	21.03	58.52	7.86	
1625			510.0	+183	6.24	4.1	17.88	—	7.12	
1630			+1000	+106	6.41	20.3	17.14	58.52	2.87	
1635			+1000	+99	6.46	26.7	17.34	58.52	2.84	
1640			+1000	+93	6.48	34.3	17.34	—	2.30	
1645			+1000	+97	6.52	37.2	17.27	—	2.39	
1650			842.7	+100	6.49	39.0	17.25	—	2.30	
1655		7 gal	700.1	+104	6.47	42.6	16.93	58.52	2.22	

Well Secure: Purge Water Disposal: To DPW Sewer
Color: odorless, odorless Turbidity(qualitative): turbid

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N00132.0001 Task: 00002 Well ID: MW-52I
Date: 3 OCT 2001 Sampled By: MS GN
Sampling Time: 1545 Recorded By: MS
Weather: 75° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: Purge Method: low flow Waddan
Casing Diameter: 2" Purge Rate: 490 mL/min
Total Depth: Total Volume Purged: 5 gal
Depth to Water: 58.47 Pump Intake Depth
Water Column: Pump on: 1515 Off: 1550
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
1520	490		46.2	+201	5.48	96.7	17.16	58.49	0.85	
1525	↓		96.0	+214	5.11	86.0	17.16	58.49	0.61	
1530			43.5	+217	5.00	85.4	17.42	↓	0.61	
1535			24.2	+211	5.02	85.3	17.46		0.63	
1540			9.3	+205	5.05	86.4	17.36		0.59	
1545	↓	5 gal	1.9	+203	5.08	87.0	17.18	↓	0.59	

Well Secure:
Color: colorless; odorless
Purge Water Disposal: → DPW Sewer
Turbidity(qualitative): clear

PID 0.0

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: MW-52D
Date: 3 OCT 2001 Sampled By: MS GN
Sampling Time: 1420 Recorded By: MS
Weather: 75° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 2" Purge Rate: 500 ml/min
Total Depth: Total Volume Purged: 7 gal
Depth to Water: 59.91 Pump Intake Depth
Water Column: Pump on: 1315 Off: 1430
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
13:15	500		65.3	+263	5.82	245.1	19.08	59.91	3.80	
13:20	↓		74.9	+264	5.75	244.3	18.55		2.03	
13:25			29.2	+265	5.40	236.0	17.01	59.91	0.71	
13:30			56.4	+244	5.65	228.2	17.15		0.75	
13:35			+1000	+225	5.74	231.7	17.18		1.35	
13:40			+1000	+260	5.16	255.5	16.86		2.74	
13:45			+1000	+263	5.12	253.6	17.11		2.78	
13:50			+1000	+274	5.14	251.9	17.04		3.14	
13:55			+1000	+276	5.12	251.2	16.85		2.87	
1400			+1000	+279	5.08	251.8	16.68		3.07	
1405			+1000	+283	5.06	250.1	16.73		3.31	
1410			+1000	+285	5.06	247.9	16.77		3.72	
1415			+1000	+287	5.03	244.4	16.71		3.21	
1420		7	+1000	+289	5.06	243.1	16.52	59.90	3.48	

Well Secure: Purge Water Disposal: → DPW sewer
Color: colorless odorless Turbidity(qualitative): turbid

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: NORTHROP GRUMMAN Project No. NY001321.0001.00002 Page 1 of ____

Site Location: BETHPAGE NY Date: 10-3-01

Site/Well No.: 6M-16SR Replicate No. ____ Code No. ____

Weather: CLEAR 75° Sampling Time: Begin 9:45 End ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	70.00
Depth to Water (ft bmp)	50.92
Water-Level Elevation (ft)	
Water Column in Well (ft)	19.08
Casing Diameter/Type	4 (0.65)
Gallons in Well	12.50
Gallons Pumped/Bailed Prior to Sampling	38
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 9:58 end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	IV	2V	5V
Color				COLORLESS
Odor				NONE
Appearance				CLEAR
pH (s.u.)	6.93	6.76	6.70	6.75
Conductivity ~~(mS/cm)~~ (µmhos/cm)	134.1	126.8	132	134.0
Turbidity (NTU)			5.9	3.0
Temperature (°C)	19.3	20.2	18.2	18.2
Dissolved Oxygen (mg/L)	9:58	10:10	10:22	10:36
Salinity (%)				
Sampling Method				

Remarks: Q=1 T=38 V=12

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: NORTHROP GRUMMAN Project No. NY001321.0001.00002 Page 1 of ____

Site Location: BETHPAGE NY Date: 10-3-01

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

Weather: CLEAR 75° Sampling Time: Begin 8:15 End 9:30

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	145.00
Depth to ~~Water~~ PACKER (ft bmp)	134.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	11.00
Casing Diameter/Type	4 (0.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	22
Sample Pump Intake Setting (ft bmp)	90
Purge Time	begin 8:30 end 9:25
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	1J	2J	3J
Color				COLORLESS
Odor				NONE
Appearance				CLEAR
pH (s.u.)	7.83	7.60	7.50	7.42
Conductivity ~~(mS/cm)~~ (µmhos/cm)	283	307	314	315
Turbidity (NTU)				26
Temperature (°C)	17.0	16.9	17.3	17.2
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: DEDICATED BLADDER PUMP

Remarks: 5 GAL PAILS 1 1/2

Constituents Sampled	Container Description	Number	Preservative
SEE COC			

Sampling Personnel: G. WILLIAMS

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. NY001321.0001.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 4 OCT 2001

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

Weather: 75° SUNNY | Sampling Time: Begin 1500 End 1540

Evacuation Data	
Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67'
Depth to Water (ft bmp)	42.44
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	2" (0.16)
Gallons in Well	4
Gallons Pumped/Bailed Prior to Sampling	12
Sample Pump Intake Setting (ft bmp)	62'
Purge Time	begin 1522 end 1536
Pumping Rate (gpm)	Q= 1 gpm T= 12
Evacuation Method	Sedi flow

Field Parameters	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			slightly tur	
pH (s.u.)	6.45	5.77	5.61	5.56
Conductivity (mS/cm)				
(µmhos/cm)	115	120	120	120
Turbidity (NTU)				26
Temperature (°C)	17.5	17.5	18.0	17.5
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ TIME	1522	1526	1530	1534

Sampling Method:

Remarks:

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.	→ DPW sewer		

Sampling Personnel: MS 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: N4001321.0001 Task: 00002 Well ID: HN-29I
Date: 4 OCT 2001 Sampled By: MS GW
Sampling Time: 1200 Recorded By: MS
Weather: 70° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow/ redi flow
Casing Diameter: 4" Purge Rate: 500 mL/min
Total Depth: 140 ~~158~~' Total Volume Purged: 7 gal
Depth to Water: 51.10' Pump Intake Depth 153'
Water Column: Pump on: 1115 Off: 1205
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
1115	500			60	10.59	319	19.3	51.10	7.4	
1120				—	—	—	—	—	—	
1125				26	11.61	3605	18.1	53.32	7.4	
1130				23	11.74	3616	18.4	54.15	7.5	
1135				23	11.79	3605	19.0	54.04	8.3	
1140				26	11.83	3566	18.2	54.45	7.5	
1146				26	11.87	351	19.0	54.16	7.7	
1150				26	11.90	347	19.0	54.10	7.6	
1155				27	11.89	339	18.9	54.14	7.7	
1200		7gal	5.1	28	11.86	329	19.6	54.11	7.16	

Well Secure: Purge Water Disposal: ⇒ DPW sewer
Color: colorless ; odorless Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4001321.0001 Task: 00002 Well ID: HN-29D
Date: 4 OCT 2001 Sampled By: MS GW
Sampling Time: 1105 Recorded By: MS
Weather: 70° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate: 500 mL/min
Total Depth: 230 Total Volume Purged: 11 gal
Depth to Water: 51.46 Pump Intake Depth 226'
Water Column: Pump on: 0950 Off: 1110
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
0955	500			205	7.80	162.0	18.8	51.46	9.4	
1000				195	8.56	153.5	18.0	—	7.6	
1006				152	8.82	146.9	18.0	—	7.0	
1010				163	8.69	144.3	17.9	51.46	6.7	
1015				171	8.66	142.6	17.9	—	6.9	
1020				178	8.54	141.2	17.9	—	6.9	
1025				181	8.47	140.5	18.0	51.45	6.9	
1030				184	8.31	139.5	18.0	—	6.9	
1035				191	8.28	138.1	18.0	—	7.0	
1040				195	8.20	136.1	18.0	51.45	7.0	
1045				201	8.02	133.0	18.0	—	7.0	
1050				205	7.94	134.0	18.0	—	7.1	
1055				211	7.75	134.8	18.1	51.44	6.8	
1100				215	7.65	130.4	18.1	—	7.1	
1105		11 gal	8.3	218	7.62	130.0	18.0	—	7.1	

Well Secure: Purge Water Disposal: → DPW sewer
Color: colorless, odorless Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: HN-24I
Date: 4 OCT 2001 Sampled By: MS GW
Sampling Time: 1335 Recorded By: MS
Weather: 78° SUNNY Coded Replicate No.: REP 2 ; MS/MSD

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow / redi flow
Casing Diameter: 4" Purge Rate: 500 mL/min
Total Depth: 168 Total Volume Purged: 7 gal
Depth to Water: 60.13 Pump Intake Depth 153
Water Column: Pump on: 1245 Off: 1340
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
1250	500			162	—	544	—	60.13	5.2	
1255				182	7.05	260	20.5	—	4.0	
1300				186	6.76	255	20.5	—	3.8	
1305				183	6.65	255	20.2	60.30	3.6	
1310				175	6.55	250	21.0	—	3.5	
1315				168	6.43	250	21.0	—	3.4	
1320				163	6.33	245	21.0	60.23	3.4	
1325				161	6.27	245	22.5	—	3.3	
1330				161	6.23	245	23.0	—	3.2	
1335		7 gal	21	163	6.20	245	23.0	60.25	3.3	

Well Secure:
Color: colorless; colorless
Purge Water Disposal: ⇒ DPW sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. NY001321.0001.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 4 OCT 2001

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

Weather: 65° SUNNY | Sampling Time: Begin 0845 End 0910

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	64'
Depth to Water (ft bmp)	60.28
Water-Level Elevation (ft)	
Water Column in Well (ft)	3.72
Casing Diameter/Type	2" (.16)
Gallons in Well	.6
Gallons Pumped/Bailed Prior to Sampling	3
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 0900 end 0910
Pumping Rate (gpm)	Q=0.6 gpm T=1
Evacuation Method	

Field Parameters

	I	1V	2V	3V	4V	5V
Color				colorless		
Odor				odorless		
Appearance				clear		
pH (s.u.)	7.86	7.75	7.64	7.62	7.60	7.61
Conductivity (mS/cm)						
(µmhos/cm)	240	230	246	239	249	244
Turbidity (NTU)						150
Temperature (°C)	17.8	17.8	17.4	17.4	17.4	17.1
Dissolved Oxygen (mg/L)						
~~Salinity (%)~~ TIME	9:01	9:02	9:03	0904	0905	0907
Sampling Method						
Remarks						

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: MS, 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. NY001321.0001.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 5 OCT 2001

Site/Well No.: HN-~~25~~ 42S | Replicate No. | Code No.

Weather: 65° SUNNY | Sampling Time: Begin 1115 End 1146

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	60'
Depth to Water (ft bmp)	55.38'
Water-Level Elevation (ft)	
Water Column in Well (ft)	4.6
Casing Diameter/Type	4" (0.65)
Gallons in Well	3
Gallons Pumped/Bailed Prior to Sampling	9
Sample Pump Intake Setting (ft bmp)	59'
Purge Time	begin 1123 end 1143
Pumping Rate (gpm)	Q = 1/2 gpm T = 10 min
Evacuation Method	Peri flow

Field Parameters

Field Parameters	I	IV	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	7.41	6.75	6.50	6.40
Conductivity (mS/cm)				
(µmhos/cm)	175	185	185	185
Turbidity (NTU)				8.5
Temperature (°C)	18.0	18.0	17.5	18.0
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ TIME	1123	1129	1135	1141
Sampling Method				

Remarks

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C	→ DPW Sewer		

Sampling Personnel: MS, 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: N4001321.0001 Task: 00002 Well ID: HN42I
Date: 5 OCT 2001 Sampled By: MS GW
Sampling Time: 1105 Recorded By: MS
Weather: 65° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow
Casing Diameter: 4" Purge Rate: 400 ml/min
Total Depth: 110 Total Volume Purged:
Depth to Water: 53.00 Pump Intake Depth 105
Water Column: Pump on: 1020 Off: 1110
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
1020	400			-8	11.87	650	18.5	53.00	7.9	
1025				-23	12.02	650	18.0	—	5.7	
1030				-20	12.03	625	18.5	54.80	5.5	
1035				-15	12.01	600	18.5	54.80	5.9	
1040				-17	11.99	600	19.0	—	4.9	
1045				-8	11.96	550	19.0	54.78	4.8	
1050				-6	11.94	550	19.5	—	4.7	
1055				-3	11.90	525	19.5	54.77	4.5	
1100				-1	11.89	500	19.0	—	4.3	
1105		5	25	1	11.87	500	19.5	54.78	4.4	
WMD										

Well Secure:
Color: colorless; odorless
Purge Water Disposal: → DPW Sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No.: N100|321.0001.00002 | Page: 1 of 1

Site Location: BETHPAGE, NY | Date: 5 OCT 2001

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

Weather: 70° SUNNY | Sampling Time: Begin 1200 End 1250

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	59
Depth to Water (ft bmp)	52.62
Water-Level Elevation (ft)	
Water Column in Well (ft)	6.5
Casing Diameter/Type	4" (0.65)
Gallons in Well	4 gal
Gallons Pumped/Bailed Prior to Sampling	12
Sample Pump Intake Setting (ft bmp)	Q= ½gpm ; T=8
Purge Time	begin 1214 end 1240
Pumping Rate (gpm)	
Evacuation Method	Peri flow

Field Parameters

	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	6.36	5.90	5.81	5.75
Conductivity (~~mS/cm~~)	90	90	95	95
(µmhos/cm)				
Turbidity (NTU)				4.4
Temperature (°C)	18.5	19.0	18.5	19.0
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ TIME	1214	1222	1230	1238

Sampling Method:

Remarks:

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: MS, 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: N4001321.0001 Task: 00002 Well ID: HN-40 I
Date: 5 OCT 2001 Sampled By: MS GW
Sampling Time: 1340 Recorded By: MS
Weather: 70° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow
Casing Diameter: 4" Purge Rate: 500 mL/min
Total Depth: ~~118~~ Total Volume Purged: 7 gal
Depth to Water: 52.40 Pump Intake Depth 113
Water Column: Pump on: 1255 Off: 1345
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
1255	500			144	6.12	175	21.0	52.40	6.4	
1300				168	5.98	165	18.5	—	6.1	
1305				206	5.98	165	18.0	52.50	6.0	
1310				207	5.90	165	18.0	—	6.9	
1315				208	5.84	160	18.0	52.48	6.6	
1320				214	5.79	170	18.0	—	6.6	
1325				217	5.76	160	18.0	52.48	6.5	
1330				222	5.70	165	18.0	—	6.4	
1335				229	5.69	165	18.5	52.48	6.3	
1340		7 gal	29	233	5.67	165	18.0	—	6.4	

Well Secure:
Color: colorless / odorless
Purge Water Disposal: → DPW sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. N400132.0001.00002 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 8 OCT 2001

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

Weather: 50° SUNNY | Sampling Time: Begin 0920 | End

Evacuation Data

Measuring Point	T.O.C.
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	50.71
Depth to Water (ft bmp)	44.66
Water-Level Elevation (ft)	~~0.05~~
Water Column in Well (ft)	6.05
Casing Diameter/Type	4" (0.165)
Gallons in Well	4 gal
Gallons Pumped/Bailed Prior to Sampling	12
Sample Pump Intake Setting (ft bmp)	Q=1 gpm T= 4 min
Purge Time	begin 0953 end 1010
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	6.73	6.41	6.35	6.35
Conductivity (mS/cm)				
(µmhos/cm)	260	270	255	260
Turbidity (NTU)				
Temperature (°C)	14.5	14.5	16.0	15.5
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ TIME	0953	0958	1002	1006

Sampling Method:

Remarks:

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			
SVE INF/EFF AIR SAMPLES TAKEN			

Sampling Personnel: MS 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: NN001321.0001.00002 | GRUMMAN Project No.: _____ | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 8 OCT 2001

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

Weather: 50° SUNNY | Sampling Time: Begin 1600 End 1640

Evacuation Data

Measuring Point	T.O.C.
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	80'
Depth to Water (ft bmp)	47.79
Water-Level Elevation (ft)	
Water Column in Well (ft)	33
Casing Diameter/Type	4" (0.65)
Gallons in Well	22
Gallons Pumped/Bailed Prior to Sampling	66
Sample Pump Intake Setting (ft bmp)	~ 75'
Purge Time	begin 1600 end 1635
Pumping Rate (gpm)	Q=2 gpm; T=11
Evacuation Method	2" Redi flo

Field Parameters

Field Parameters	I	IV	2V	3V
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	4.97	5.15	5.11	5.05
Conductivity (mS/cm)				
(µmhos/cm)	290	305	305	305
Turbidity (NTU)				4.8
Temperature (°C)	16.0	16.5	16.0	16.0
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ TIME	1600	1611	1622	1633

Sampling Method: _____

Remarks: _____

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: MS 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: NY001321.0001 Task: 00002 Well ID: GM-16D
Date: 8 OCT 2001 Sampled By: MS GW
Sampling Time: 1550 Recorded By: MS
Weather: 50° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate: 450 mL/min
Total Depth: 342 Total Volume Purged: 10 gal
Depth to Water: 50.87 Pump Intake Depth 335
Water Column: Pump on: 1450 Off: 1555
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
1450	450			252	5.39	130	16.5	50.87	5.8	
1455				216	5.26	130	16.5	—	2.1	
1500				240	4.98	126	17.5	50.87	0.6	
1506				254	4.96	130	17.5	—	0.5	
1510				163	5.69	140	17.0	50.87	0.6	
1515				146	5.48	145	17.0	—	1.1	
1520				182	5.22	140	17.5	50.87	1.1	
1525				208	5.02	140	17.5	—	1.0	
1530				223	4.94	140	17.5	50.87	1.2	
1535				229	4.97	140	17.0	—	1.0	
1540				238	4.86	140	17.0	50.87	1.1	
1545				244	4.84	140	17.0	—	1.1	
1550		10gal	12	248	4.82	140	17.0	50.87	1.1	

Well Secure:
Color: Colorless; odorless
Purge Water Disposal: → DPW sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4001321.0001 Task: 00002 Well ID: GM-73DZ
Date: 9 OCT 2001 Sampled By: MS GW
Sampling Time: ~~1~~ 1515 Recorded By: MS
Weather: 60° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 552 Total Volume Purged: 12 gal
Depth to Water: 50.75 Pump Intake Depth 542
Water Column: Pump on: 1400 Off: 1520
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
1400	450			233	5.78	105	17.5	50.75	4.7	
1405				223	5.79	100	17.5	—	1.2	
1410				229	5.63	95	17.5	50.84	0.6	
1415				229	5.63	95	17.5	[redacted]	0.4	DTW 50.79
1420				226	5.61	95	17.5	—	0.4	
1425				216	5.65	95	17.5	50.76	0.5	
1430				195	5.45	100	17.5	—	1.9	
1435				194	5.37	110	17.5	50.75	2.8	
1440				203	5.21	105	17.5	—	3.2	
1446				214	5.14	106	17.5	50.75	3.6	
1450				222	5.08	110	17.5	—	3.6	
1455				226	5.16	105	17.5	—	3.9	
1500			150	227	5.09	105	17.5	50.75	3.9	
1505			130	227	5.11	105	17.0	—	3.9	
1510			120	224	5.11	105	17.5	—	3.8	
1515		12	130	227	5.15	105	17.5	50.75	4.1	

Well Secure: Purge Water Disposal: D DPW Sewer
Color: colorless; odorless Turbidity(qualitative): turbid

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: GM-74I
Date: 9 OCT 2001 Sampled By: MS GW
Sampling Time: 1010 Recorded By: MS
Weather: 50° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow redi flow
Casing Diameter: 4" Purge Rate: 450 mL/Min
Total Depth: 114 Total Volume Purged: 8 gal
Depth to Water: 40.92 Pump Intake Depth 104
Water Column: Pump on: 0915 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
0915	450			244	7.49	75	15.0	40.92	8.2	
0920				244	7.14	75	16.0	—	7.2	
0925				249	6.40	75	17.0	41.04	6.8	
0930				248	6.06	75	17.5	—	6.7	
0935				246	5.91	75	18.0	41.05	6.8	
0940				246	5.85	75	18.5	—	6.8	
0945				247	5.80	75	18.6	41.06	6.5	
0950				248	5.79	75	19.0	—	6.4	
0955				249	5.75	80	19.0	41.06	6.7	
1000		8 gal	6.3	250	5.73	80	19.0	—	6.7	

Well Secure: Purge Water Disposal: → DPW sewer
Color: Turbidity(qualitative):

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4001321.0001 Task: 00002 Well ID: N-10627
Date: 10 OCT 2001 Sampled By: MS, KS
Sampling Time: 0945 Recorded By: MS
Weather: ~50° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate: 450 mL/min
Total Depth: 295 Total Volume Purged: 8 gal
Depth to Water: 35.01 Pump Intake Depth 292'
Water Column: Pump on: 0840 Off: 0945
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
0840	450			217	5.47	60	14.5	35.01	9.3	
0846				207	6.63	50	15.0	—	9.0	
0850				147	8.14	40	16.0	37.01	8.9	
0855				95	8.74	40	16.0	—	8.8	
0900				20	8.77	45	16.5	37.17	9.0	
0905				-62	9.20	45	16.5	—	9.1	
0910				-88	9.33	45	17.0	37.27	9.1	
0915				Ur	9.36	50	17.5	—	9.1	Ur=under range
0920				Ur	9.29	50	18.0	37.27	9.0	
0925				Ur	9.31	55	17.5	—	8.9	
0930				Ur	9.28	55	18.0	37.27	8.7	
0935				Ur	9.20	60	18.0	—	8.5	
0940	↓	8gal	110	Ur	9.20	60	18.0	37.29	8.4	

Well Secure: Purge Water Disposal: → DPW sewer
Color: black odorless Turbidity(qualitative): turbid

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: GM-75D2
Date: 10 OCT 2001 Sampled By: MS KS
Sampling Time: 1115 Recorded By: MS
Weather: 60° SUNNY Coded Replicate No.: DEP3

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow Madden
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 525 Total Volume Purged:
Depth to Water: 39.20 Pump Intake Depth 520'
Water Column: Pump on: 1010 Off: 1115
Gallons/Foot: Parameters Sampled: SEE C.O.C.
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1010	450			182	6.90	115	17.5	39.20	7.3	
1015				200	6.70	120	17.5	—	7.3	
1020				273	6.19	120	18.0	39.21	7.3	
1025				216	5.83	120	18.0	—	7.0	
1030				217	5.85	120	18.0	39.21	7.0	
1035				208	5.98	120	18.0	—	7.0	
1040				200	5.79	125	18.0	39.18	7.0	
1045				167	5.54	130	18.0	—	6.8	
1050				174	5.45	130	18.0	39.18	6.9	
1055				198	5.30	130	18.5	—	7.0	
1100				217	5.11	130	18.5	39.16	7.0	
1105				232	5.04	130	18.5	—	6.8	
1110	↓	8 gal	5.4	240	4.99	130	18.5	39.16	6.9	

Well Secure:
Color: colorless odorless
Purge Water Disposal: → DPW sewer
Turbidity(qualitative): clear

PID 1.7

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: GM-34D[redacted]
Date: 10 OCT 2001 Sampled By: MS KS
Sampling Time: 1440 Recorded By: MS
Weather: 70° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: STEEL Purge Method: low flow bladder
Casing Diameter: [redacted] 2" Purge Rate: 450 mL/min
Total Depth: [redacted] 319 Total Volume Purged: 8 gal
Depth to Water: 17.98 Pump Intake Depth 314
Water Column: Pump on: 1340 Off: 1445
Gallons/Foot: Parameters Sampled: SEE C.O.C.
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1340	450			-40	8.34	70	16.5	17.98	2.9	
1345	"			-85	8.64	70	17.0	—	0.9	
1350				Ur	8.90	70	17.0	18.20	0.7	
1355				Ur	9.01	70	17.0	—	0.5	
1400				Ur	9.19	70	17.0	18.15	0.4	
1405				Ur	8.12	75	17.0	—	0.3	
1410				-89	7.45	75	16.5	17.95	0.5	
1415				-63	7.17	75	17.0	—	0.4	
1420				-32	6.92	75	16.5	17.97	0.4	
1425				-18	6.82	75	16.5	—	0.4	
1430				0	6.64	70	16.6	17.96	0.4	
1435				10	6.58	75	16.5	—	0.2	
1440	↓	8 gal	16	15	6.53	75	16.5	17.99	0.4	

Well Secure:
Color: colorless odorless
Purge Water Disposal: DPW sewers
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: GM-79I
Date: 11 OCT 2001 Sampled By: MS KS
Sampling Time: 1125 Recorded By: MS
Weather: 60° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Geotech flo low flow
Casing Diameter: 4" Purge Rate: 500 mL/min
Total Depth: 180' Total Volume Purged: 10 gal
Depth to Water: 43.83 Pump Intake Depth 175'
Water Column: Pump on: 1020 Off: 1130
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
1025	400			240	5.79	160	16.5	43.83	4.2	
1030	500			244	5.66	160	17.0	—	3.1	
1035				243	5.60	155	17.0	44.03	2.1	
1040				226	5.86	175	16.0	—	1.2	
1045				225	5.53	175	16.0	44.05	1.0	
1050				232	5.41	175	17.0	—	1.1	
1055				236	5.39	175	17.0	43.92	1.1	
1100				243	5.35	175	16.5	—	1.3	
1105				247	5.30	175	16.0	43.94	1.4	
1110				250	5.26	176	16.5	—	1.5	
1115				253	5.28	175	16.0	43.94	1.6	
1120				256	5.25	175	16.5	—	1.6	
1125	↓	10 gal	15	268	5.23	175	16.0	43.92	1.6	

Well Secure:
Color: colorless odorless
Purge Water Disposal: → DPW sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001321.0001 Task: 00002 Well ID: GM-79D
Date: 11 OCT 2001 Sampled By: MS KS
Sampling Time: 1235 Recorded By: MS
Weather: 65° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow bladder
Casing Diameter: 4" Purge Rate: 450 mL/min
Total Depth: 290 Total Volume Purged: 10 gal
Depth to Water: 45.65 Pump Intake Depth 285'
Water Column: Pump on: 1135 Off: 1240
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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	450			252	5.54	86	15.5	45.65	3.7	
1140				256	5.43	85	15.0	—	1.9	
1145				257	5.33	80	15.5	45.77	1.3	
1150				180	5.52	80	15.5	—	1.2	
1155				179	5.40	75	15.5	45.65	1.3	
1200				180	5.34	75	15.5	—	1.3	
1205				191	5.18	75	15.5	45.65	1.4	
1210				202	5.17	75	15.5	—	1.4	
1215				207	5.16	75	15.5	45.65	1.3	
1220				208	5.16	75	15.0	—	1.2	
1225				211	5.17	75	15.5	45.65	1.1	
1230				212	5.13	75	15.0	—	1.1	
1235	↓	10 gal	800 (VOC only)	213	5.12	75	15.0	45.66	1.2	

Well Secure:
Color: colorless odorless
Purge Water Disposal: → DPW sewer
Turbidity(qualitative): v. turbid

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4001321.0001 Task: 00002 Well ID: GM-13D
Date: 11 OCT 2001 Sampled By: MS KS
Sampling Time: 0935 Recorded By: MS
Weather: 60° SUNNY Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: low flow ded bladder
Casing Diameter: 4" Purge Rate: 450
Total Depth: 210 Total Volume Purged: 7 gal
Depth to Water: 50.78 Pump Intake Depth
Water Column: Pump on: 0830 Off: 0940
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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
0835	450			154	6.51	80	16.5	50.78	4.9	
0840	"			207	5.92	85	16.5	—	3.4	
0845				216	5.74	90	16.5	50.77	2.2	
0850				223	5.67	90	16.0	—	0.8	
0855				227	5.63	90	16.5	50.79	0.7	
0900				232	5.59	90	16.0	—	[redacted]	→0.6
0905				234	5.58	90	16.0	50.83	0.6	
0910				236	5.57	90	16.0	—	0.5	
0916				237	5.57	90	16.0	50.78	0.4	
0920				240	5.57	90	16.0	—	0.4	
0925				241	5.58	90	16.0	50.79	0.4	
0930				241	5.57	90	16.0	—	0.4	
0935	↓	7 gal	2.3	242	5.56	90	16.0	50.81	0.4	

Well Secure:
Color: colorless odorless
PID 15.9

Purge Water Disposal: → DPW sewer
Turbidity(qualitative): clear

ARCADIS

Appendix C

Chain Of Custody Records

ARCADIS GERAGHTY&MILLER

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001321.0001.00002

Project Location BETHPAGE, NY

Laboratory STL, CT

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation MS, GW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml VOA VIAL VOC						Remarks	Total
TB101201	L	10/12/01		2							2
GP1/3 INF				6*							6*
ONT EFF				2							2
GP1/3 EFF				2							2
ONT 3				2							2
GP-3				2							2
ONCI INF				2							[illegible]
GP-1				2							[illegible]
ONT2				2							[illegible]
REP 4 (= GP1/3 INF)				2							[illegible]
ONT 1				2							2

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

Total No. of Bottles/Containers 26

Relinquished by: [illegible signature]	Organization: ARCADIS G&M	Date 10/12/01	Time [illegible]	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

* PLEASE USE GP1/3 INF AS MS/MSD QA/QC

REPORT TO DAVE STERN

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

AG 05-0587

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001321.0001.00002

Project Location ALTHPAGE NY

Laboratory STL, CT

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation MS, KS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 10mL VOA VIAL VOC (UNP)						Remarks	Total
GM-79I	L	10/11/01		2							2
GM-79D	L			2							2
GM-13D	L			2							2
FB101101	L			2							2
TB101101	L			2							2

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

Total No. of Bottles/Containers 10

Relinquished by: Michael J. Sanborn	Organization: ARCADIS G+M	Date 10/11/01	Time 16:00	Seal Intact? Yes No N/A
Received by: _____	Organization: _____	Date / /	Time _____	
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact? Yes No N/A
Received by: _____	Organization: _____	Date / /	Time _____	

Special Instructions/Remarks:

REPORT TO DAVID STERN

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NYD01321.0001.00002

Project Location BINGHAMTON NY

Laboratory SEVERN TRENT

Project Manager MELO SAN GIOVANNI

Sampler(s)/Affiliation MS, KS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 10 mL VOA VIAL VOC (LIND)						Remarks	Total
GM 31D	L	10/10/01		2							2
GM-34D2	L			6*							6*
TB101001	L			2							2
FB101001	L			2							2
N-10627	L			2							2
GM-75D2	L			2							2
RBP3	L	↓		2							2

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

Total No. of Bottles/Containers 18

				Seal Intact?
Relinquished by: Melissa J Sullivan	Organization: ARCADIS G&M	Date 10/10/01	Time 11:00	
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:

* PLEASE USE GM 31D2 AS MS/MSD QA/QC

ATTN: DAVID SILPA

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name N1001321.0001.00002 / GRUMMAN

Project Location BETHPAGE, NY

Laboratory STL, CT

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation MS, GW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VIAL VOC (UNP)						Remarks	Total
FB100901	L	10/09/01		2							2
TB100901	L	↓		2							2
GM-74I	L	↓		2							2
GM 74D	L	↓		2							2
GM 74D2	L	↓		2							2
GM-73D2	L	↓		2							2

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

Total No. of Bottles/Containers 12

Relinquished by: [signature]	Organization: ARCADIS G+M	Date 10/09/01	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 FED EX (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

AG 05-0597

ARCADIS GERAGHTY&MILLER

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NYCO1321.0002.00003

Project Location [illegible]THPAGE, NY

Laboratory [illegible]L, CT

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation MS, GW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: [illegible] VOA VIAL (UNP) [illegible]						Remarks	Total
GM-32S	L	[illegible]/10/8/01		2							2

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

Total No. of Bottles/Containers 2

Relinquished by: Melissa J. [illegible]	Organization: ARCADIS G+M	Date 10/08/01	Time [illegible]	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: [illegible] THIS SAMPLE FOUND ON [illegible] # [illegible]321.[illegible]0002 [illegible] DAVE [illegible]

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name N1001321.0001.00002

Project Location [illegible]PAGE, NY

Laboratory [illegible]TL, CT

Project Manager [illegible]

Sampler(s)/Affiliation [illegible] GW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 ml VOA VIAL VOC (UNP)						Remarks	Total
[illegible]100801	L	[illegible]/08/01		2							2
FB100801	L	↓		2							2
GM-15S	L	↓		2							2
GM-15I	L	↓		2							2
GM-15D	L	↓		2							2
GM-15DZ	L	↓		2							2

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

Total No. of Bottles/Containers 12

Relinquished by: [illegible]	Organization: ARCADIS G&M	Date 10/08/01	Time [illegible]	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: REPORT TO DAVE [illegible]

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY000321.0001.00002 / GRUMMAN

Project Location BETHPAGE, NY

Laboratory STL, CT

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation MS, GW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: (10 ml VOA VIAL) VOC	(UNP)					Remarks	Total
TB100501	L	10/05/01		2							2
FB100501	L			2							2
HN-11I	L			2							2
HN-40S	L			2							2
HN-42I	L			2							2
HN-42S	L	↓		2							2

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

Total No. of Bottles/Containers: 12

					Seal Intact?
Relinquished by: Melissa J. Saunders	Organization: ARCADIS G+M	Date 10/05/01	Time 16:00		
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 DAVID STERN

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001321.0001.00002

Project Location BETHPAGE, NY

Laboratory STL, CT

Project Manager CARLO SANGIOVANNI

Sampler(s)/Affiliation MS, GW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA VIAL VOC (UNP)						Remarks	Total
EB100401	L	10/04/01		2							2
TB100401	L			2							2
REP2	L			2							2
N-10634	L			2							2
HN-24I*	L			6*							6
FW-03	L			2							2
HN-29I	L			2							2
HN-29D	L	↓		2							2

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

Total No. of Bottles/Containers 20

					Seal Intact?
Relinquished by: Melissa J. Swinton	Organization: ARCADIS GIM	Date 10/04/01	Time 1700		
Received by: _____	Organization: _____	Date / /	Time _____		Yes No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____		Seal Intact?
Received by: _____	Organization: _____	Date / /	Time _____		Yes No N/A

Special Instructions/Remarks:

* PLEASE USE HN-24I AS MS/MSD QA/QC SAMPLE

REPORT TO DAVID STERN

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001321.0001.00002

Project Location [illegible], NY

Laboratory [illegible]

Project Manager [illegible]

Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOA vials	VOC 500ml (unp) Plastic / 500ml Plastic HNO3					Remarks	Total
[illegible]01	L	10/03/01		2	1						3
[illegible]01	L	|		2	1						2
[illegible]	L	|		2							3
[illegible]	L	|		2							2
MW-52D	L	|		2							2
MW-52I	L	|		2							2
MW-52S	L	▽		2							2

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

Total No. of Bottles/Containers: 16

Relinquished by: [illegible signature]	Organization: ARCADIS G+M	Date 10/03/01	Time 1800	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: [illegible] TO DAVID STERN

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name: N001521.0001.00002
Project Location: BETHPAGE NY
Laboratory: STL, CT
Project Manager: ALLO SAN GIOVANNI
Sampler(s)/Affiliation: MS, GW

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 ml VOA vial VOC (UNP)						Remarks	Total
FB100201	L	11/02/01		2							2
TB100201	L	↓		2							2
GM-17SR	L	↓		2							2
GM-17I	L	↓		2							2
GM-17D	L	↓		2							2
GM-23I	L	↓		2							2
GM-23S	L	↓		2							2

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

Total No. of Bottles/Containers: 14

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 11/02/01	Time 12:00	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: RPT TO DAVID STERN

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001321.0001.00002

Project Location FISHKILL, NY

Laboratory STL, CT

Project Manager CARLO DAN GIOVANNI

Sampler(s)/Affiliation MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA VIAL VOC	1 L AMBER (UNP)					Remarks	Total
TRIP0101	L	10/01/01		2							2
GM-20I	L	↓		2							2
GM-20D	L			2							2
GM-21I	L	↓		2							2

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

Total No. of Bottles/ Containers: 8

Relinquished by: Melissa J Saunders	Organization: ARCADIS G&M	Date 10/01/01	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 DAVID STERN

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001321.0001.00002

Project Location BETHPAGE NY

Laboratory STL, CT

Project Manager ALLO SAN GIOVANNI

Sampler(s)/Affiliation NS, GW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC VIA 524.2 (VIAL)						Remarks	Total
TB092801	L	09/28/01									3
FB092801	L	↓		3							3
GM-33D2	L	↓		3							3
GM-18S	L	↓		6 *							6
GM-18I	L	↓		3							3
GM-18D	L	↓		3							3
REP1	L	↓		3							3

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

Total No. of Bottles/Containers

Relinquished by: [illegible signature]	Organization: ARCADIS G&M	Date 09/28/01	Time 1800	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:
REPORT TO DAVID STERN
* PLEASE USE THIS SAMPLE AS A MS/MSD QA/QC SAMPLE

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001391.0001.00002

Project Location BETHPAGE, NY

Laboratory STL, CT

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation MS, GW

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40mL VOA VIAL VOC	500mL PLASTIC (UNP)	CONT (HNO3)				Remarks	Total
TBC92701	L	09/27/01		2							2
FBC92701	L			2	1						3
N-10631	L			2	1						3
MW-5R	L			2	1						3
CM-71S	L			2							2
CM-78S	L			2	1						3
CM-78I	L			2	1						3

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

Total No. of Bottles/ Containers: 19

					Seal Intact?
Relinquished by: Melissa J. Sautman	Organization: ARCADIS G&M	Date 9/27/01	Time 1800		
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 FED EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name GRUMMAN / BWD

Project Location BETHPAGE, NY

Laboratory H2M

Project Manager [illegible]

Sampler(s)/Affiliation M SHERIDEN (AGM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VIAL (THIO)						Remarks	Total
GM-37D	L	09/26/01		2							2
GM-37D2	L	09/26/01		2							2

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

Total No. of Bottles/ Containers: 4

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS G+M	Date 09/27/01	Time 1150		
Received by: [signature]	Organization: [illegible]	Date 9/27/01	Time [illegible]		Yes No N/A
Relinquished by: _____	Organization: _____	Date __/__/__	Time _____		Seal Intact?
Received by: _____	Organization: _____	Date __/__/__	Time _____		Yes No N/A

Special Instructions/Remarks: _____

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001391.0001.00002

Project Location BETHPAGE, NY

Laboratory STL, CT

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation M. AURBORN (AGM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 mL VOA VIAL (HCl)	VOC	250mL PLASTIC (HNO3)					Remarks	Total
TB092601	L	09/26/01		2								2
GM-37D	L	↓		2	1							3
GM-37D2	L	↓		2	1							3

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

Total No. of Bottles/ Containers 8

Relinquished by: Melissa J. Saurborn	Organization: ARCADIS G+M	Date 09/26/01	Time 1600	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No N/A

Special Instructions/Remarks:

REPORT TO DAVID STERN

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name GRUMMAN | BWD

Project Location BETHPAGE, NY

Laboratory H2M

Project Manager CHRIS SAN GIOVANNI

Sampler(s)/Affiliation M. SHERBORN / AGM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA VIAL VOC (HCl)						Remarks	Total
GM-35D2	L	9/24/01		2							2
GM-70D2	L	09/24/01		2							2

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

Total No. of Bottles/Containers 4

Relinquished by: [illegible signature]	Organization: [illegible] G+M	Date 9/24/01	Time 1500	Seal Intact?
Received by: [illegible signature]	Organization: [illegible]	Date 9/24/01	Time [illegible]	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NYC0132.0001.00002

Project Location BETHPAGE, NY

Laboratory TL, CT

Project Manager GIELO SAN GIOVANNI

Sampler(s)/Affiliation M SALVERON

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40mL VOA VIAL VOC (UNPD)						Remarks	Total
TP09401	L	09/24/01		2							2
GM-05D2	L			2							2
GM-07D2	L			2							2

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

Total No. of Bottles/ Containers 6

					Seal Intact?
Relinquished by: Melissa Sanders	Organization: ARCADIS G&M	Date 09/24/01	Time 1700		
Received by: _____	Organization: _____	Date / /	Time _____		Yes No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____		Seal Intact?
Received by: _____	Organization: _____	Date / /	Time _____		Yes No N/A

Special Instructions/Remarks: REPORT TO DAVID STERN

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name GRUMMAN / RWD

Project Location KATHPAGE, NY

Laboratory H2M

Project Manager MIKE SANGIOVANNI

Sampler(s)/Affiliation [illegible] / H2M

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40mL VOA VIAL (HCl) VOC						Remarks	Total
GM-71D2	L	09/20/01		2							2

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

Total No. of Bottles/ Containers: 2

Relinquished by: [signature]	Organization: ARCADIS G+M	Date 9/20/01	Time 1200	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 _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name N100139).0001.00002

Project Location BETHPAGE, NY

Laboratory STL - CT

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC 40 ml vol vial (UNP)						Remarks	Total
TB-42001	L	9/20/01		2							2
GM-71D2	L	11		2							2

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

Total No. of Bottles/Containers 4

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 9/20/01	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 FED EX (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name GRUMMAN [illegible]
Project Location BETHPAGE, NY (FWD)
Laboratory HDM
Project Manager CARLO SAN GIOVANNI
Sampler(s)/Affiliation M SAUERBORN (AGM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC (40 ml vial)						Remarks	Total
GM-36D	L	6/19/01		2							2
GM-36DD	L	6/19/01		2							2

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

Total No. of Bottles/Containers 4

Relinquished by: Melissa J Sauerborn	Organization: ARCADIS G&M	Date 6/19/01	Time [illegible]	Seal Intact?
Received by: [illegible]	Organization:	Date [illegible]	Time [illegible]	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NYGF21.1201.00002

Project Location BETHPAGE, NY

Laboratory TL, CT

Project Manager MELO SAN GIOVANNI

Sampler(s)/Affiliation MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml VIAL VOA VOC	VOA					Remarks	Total
TRIP BLANK 1	L	9/19/01		3							3
GM-36D	L	1		2							2
GM-36D2	L	↓		2							2

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

Total No. of Bottles/ Containers: 6

				Seal Intact?
Relinquished by: Melissa J. Sullivan	Organization: ARCADIS G+M	Date 9/19/01	Time 1710	
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 FED EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name 30021.660.00002

Project Location BATHTUB, NY

Laboratory CT2M

Project Manager CECIL VAN GIOVANNI

Sampler(s)/Affiliation J. LINDBERG (A2M)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TOTAL VIALS	VOC (HCl)						Remarks	Total
CM-38D	L	9/18/01		2								2
CM-38DQ	L	9/18/01		2								2

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

Total No. of Bottles/ Containers: 4

Relinquished by: [signature]	Organization: ARCADIS G+M	Date 9/18/01	Time 1630	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A	
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A	

Special Instructions/Remarks: _____

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

AG 05-0597

ARCADIS G&M

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001301.0001.00002

Project Location BETHPAGE, NY

Laboratory TL-CT

Project Manager FELICIAN GIOVANNI

Sampler(s)/Affiliation MS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ML VIAL VOC UNP						Remarks	Total
TRIP1801	L	09/18/01		2							2
GM-38D		"		2							2
GM-38D2		"		2							2

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

Total No. of Bottles/ Containers: 6

Relinquished by: Michael J. Sweeney	Organization: ARCADIS G&M	Date 09/18/01	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: INVERT TO DAVID STERN

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

AG 05-0597

ARCADIS

Appendix D

Data Validation Memoranda

MEMO

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

ENVIRONMENTAL

To:
David Stern

Copies:

From:
Danielle Petkus and John Burke

Date:
October 31, 2001

Subject:
Data Validation of Volatile Organic Compound Groundwater Samples Collected for the Third Quarter 2001 Monitoring Program, Northrop Grumman, Bethpage, New York (Project No. NY001321.00001.00004).

DATA VALIDATION

Water samples, field replicates, field blanks, and trip blanks were collected from September 18 through October 12, 2001 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) 10/95 Method NYDEC 95-1.

Validation of the data was performed following the quality assurance/quality control (QA/QC) criteria set forth in the method, and the document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" dated October 1999. Sample identification, collection dates, and laboratory-received dates are listed in Table 1. The quality of the data was acceptable with the appropriate qualifications described in this memorandum. Metals data and semi-volatile data were discussed in a separate memo.

The laboratory provided seven data packages. The analytical data for samples were provided by the laboratory in sample delivery groups SDG 7001-2459A, 7001-2459B, 7001-2459C, 7001-2459D, 7001-2459E, and 7001-2459F. The data validation results for these SDGs are discussed separately below.

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 11, 2001. The form VI photocopy was of poor quality and a faxed copy was inserted into the sample package. All compound relative response factors (RRFs) found to be >0.05 and all compound percent relative standard deviation (%RSD) values were found to be <30%.

IV. CONTINUING CALIBRATION

Two continuing calibrations were performed on September 24 and 26, 2001. The compounds had RRFs >0.05 and percent differences (%Ds) <25% except acetone and 2-chloroethylvinylether. Acetone was qualified as estimated (J) if detected and estimated (UJ) if not detected in samples TB091801, TB091901, GM-36D, GM-36D2, GM-38D, and GM-38D2. 2-Chloroethylvinylether was qualified as estimated (J) if detected and estimated (UJ) if not detected in samples TB092001, TB092401, GM-71D2, GM-70D2, and GM-35D2.

V. BLANKS

TWO method blanks (VBLKN5 and VBLKN7) were analyzed with this SDG. The following compounds were detected in the method blanks:

Method Blank VBLKN5

Compound	Concentration in micrograms per liter (ug/L)
Methylene chloride	0.7 J
Acetone	4 J
2-Butanone	2 J
4-Methyl-2-pentanone	0.5 J
2-Hexanone	0.7 J

Associated samples: GM-36D, GM-36D2, GM-38D, and GM-38D2.

Method Blank VBLKN7

Compound	Concentration in ug/L
Acetone	5 J
Chloromethane	0.1 J
2-Butanone	2 J
4-Methyl-2-pentanone	1 J
2-Hexanone	0.8 J

Associated samples: GM-71D2, GM-35D2, and GM-70D2.

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

Trip Blank TB091801

Compound	Concentration in ug/L
Methylene chloride	1 JB

Associated samples: GM-38D and GM-38D2.

Trip Blank TB091901

Compound	Concentration in ug/L
Methylene chloride	2 JB
Toluene	0.1 J

Associated sample: GM-36D and GM-36D2.

Trip Blank TB092001

Compound	Concentration in ug/L
Methylene chloride	0.9 J
2-Butanone	5 JB
Acetone	4 JB

Associated sample: GM-71D2.

Trip Blank TB092401

Compound	Concentration in ug/L
Methylene chloride	1 J
2-Butanone	5 JB
Acetone	12 B

Associated samples: GM-35D2 and GM-70D2.

Based on the blank results, the following sample results were qualified as non-detect (U) at the method detection limits or non-detect (U), if above the detection limits:

Compound	Samples
Methylene chloride	GM-36D, GM-36D2, GM-38D, GM-38D2, GM-71D2, and GM-35D2
Acetone	GM-36D, GM-38D, GM-38D2, GM-35D2, and GM-70D2
2-Butanone	GM-38D2, GM-71D2, and GM-35D2

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

A batch specific spike was used for the matrix spike/matrix spike duplicate (MS/MSD) analyses and matrix spike blank (MSB). Three spike recoveries and one relative percent difference (RPD) value were outside control limits for the MS/MSD and MSB. 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)

No tentatively identified compounds (TICs) were detected in this sample set.

XII. OVERALL ASSESSMENT OF DATA

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

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 13, 2001. All compound relative response factors (RRFs) were found to be >0.05. The compound relative standard deviations (%RSDs) were found to be <30% except acetone. Acetone was qualified as estimated (J) if detected, and estimated (UJ) if not detected in the samples.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed on October 1, 2 and 4, 2001. The compounds had RRFs >0.05. The following percent differences (%Ds) were >25%:

Calibration date:10/01/01

Compound	%RSD
Acetone	88.5
2-Butanone	49.9
Bromoform	32.6
4-Methyl-2-pentanone	47.5
2-Hexanone	57.7
1,1,2,2-Tetrachloroethane	39.1
2-Chloroethylvinylether	68.0
Vinyl acetate	35.0

Associated samples: TB092601, TB092801, FB092801, GM-18S, and GM-18I.

Calibration date:10/02/01

Compound	%RSD
2-Butanone	26.6
4-Methyl-2-pentanone	45.6
2-Hexanone	48.6
1,1,2,2-Tetrachloroethane	35.0
2-Chloroethylvinylether	64.1

Associated samples: TB092701, FB092701, MW-3R, GM-37D, GM-21S, GM-78S, GM-78I, REP-1, GM-18D, N-10631, and GM-37D2.

Calibration date:10/04/01

Compound	%RSD
2-Chloroethylvinylether	35.0

Associated samples: TB100101, GM-33D2, GM-20I, and GM-20D.

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

V. BLANKS

Three method blanks (VBLKMM, VBLKMN, and VBLKMP) were analyzed with the samples in this SDG. The following compounds and TICs were detected in the method blanks:

Method Blank VBLKMM

Compound	Concentration in ug/L
Methylene chloride	2 J
Toluene	0.3 J

TIC	RT
Butylated hydroxytoluene	22.70

Associated samples: GM-18S and GM-18I.

Method Blank VBLKMN

TIC	RT
Butylated hydroxytoluene	22.68

Associated samples: N-10631, MW-3R, GM-21S, GM-78S, GM-78I, GM-37D, GM-37D2, GM-18D, and REP-1.

Method Blank VBLKMP

TIC	RT
Butylated hydroxytoluene	22.68

Associated samples: GM-33D2, GM-20I, and GM-20D.

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

Trip Blank TB092601

Compound	Concentration in ug/L
Methylene chloride	0.8 JB
Acetone	3 J

Associated samples: GM-37D and GM-37D2.

Trip Blank TB092701

Compound	Concentration in ug/L
Methylene chloride	1 J

Associated samples: N-10631, MW-3R, GM-21S, GM-78S, and GM-78I.

Trip Blank TB092801

Compound	Concentration in ug/L
Methylene chloride	1 JB

Associated samples: GM-33D2, GM-18S, GM-18I, GM-18D, and REP-1.

Trip Blank TB100101

Compound	Concentration in ug/L
Methylene chloride	1 J

Associated samples: GM-20I and GM-20D.

Three field blanks were analyzed with this SDG. The following target compounds were detected in the field blanks:

Field Blank FB092701

Compound	Concentration in ug/L
Methylene chloride	2 J

Associated samples: N-10631, MW-3R, GM-21S, GM-78S, and GM-78I.

Field Blank FB092801

Compound	Concentration in ug/L
Methylene chloride	1 JB

Associated samples: GM-33D2, GM-18S, GM-18I, GM-18D, and REP-1.

Based on the blank results, the following sample results were qualified as non-detect (U) at the method detection limits or non-detect (U), if above the detection limits:

Compound	Samples
Methylene chloride	MW-3R, GM-37D, GM-21S, GM-78S, GM-78I, REP-1, GM-18D, N-10631, GM-37D2, GM-18I, GM-33D2, GM-20I, and GM-20D.

No TICs were detected in the samples; therefore, no qualification of the TIC data was necessary.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

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

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Sample GM-18S was used for the MS/MSD analyses and MSB. Spike recoveries and RPD values were within control limits for the MS/MSD and MSB.

The laboratory also provided a QCS spike summary. The percent recoveries (%R) 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)

Tentatively identified compounds (TICs) were detected in the method blanks and were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Sample GM-33D2 was replicated and labeled REP-1. The duplicate results were acceptable. The quality of the data presented in this SDG package is acceptable with the appropriate qualifications described above.

SDG 7001-2459C

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 September 13 and October 10, 2001. All compound RRFs were found to be >0.05. The %RSD value for acetone was >30% in the September 13 calibration. Acetone was qualified as estimated (J) if detected, and estimated (UJ) if not detected in the following samples: GM-21I, FB100201, TB100201, GM-17SR, GM-17I, GM-17D, GM-23I, GM-23S, FB100301, GM-16I, GM-16SR, MW-52D, MW-52S, TB100301, and MW-52I.

IV. CONTINUING CALIBRATION

One continuing calibration was performed on October 5, 2001 and three continuing calibrations were performed on October 10, 2001. The compounds had RRFs >0.05. The following %Ds were >25%:

Calibration Date: 10/5/01

Compound	%D
2-Butanone	26.0
4-Methyl-2-pentanone	46.1
2-Hexanone	36.6
1,1,2,2-Tetrachloroethane	28.0
2-Chloroethylvinylether	52.4

Associated samples: GM-21I, FB100201, TB100201, GM-17SR, GM-17I, GM-17D, GM-23I, and GM-23S.

Calibration Date: 10/10/01
Time: 0736

Compound	%D
2-Butanone	29.7
Dibromochloromethane	25.1
1,1,2-Trichloroethane	27.4
4-Methyl-2-pentanone	62.3
2-Hexanone	53.5
1,1,2,2-Tetrachloroethane	38.9

Associated samples: FB100301, GM-16I, GM-16SR, MW-52D, MW-52S, TB100301, and MW-52I.

Calibration Date: 10/10/01
Time: 2035

Compound	%D
Acetone	32.5

Associated samples: FB100401, TB100401 and REP2.

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

V. BLANKS

Four method blanks (VBLKNU, VBLKNV, VBLKMQ, and VBLKMV) were analyzed with the samples in this SDG. The following compounds and TIC were detected in the method blanks:

Method Blank VBLKNU

Compound	Concentration in ug/L
Methylene chloride	2 J

TIC	RT
Butylated hydroxytoluene	22.31

Associated samples: N-10634 and HN-24I.

Method Blank VBLKNV

Compound	Concentration in ug/L
Acetone	5 J

Associated sample: REP2.

Method Blank VBLKMQ

TIC	RT
Butylated hydroxytoluene	22.75

Associated samples: GM-21I, GM-17SR, GM-17I, GM-17D, GM-23I, and GM-23S.

Method Blank VBLKMV

Compound	Concentration in ug/L
Acetone	8 J

Associated samples: GM-16SR, GM-16I, MW-52D, MW-52I, and MW-52S.

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

Trip Blank TB100201

Compound	Concentration in ug/L
Methylene chloride	4 J

Associated samples: GM-17SR, GM-17I, GM-17D, GM-23I, and GM-23S.

Trip Blank TB100301

Compound	Concentration in ug/L
Methylene chloride	12
Acetone	22 B
Toluene	0.3 J

Associated samples: GM-16SR, GM-16I, MW-52D, MW-52I, and MW-52S.

Trip Blank TB100401

Compound	Concentration in ug/L
Methylene chloride	1 J
Acetone	5 JB

Associated samples: REP2, N-10634, and HN-24I.

One trip blank associated with a sample in this SDG was analyzed in another SDG and is summarized below:

Trip Blank TB100101

Compound	Concentration in ug/L
Methylene chloride	1 J

Associated sample: GM-21I.

Three field blanks were collected and analyzed with the samples. The following compounds were detected in the field blanks:

Field Blank FB100201

Compound	Concentration in ug/L
Methylene chloride	5 J

Associated samples: GM-17SR, GM-17I, GM-17D, GM-23I, and GM-23S.

Field Blank FB100301

Compound	Concentration in ug/L
Methylene chloride	1 J

Associated samples: GM-16SR, GM-16I, MW-52D, MW-52I, and MW-52S.

Field Blank FB100401

Compound	Concentration in ug/L
Methylene chloride	1 J
Acetone	6 JB

Associated samples: REP2, N-10634, and HN-24I.

Based on the blank results, the following compounds were qualified as non-detect (U):

Compound	Sample ID
Methylene chloride	GM-21I, GM-17SR, GM-17I, GM-17D, GM-23I, GM-23S, GM-16SR, GM-16I, MW-52I, MW-52S
Acetone	MW-52S and MW-52I
Toluene	MW-52I

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

Samples HN-24I and MW-52I were used for the MS/MSD and MSB analyses. Two spike recoveries were outside control limits for the MS/MSD and MSB. No qualification of the data was necessary.

The laboratory also provided four QCS spike summaries. The percent recoveries (%R) for eleven compounds were outside QC limits. No qualifications were 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)

TICs were detected in this sample set and were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Sample HN-24I was replicated and labeled REP2. The duplicate results were acceptable. The quality of the data presented in this SDG package is acceptable with the appropriate qualifications described above.

SDG 7001-2459D

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 October 10, 2001. All compound RRFs found to be >0.05 and all compound %RSDs were found to be <30%.

IV. CONTINUING CALIBRATION

Five continuing calibrations were performed on October 10, 11, 12, and 13, 2001. The compounds had RRFs >0.05 and %Ds <25% except for the following:

Calibration Date: 10/10/01

Compound	%D
Acetone	32.5

Associated Samples: HN-29D, HN-29I, and FW-03.

Calibration Date: 10/12/01

Compound	%D
Chloromethane	25.6

Associated Samples: GM-15I, GM-32S, FB100901, TB100901, GM-74I, and GM-74D.

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

V. BLANKS

Four method blanks (VBLKNV, VBLKNW, VBLKNX, and VBLKNZ) were analyzed with this SDG. The following compounds were detected in the method blanks:

One field blank associated with samples in this SDG was analyzed in another SDG and is summarized here. The following compounds were detected in the field blank:

Field Blank: FB100401

Compound	Concentration in ug/L
Methylene Chloride	1 J
Acetone	6 JB

Associated Samples: FW-03, HN-29I, and HN-29D.

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

Compound	Sample ID
Methylene Chloride	HN-40I, HN-40S, HN-42I, HN-42S, GM-15S, GM-15D, GM-15D2, GM-32S, GM-74I, GM-74D
Acetone	HN-40I, HN-40S, HN-42I, HN-42S, GM-15S, GM-15D, GM-15D2, GM-74D

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

Sample GM-74D was used for the MS/MSD analyses and MSB. Spike recoveries and RPD values were within control limits for the MS/MSD and MSB.

A QCS spike summary was also provided with this SDG. Three compounds were not within QC limits. No qualification of the data was necessary based on the spike results.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

All target compounds detected were reported correctly.

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

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The TICs detected in the samples were reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Sample GM-15D2 was mistakenly identified by the laboratory as GM-15DZ. All forms incorrectly identified the sample. The laboratory was contacted and corrected forms were inserted into the data package.

The data is acceptable with the qualifications listed above.

SDG 7001-2459E

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 October 10, 2001. The compound relative response factors (RRFs) found to be >0.05 and the compound relative standard deviations (%RSDs) were found to be <30%.

IV. CONTINUING CALIBRATION

Five continuing calibrations were performed on October 12, 13, 15, 16, and 17, 2001. The compounds had RRFs >0.05 and percent differences (%Ds) <25% except for the following:

Calibration Date: 10/12/01

Compound	%D
Chloromethane	25.6

Associated Samples: GM-74D2, GM-34D, and GM-34D2.

Calibration Date: 10/13/01

Compound	%D
Bromoform	-29.0

Associated Samples: GM-73D2, TB101001, FB101001, TB101101, FB101101, N-10627, and GM-79D.

Calibration Date: 10/15/01

Compound	%D
Acetone	35.4
2-Butanone	28.7

Associated Samples: GM-79I, GM-13D, GM-75D2, REP3, and ONCT 2.

Calibration Date: 10/16/01

Compound	%D
Acetone	28.7
2-Butanone	31.5

Associated Samples: ONCT INF, REP4, and ONCT1.

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 (VBLKNZ, VBLKN1, VBLKN2, VBLKN3, and VBLKN4) were analyzed with this SDG. The following compounds were detected in the method blanks:

Method Blank: VBLKNZ

Compound	Concentration in ug/L
Methylene chloride	1 J
Acetone	6 J

Associated Samples: GM-74D2, GM-34D, and GM-34D2.

Method Blank: VBLKN1

Compound	Concentration in ug/L
Acetone	8 J

Associated Samples: N-10627, GM-73D2 and GM-79D.

Method Blank: VBLKN2

Compound	Concentration in ug/L
Acetone	6 J
2-Hexanone	3 J

Associated Samples: GM-75D2, REP3, GM-79I, GM-13D, and ONCT 2.

Method Blank: VBLKN3

Compound	Concentration in ug/L
Methylene chloride	0.8 J
Acetone	8 J

Associated Samples: ONCT INF, REP4, and ONCT1.

Method Blank: VBLKN4

Compound	Concentration in ug/L
Acetone	6 J
2-Butanone	3 J
4-Methyl-2-pentanone	2 J

Associated Samples: GP-3 and GP-1.

Two trip blanks (TB101001 and TB101101) were collected along with this sample set. The following compound was detected in the trip blanks:

Trip Blank: TB101001

Compound	Concentration in ug/L
Methylene chloride	1 J
Acetone	8 JB

Associated Samples: GM-34D, GM-34D2, N-10627, GM-75D2, and REP3.

Trip Blank: TB101101

Compound	Concentration in ug/L
Methylene Chloride	0.8 J
Acetone	8 JB
2-Butanone	2 J

Associated Samples: GM-79I, GM-79D, and GM-13D.

Two trip blanks associated with samples in this SDG were analyzed other SDGs and are summarized here. The following compounds were detected in the trip blanks:

Trip Blank: TB100901

Compound	Concentration in ug/L
Methylene Chloride	0.9 JB
Acetone	5 JB

Associated Samples: GM-74D2 and GM-73D2.

Trip Blank: TB101201

Compound	Concentration in ug/L
Methylene Chloride	1 JB
Acetone	6 JB
2-Butanone	3 J
4-Methyl-2-pentanone	2 J
1,1,2,2,-Tetrachloroethane	0.7 J

Associated Samples: GP-3, ONCT INF, GP-1, ONCT 2, REP4, and ONCT 1.

Two field blanks (FB101001 and FB101101) were also collected with this sample set. The following compound was detected in the field blanks:

Field Blank: FB101001

Compound	Concentration in ug/L
Methylene chloride	1 J
Acetone	4 JB

Associated Samples: GM-34D, GM-34D2, N-10627, GM-75D2, and REP3.

Field Blank: FB101101

Compound	Concentration in ug/L
Methylene chloride	1 J
Acetone	6 JB
2-Butanone	2 J

Associated Samples: GM-79I, GM-79D, and GM-13D.

One field blank associated with samples in this SDG was analyzed in another SDG, and is summarized here. The following compounds were detected in the field blank:

Field Blank: FB100901

Compound	Concentration in ug/L
Methylene Chloride	1 JB
Acetone	6 JB

Associated Samples: GM-74D2 and GM-73D2.

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

Compound	Sample ID
Methylene Chloride	GM-74D2, GM-34D, GM-34D2, GM-73D2, GM-79D, GM-75D2, REP3, GM-13D, ONCT 2, ONCT INF, REP4, ONCT 1, GP-3, GP-1
Acetone	GM-34D2, GM-73D2, N-10627, GM-79D, REP3, GM-79I, GM-13D, ONCT 2, ONCT INF, REP4, ONCT1, GP-3

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

Sample GM-34D2 was used for the MS/MSD analyses and MSB. Spike recoveries were within control limits and one %RPD value was outside control limits for the MS/MSD and MSB.

One QCS spike summary was also provided with this SDG. Three compounds were not within QC limits. No qualification of the data was necessary based on the spike results.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

All compounds were identified correctly.

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

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

No TICs were detected in the samples or blanks.

XII. OVERALL ASSESSMENT OF DATA

Sample GM-75D2 was replicated and labeled REP3. The results were acceptable.

Sample GP1/3 INF was analyzed in another SDG and was replicated and labeled REP4. REP 4 was analyzed in this SDG. The duplicate results are acceptable.

The data is acceptable with the qualifications listed above.

SDG 7001-2459F

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 October 10, 2001. All compound RRFs found to be >0.05 and all %RSD values were found to be <30%.

IV. CONTINUING CALIBRATION

Two continuing calibrations were performed on October 15 and 16, 2001. The compounds had RRFs > 0.05 and percent differences (%Ds) <25% except for the following:

Calibration Date: 10/15/01

Compound	%D
Acetone	35.4
2-Butanone	28.7

Associated sample: ONCT 3.

Calibration Date: 10/16/01

Compound	%D
Acetone	28.7
2-Butanone	31.5

Associated samples: TB101201, GP1/3 INF, GP1/3 EFF, and ONCT EFF.

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

V. BLANKS

Two method blanks (VBLKN2 and VBLKN3) were analyzed with this SDG. The following compounds were detected in the method blanks:

Method Blank: VBLKN2

Compound	Concentration in ug/L
Acetone	6 J
2-Hexanone	3 J

Associated sample: ONCT 3.

Method Blank: VBLKN3

Compound	Concentration in ug/L
Methylene chloride	0.8 J
Acetone	6 J

Associated samples: GP1/3 INF, ONCT EFF, and GP1/3 EFF.

One trip blank (TB101201) was collected with the samples and analyzed in this SDG. The following compound was detected in the trip blank:

Trip Blank: TB101201

Compound	Concentration in ug/L
Methylene Chloride	1 JB
Acetone	6 JB
2-Butanone	3 J
4-Methyl-2-pentanone	2 J
1,1,2,2-Tetrachloroethane	0.7 J

Associated samples: All.

Methylene chloride was qualified as non-detect (U) based on the blank results in samples ONCT 3, GP1/3 INF, and GP1/3 EFF. Acetone was qualified as non-detect (U) in sample GP1/3 EFF based on the blank results.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

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

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Sample GP1/3 INF was used for the MS/MSD analyses and MSB. Spike recoveries and RPD values were within control limits for the MS/MSD and MSB.

A spike summary was also provided. The spike %R values 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

All compounds were identified correctly.

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

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

No TICs were detected in the samples or blanks.

XII. OVERALL ASSESSMENT OF DATA

Sample GP1/3 INF was replicated and labeled REP4. REP4 was analyzed in SDG 7001-2459E. The duplicate results were acceptable.

The data is acceptable with the qualifications listed above.

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7001-2459A, 7001-2459B, 7001-2459C, 7001-2459D, 7001-2459E, and 7001-2459F.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7001-2459A			
TB091901	012459A-01	09/19/01	09/20/01
GM-36D	012459A-02	09/19/01	09/20/01
GM-36D2	012459A-03	09/19/01	09/20/01
TB091801	012459A-04	09/18/01	09/19/01
GM-38D	012459A-05	09/18/01	09/19/01
GM-38D2	012459A-06	09/18/01	09/19/01
TB092001	012459A-07	09/20/01	09/21/01
GM-71D2	012459A-08	09/20/01	09/21/01
TB092401	012459A-09	09/24/01	09/25/01
GM-35D2	012459A-10	09/24/01	09/25/01
GM-70D2	012459A-11	09/24/01	09/25/01

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7001-2459A, 7001-2459B, 7001-2459C, 7001-2459D, 7001-2459E, and 7001-2459F.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7001-2459B			
TB092701	012459B-01	09/27/01	09/28/01
FB092701	012459B-02	09/27/01	09/28/01
N-10631	012459B-03	09/27/01	09/28/01
MW-3R	012459B-04	09/27/01	09/28/01
GM-21S	012459B-05	09/27/01	09/28/01
GM-78S	012459B-06	09/27/01	09/28/01
GM-78I	012459B-07	09/27/01	09/28/01
TB092601	012459B-08	09/26/01	09/27/01
GM-37D	012459B-09	09/26/01	09/27/01
GM-37D2	012459B-10	09/26/01	09/27/01
TB092801	012459B-11	09/26/01	09/27/01
FB092801	012459B-12	09/28/01	09/29/01
GM-33D2	012459B-13	09/28/01	09/29/01
GM-18S	012459B-14	09/28/01	09/29/01
GM-18I	012459B-15	09/28/01	09/29/01
GM-18D	012459B-16	09/28/01	09/29/01
REP1	012459B-17	09/28/01	09/29/01
TB100101	012459B-18	10/01/01	10/02/01
GM-20I	012459B-19	10/01/01	10/02/01
GM-20D	012459B-20	10/01/01	10/02/01

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7001-2459A, 7001-2459B, 7001-2459C, 7001-2459D, 7001-2459E, and 7001-2459F.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7001-2495C			
GM-21I	012459C-01	10/01/01	10/02/01
FB100201	012459C-02	10/02/01	10/03/01
TB100201	012459C-03	10/02/01	10/03/01
GM-17SR	012459C-04	10/02/01	10/03/01
GM-17I	012459C-05	10/02/01	10/03/01
GM-17D	012459C-06	10/02/01	10/03/01
GM-23I	012459C-07	10/02/01	10/03/01
GM-23S	012459C-08	10/02/01	10/03/01
TB100301	012459C-09	10/03/01	10/04/01
FB100301	012459C-10	10/03/01	10/04/01
GM-16SR	012459C-11	10/03/01	10/04/01
GM-16I	012459C-12	10/03/01	10/04/01
MW-52D	012459C-13	10/03/01	10/04/01
MW-52I	012459C-14	10/03/01	10/04/01
MW-52S	012459C-15	10/03/01	10/04/01
FB100401	012459C-16	10/04/01	10/05/01
TB100401	012459C-17	10/04/01	10/05/01
REP2	012459C-18	10/04/01	10/05/01
N-10634	012459C-19	10/04/01	10/05/01
HN-24I	012459C-20	10/04/01	10/05/01

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7001-2459A, 7001-2459B, 7001-2459C, 7001-2459D, 7001-2459E, and 7001-2459F.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7001-2459D			
FW-03	012459D-01	10/04/01	10/05/01
HN-29I	012459D-02	10/04/01	10/05/01
HN-29D	012459D-03	10/04/01	10/05/01
TB100501	012459D-04	10/05/01	10/06/01
FB100501	012459D-05	10/05/01	10/06/01
HN-40I	012459D-06	10/05/01	10/06/01
HN-40S	012459D-07	10/05/01	10/06/01
HN-42I	012459D-08	10/05/01	10/06/01
HN-42S	012459D-09	10/05/01	10/06/01
TB100801	012459D-10	10/08/01	10/09/01
FB100801	012459D-11	10/08/01	10/09/01
GM-15S	012459D-12	10/08/01	10/09/01
GM-15I	012459D-13	10/08/01	10/09/01
GM-15D	012459D-14	10/08/01	10/09/01
GM-15D2	012459D-15	10/08/01	10/09/01
GM-32S	012459D-16	10/08/01	10/09/01
FB100901	012459D-17	10/09/01	10/10/01
TB100901	012459D-18	10/09/01	10/10/01
GM-74I	012459D-19	10/09/01	10/10/01
GM-74D	012459D-20	10/09/01	10/10/01

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7001-2459A, 7001-2459B, 7001-2459C, 7001-2459D, 7001-2459E, and 7001-2459F.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7001-2459E			
GM-74D2	012459E-01	10/09/01	10/10/01
GM-73D2	012459E-02	10/09/01	10/10/01
GM-34D	012459E-03	10/10/01	10/11/01
GM-34D2	012459E-04	10/10/01	10/11/01
TB101001	012459E-05	10/10/01	10/11/01
FB101001	012459E-06	10/10/01	10/11/01
N-10627	012459E-07	10/10/01	10/11/01
GM-75D2	012459E-08	10/10/01	10/11/01
REP3	012459E-09	10/10/01	10/11/01
GM-79I	012459E-10	10/11/01	10/12/01
GM-79D	012459E-11	10/11/01	10/12/01
GM-13D	012459E-12	10/11/01	10/12/01
FB101101	012459E-13	10/11/01	10/12/01
TB101101	012459E-14	10/11/01	10/12/01
GP-3	012459E-15	10/12/01	10/13/01
ONCT INF	012459E-16	10/12/01	10/13/01
GP-1	012459E-17	10/12/01	10/13/01
ONCT 2	012459E-18	10/12/01	10/13/01
REP 4	012459E-19	10/12/01	10/13/01
ONCT 1	012459E-20	10/12/01	10/13/01

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7001-2459A, 7001-2459B, 7001-2459C, 7001-2459D, 7001-2459E, and 7001-2459F.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7001-2459F			
TB101201	012459F-01	10/12/01	10/13/01
GP1/3 INF	012459F-02	10/12/01	10/13/01
ONCT EFF	012459F-03	10/12/01	10/13/01
GP1/3 EFF	012459F-04	10/12/01	10/13/01
ONCT 3	012459F-05	10/12/01	10/13/01

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

MEMO

To:
David Stern

Copies:

ENVIRONMENTAL

From:
Danielle Petkus and John Burke

Date:
22 October 2001

Subject:
Data Validation of Cadmium, and Chromium for Groundwater Samples Collected from the Third Quarter 2001, Off-Site Monitoring Program, Northrop Grumman, Bethpage, New York (Project No. NY1321.1 Task 0004).

Seven groundwater samples and two field blanks were collected on September 27 and October 3, 2001 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 cadmium and chromium using SW846 methods ICAP 3010A/6010B.

The laboratory provided the sample data in sample delivery group (SDG) 7001-2459B and 7001-2459C. The VOC results in were fully validated and are discussed in a separate memorandum. The metal results were reviewed for the following:

- Chain-of-custody form,
- holding times,
- blanks (initial calibration, continuing calibration, preparation, and field),
- and spike sample recovery.

The data were complete and acceptable. All qualifiers added to the results are discussed below.

7001-2459B

One field blank was analyzed with this set. Chromium was detected in the field blank at a concentration of

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1.1 ug/L. Chromium was qualified as non-detect (U) in samples GM-78I, GM-37D, and GM-37D2.

7001-2459C

One field blank was analyzed with this set. Chromium was detected in the field blank at a concentration of

1.8 ug/L. Chromium was qualified as non-detect (U) in sample GM-16SR.