NORTHROP GRUMMAN

Town of Oyster Bay
Bethpage Community Park
Delineation Sampling Program
Bethpage, New York

Site-Specific Work Plan

October 2002

RLA/JOBS/NOTHROP\1572\OysBayPark2.cdr(10/23/02)

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October 25, 2002

Steve Hamilton, Esq.
New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Solid Waste and Hazardous Materials
Bureau of Solid Waste and Corrective Action, 8th Floor
625 Broadway
Albany, NY 12233-7258

RE: Delineation Plan for Bethpage Community Park

Dear Steve:

As we discussed, accompanying this letter are eight copies of an investigation work plan submitted in accordance with the request contained in the Department's letter dated August 8, 2002. Please distribute them internally within the Department of Environmental Conservation and the State Department of Health. If you need additional copies, let me know.

We have not been able to get cooperation from the Navy in this process. We would again ask that you continue your efforts to assure the Navy's involvement as this situation proceeds.

We look forward to a favorable response to this investigation work plan so that the process of addressing the situation in the Park can move forward.

Very truly yours,

Frank L. Amoroso

FLA:mm
Enclosures

G223025.1

TOWN OF OYSTER BAY
BETHPAGE COMMUNITY PARK
DELINEATION SAMPLING PROGRAM
BETHPAGE, NEW YORK

Site-Specific Work Plan

Prepared by:

NORTHROP GRUMMAN CORPORATION

South Oyster Bay Road
Bethpage, New York

OCTOBER 2002

SITE-SPECIFIC WORK PLAN
TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
DELINEATION SAMPLING PROGRAM
BETHPAGE, NEW YORK

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1.0 INTRODUCTION

The purpose of this Work Plan is to provide a description of the Delineation Sampling Program to be undertaken within the Town of Oyster Bay Bethpage Community Park located adjacent to the Northrop Grumman Corporation (NGC) Bethpage Facility in Bethpage, New York. This program is being undertaken in response to the soil sampling program completed within the park by NGC in March 2002. As a result of the March 2002 soil sampling program, the park was closed by the Town of Oyster Bay in May 2002 and remains closed to this date. Based on the results of that sampling program and subsequent meetings with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH), it has been determined that additional soil and groundwater sampling needs to be conducted in order to further characterize the overall surface and subsurface environmental condition of the park.

Section 2.0 of this report provides a description of the park property and presents a brief summary of the site history and historic investigation programs. A description of the field activities and overall scope of the Delineation Sampling Program to be undertaken within the park is described in Section 3.0. Project management for this program is discussed in Section 4.0. Sections 5.0 and 6.0 present the Quality Assurance Project Plan and the Site-Specific Health and Safety Plan, respectively, which will be utilized during the course of this program.

2.0 SITE BACKGROUND

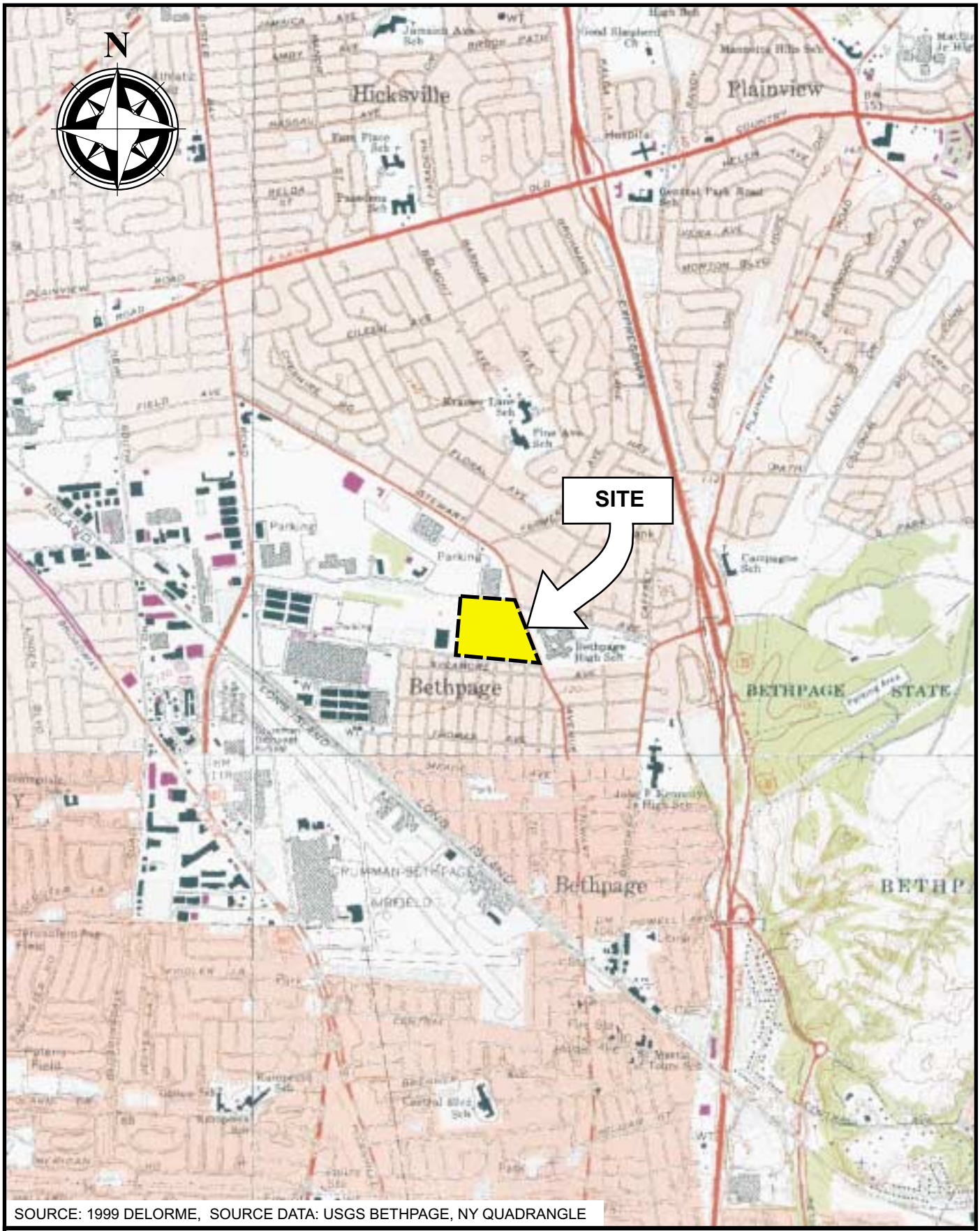
This section provides a general description of the Town of Oyster Bay Bethpage Community Park and surrounding areas and presents a brief summary of site history and historic investigation programs conducted on the property.

2.1 Site Description

The Town of Oyster Bay Bethpage Community Park is located on Stewart Avenue in Bethpage, Nassau County, New York and is situated adjacent to the northeastern portion of the Northrop Grumman Corporation (NGC) Bethpage Facility. A figure showing the location of the property in relation to the surrounding areas is provided as Figure 2-1.

The entire Bethpage Community Park property is comprised of approximately 18 acres and is currently owned by the Town of Oyster Bay. The site is bordered by the Cherry Avenue Extension and the Robert Plan Company building (formerly NGC's Plant 30) to the north, Stewart Avenue and a high school to the east, the Plant 24 Access Road Site (currently owned by NGC) to the south, and a second Robert Plan Company building (formerly NGC's Plant 24) and the McKay Field property, ball fields and former nursery areas (currently owned by NGC) to the west. The park is available to community residents year round. The major features and structures located on the park property include the following:

- Tennis courts
- Paddleball courts
- Covered picnic area
- Two playground areas
- Baseball field
- Two swimming pools
- Covered ice skating rink
- Shuffleboard courts
- Basketball court
- Horseshoe courts
- Park offices
- Parking lot
- Bicycle rack area
- Recharge basin



SOURCE: 1999 DELORME, SOURCE DATA: USGS BETHPAGE, NY QUADRANGLE

RLA/MAPS/NORTHROP1572(10/23/02)

TOWN OF OYSTER BAY
BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK

SITE LOCATION MAP

FIGURE 2-1

A site plan for the property is provided as Figure 2-2. The site is generally level with good drainage. Ground elevation is approximately 120 feet above mean sea level and the depth from ground surface to the upper glacial aquifer is approximately 58 feet. The Soil Conservation Service classifies the site as Urban Land (Ug). Urban Land is defined as an area with at least 85 percent asphalt, concrete, or other impervious building materials, with most of the remaining small areas of soil being well drained Riverhead, Hempstead or Enfield soils, or excessively drained Udipsaments. Udipsaments are defined as manmade fills or borrow areas, most of which are grassed with 0 to 60 percent slopes, which consist of very deep soils that are excessively drained to well-drained.

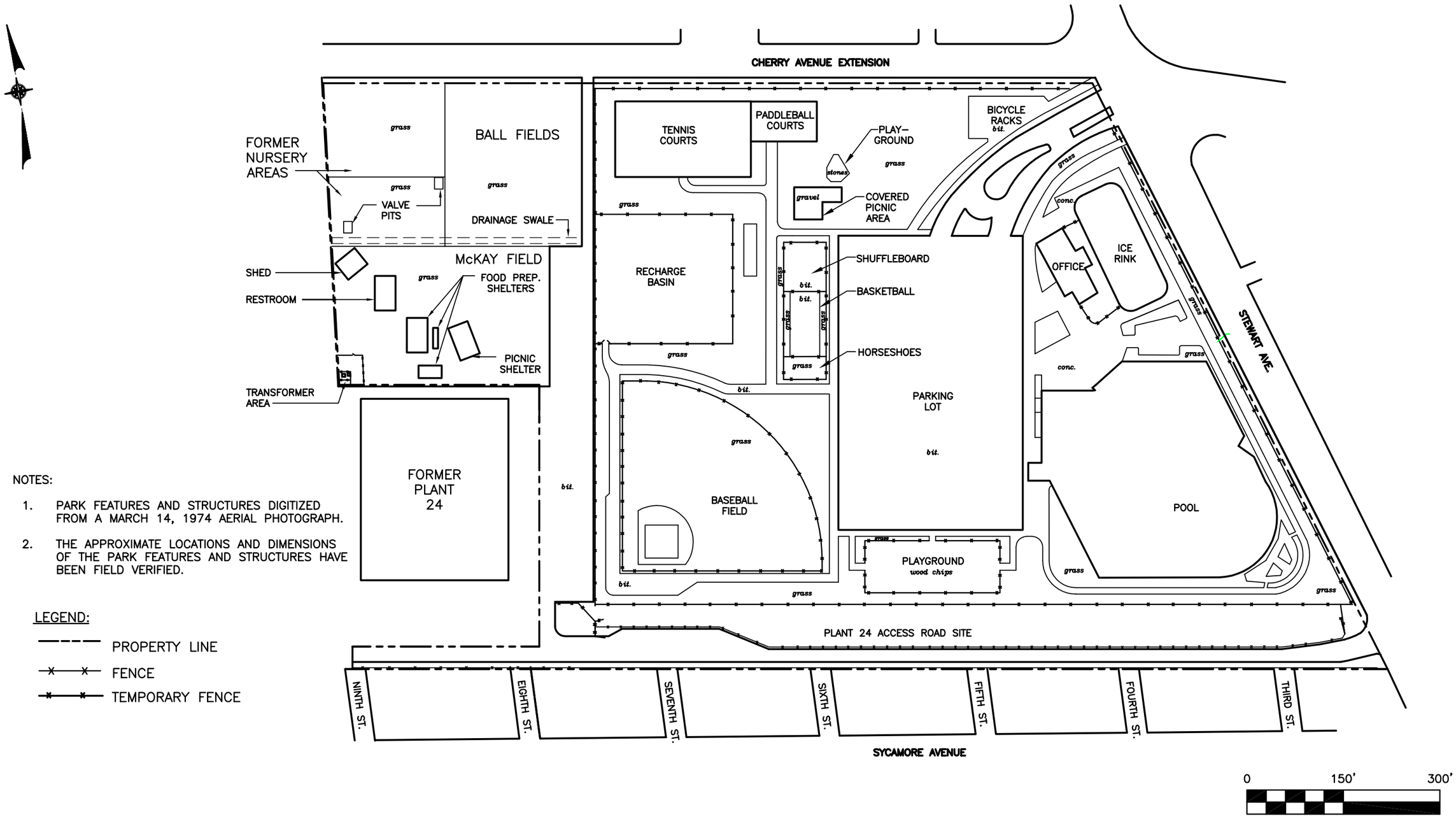
2.2 Site History

The area comprising what is now the Town of Oyster Bay Bethpage Community Park was primarily farmland until the 1940s. Around this time, the property was purchased by Grumman Aircraft Engineering Corporation (the former name of Northrop Grumman Corporation) as part of the Bethpage Facility. The site was not involved with any of the manufacturing operations undertaken at the Bethpage Facility and no buildings or structures were ever erected on the property by Grumman Aircraft Engineering Corporation.

According to Northrop Grumman Corporation records, the property comprising the park was donated by Grumman Aircraft Engineering Corporation to the Town of Oyster Bay on October 17, 1962. Shortly thereafter, the park as it appears now was constructed on the property.

Aerial photographs of the Grumman Aircraft Engineering Corporation Bethpage Facility dated from before the transfer of property show the site as undeveloped and indicate some earth disturbances.

Northrop Grumman Corporation does not have any information regarding the operations conducted by the Town of Oyster Bay subsequent to the property transfer.



NOTES:

1. PARK FEATURES AND STRUCTURES DIGITIZED FROM A MARCH 14, 1974 AERIAL PHOTOGRAPH.
2. THE APPROXIMATE LOCATIONS AND DIMENSIONS OF THE PARK FEATURES AND STRUCTURES HAVE BEEN FIELD VERIFIED.

LEGEND:

- PROPERTY LINE
- FENCE
- TEMPORARY FENCE

TOWN OF OYSTER BAY
BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK

SITE PLAN AND SURROUNDING AREAS

FIGURE 2–2

2.3 Previous Investigations

On November 16 and 17, 1994, an investigation was conducted by Halliburton NUS Corporation on behalf of the U.S. Department of the Navy to determine whether polychlorinated biphenyl (PCB) contamination from the Naval Weapons Industrial Reserve Plant (NWIRP) Site 1 had migrated and impacted downwind off-site locations. Of the 17 locations sampled during this investigation, one was located on the Bethpage Community Park property adjacent to the basketball court. A soil sample was collected in this location from the 0 to 6-inch depth interval below grade and analyzed for PCBs. The analytical results of this sample indicated that PCBs were not present at concentrations exceeding the New York State Department of Environmental Conservation's Technical and Administrative Guidance Memorandum (TAGM) No. 4046 Recommended Soil Cleanup Objective. The results of the program were summarized in the report entitled, "Off-site Soil Sampling and PCB Analysis Report, NWIRP, Bethpage, New York - CTO 0089." The report did not recommend additional sampling since PCB concentrations in excess of the TAGM criteria were not detected.

In April 1998, the Town of Oyster Bay retained EDER Associates (EDER) to conduct a surface soil sampling program within the Bethpage Community Park to determine whether PCBs were present in the surface soil. As part of this program, EDER collected surface soil samples from five locations within the park including the picnic area (two locations), the baseball field (two locations) and the area between the ice rink and the pool along Stewart Avenue (one location). Soil samples were collected from the surface at each location and analyzed for PCBs. The analytical results of the surface soil samples indicated that PCBs were not present at concentrations exceeding the NYSDEC's TAGM 4046 Recommended Soil Cleanup Objective. The results of the program were summarized in the letter report entitled, "Soil Sampling - Polychlorinated Biphenyls, Bethpage Community Park," dated April 27, 1998. Recommendations for additional sampling were not presented in the letter report since PCB concentrations in excess of the TAGM criteria were not detected.

In March 2002, as a result of detecting PCB concentrations in excess of the NYSDEC TAGM 4064 Recommended Soil Cleanup Objectives on an adjacent property, Northrop

Grumman Corporation retained Dvirka and Bartilucci Consulting Engineers to conduct a soil sampling program within the Bethpage Community Park. The program consisted of advancing 60 soil probes on a 100-foot grid to a depth of 8 feet below grade. Soil samples were collected from the 0 to 2-inch depth interval, the 2-inch to 2-foot depth interval and at 2-foot intervals from that point until the total depth of each boring was reached (a total of 5 soil samples per probe). In addition, surface soil samples were collected from 19 "exposure point locations." All soil samples collected were laboratory analyzed for PCBs and Resource Conservation and Recovery Act (RCRA) metals. The analytical results of the soil samples indicated that PCBs and some RCRA metals were present at some locations in the park at concentrations exceeding the NYSDEC's TAGM 4046 Recommended Soil Cleanup Objectives. The results of the program were summarized in the report entitled, "Town of Oyster Bay Bethpage Community Park, Soil Sampling Program, Report of Findings," dated June 2002. Subsequent to this soil sampling program, in May 2002, the Town of Oyster Bay closed the Bethpage Community Park. The park has not reopened to the public since that time.

As a result of the March 2002 soil sampling program, NYSDOH inspected the park and requested that Northrop Grumman Corporation perform additional exposure point sampling in 8 locations within the Bethpage Community Park and perform some surface horizontal delineation sampling around a soil probe located in left center field of the baseball field (probe P-31). In May 2002, Northrop Grumman Corporation retained Dvirka and Bartilucci Consulting Engineers to conduct the additional exposure point sampling and limited surface horizontal delineation around P-31 within the Bethpage Community Park. This program consisted of collecting surface (0 to 2 inches below grade) soil samples from 8 exposure point locations and 12 locations surrounding P-31 (radii of 5, 10 and 50 feet with 4 soil samples collected at each distance). However, since the soil samples collected from the 10 and 50-foot radii would only be analyzed if the samples from the 5-foot radius exceeded the NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives, only the 4 soil samples from the 5-foot radius, in addition to the 8 exposure point samples, were analyzed. All soil samples were analyzed for PCBs and RCRA metals. The results of the program were summarized in a letter report entitled, "Additional Soil Sampling Program, Town of Oyster Bay Bethpage Community Park, Bethpage, New York" dated July 18, 2002.

It should be noted that the Town of Oyster Bay's consultant, Gannett Fleming Engineers and Architects (Gannett Fleming), and the NYSDEC split soil samples with Dvirka and Bartilucci Consulting Engineers during the Additional Soil Sampling Program conducted in May 2002. In addition to the samples listed previously, Gannett Fleming had the 8 soil samples collected from the 10 and 50-foot radii surrounding P-31 analyzed, and collected soil samples from the recharge basin area at two locations from the 0 to 2-inch and 2-inch to 2-foot depth intervals below grade for analysis. The NYSDEC collected surface soil samples from only 7 of the locations from which Dvirka and Bartilucci Consulting Engineers collected soil samples.

3.0 SCOPE OF INVESTIGATION

This section presents a description of the Delineation Sampling Program to be undertaken within the Town of Oyster Bay Bethpage Community Park.

3.1 Objectives and Approach

The purpose of this Delineation Sampling Program is to further characterize the environmental condition of the surface and subsurface soil located within the Town of Oyster Bay Bethpage Community Park. In addition, groundwater samples will be collected from two locations within the park to assess whether groundwater quality has been adversely impacted.

Based on the results of the soil sampling program undertaken by Northrop Grumman Corporation in March 2002 and subsequent meetings and conversations with representatives of the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH), areas indicating earth disturbances identified from historical aerial photographs have been identified as the primary area of concern located within the Bethpage Community Park. As a result, the Delineation Sampling Program addresses these areas and seeks to further delineate the contamination previously detected.

In order to delineate the previously detected contamination, a total of 11 soil borings will be advanced within this area and immediately adjacent areas. The rationale for these 11 soil borings follows:

- One boring will be advanced in the southwest corner of the parking lot, somewhat northeast of a line drawn between previously sampled soil probes P-22 and P-28. Sampling in this location will horizontally delineate the polychlorinated biphenyl (PCB) concentrations detected in the 2 to 4-foot depth interval sample at probe P-22, and the 4 to 6-foot depth interval sample at probe P-28.

- Two borings will be advanced along the east side of the baseball field area along the sidewalk at locations on east/west lines of the previously established 100-foot grid. Sampling in these locations will horizontally delineate the PCB concentrations detected in the baseball field area to the east.

- Two borings will be advanced along the east side of the shuffleboard/basketball court area at locations on the east/west lines of the previously established 100-foot grid. Sampling in these locations will horizontally delineate the PCB concentrations detected in the baseball field area to the northeast.

- Two borings will be advanced along the west side of the baseball field area along the fence line at locations midway between the east/west lines of the previously established 100-foot grid. Sampling in these locations will horizontally delineate the PCB concentrations detected in the baseball field area to the west.

- One boring will be advanced in the southern portion of the recharge basin area from a location at grade with the baseball field (to allow the drill rig access to the boring location). Sampling in this location will horizontally delineate the PCB concentrations detected in the baseball field area to the north.

- Three soil borings will be advanced within the baseball field area at previously sampled probe locations exhibiting the highest concentrations of PCBs in the baseball field area. Sampling in these locations will vertically delineate the PCB concentrations detected in the baseball field area.

- Two of the borings advanced as part of this program will be converted to groundwater monitoring wells. The borings selected for the two monitoring wells include the boring to be advanced within the recharge basin area and the southernmost boring proposed to be advanced along the east side of the baseball field. Based on existing information, these locations are primarily upgradient and downgradient, respectively, of the baseball field area.

Since excavation activities were historically conducted within this area, it is unclear what the depth of impacted soil may be within this area. As a result, the total depth of each boring will be field determined by a qualified geologist. As such, the soil borings will be advanced to the following depth at each location, whichever is greater:

- Undisturbed native soil or a confining layer; or,

- Soil which does not exhibit evidence of contaminant impact such as visual appearance of staining and/or discoloration. Field instruments, such as a photoionization detector, will also be utilized to assist with this determination.

Each soil boring will be advanced utilizing the hollow stem auger method with continuous split spoon sampling at 2-foot intervals. A qualified geologist will log all samples retrieved from the borings and record these observations in a bound field log book. For the

purposes of this Work Plan, in order to determine the total number of soil samples to be collected, it is assumed that each soil boring will be advanced to a depth of 12 feet below grade. For borings advanced to 12 feet below grade, soil samples with be collected for laboratory analysis from the 0 to 2-inch depth interval, the 2-inch to 2-foot depth interval and at 2-foot intervals from that point until the total depth of the boring is reached. For borings advanced to depths greater than 12 feet, the soil samples mentioned previously will be collected as well as samples from all other 2-foot intervals which the geologist determines should be sampled.

At two locations, the soil probes will be extended to 10 feet below the water table interface and monitoring wells will be installed. The 2-inch wells will consist of 15 feet of screen and be installed with the screen 5 feet above the water table interface and 10 feet below. A further description of the monitoring well construction is provided in Section 3.2.1.

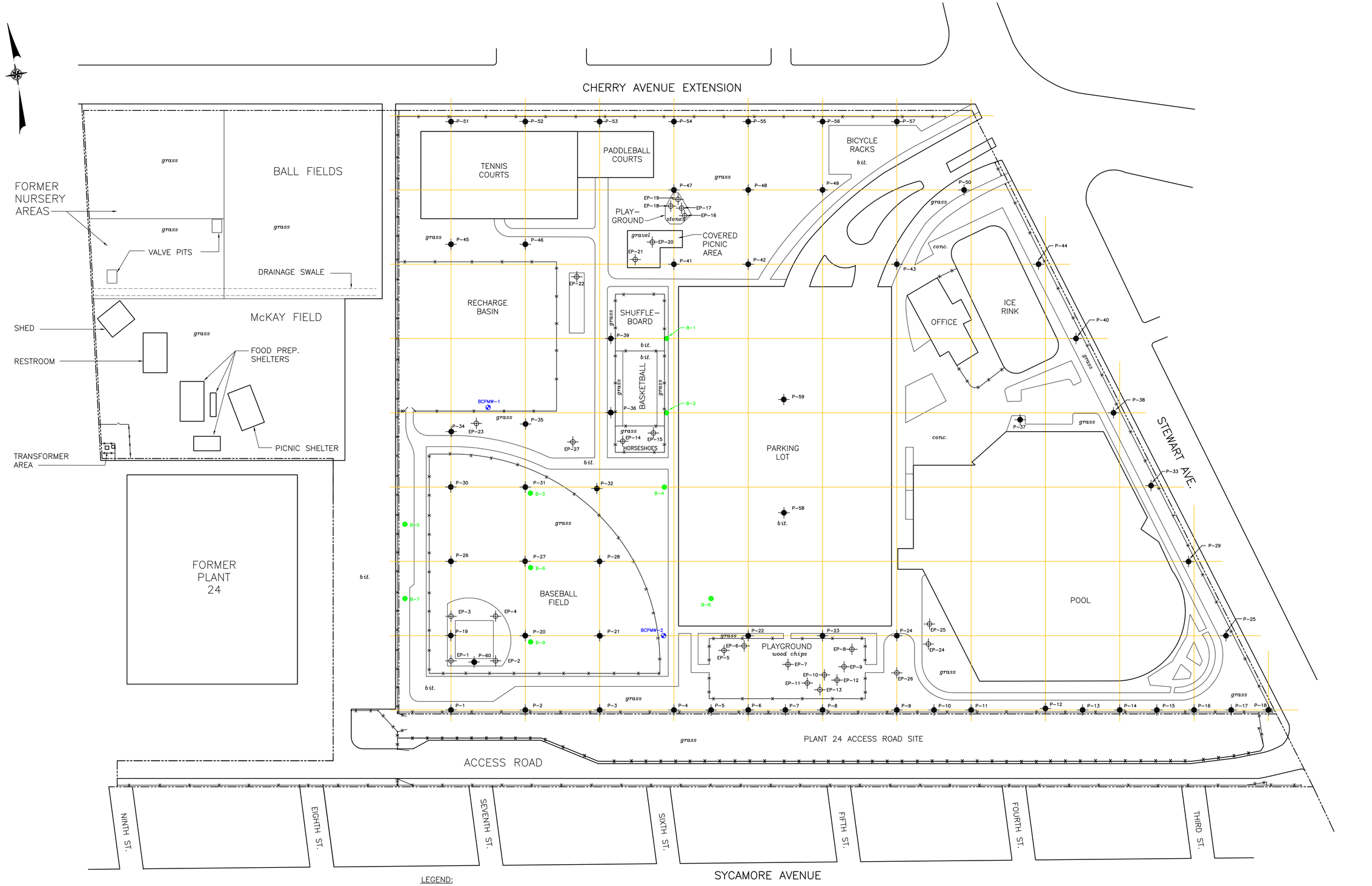
The proposed soil boring and monitoring well locations are presented on Figure 3-1.

3.2 Field Investigation

The field investigation to be undertaken within the Town of Oyster Bay Bethpage Community Park includes the following activities:

- Surface and subsurface soil sampling
- Groundwater sampling

A summary of the scope of the sampling program is provided on Table 3-1 and Table 3-2, respectively, presented at the end of this section. Further descriptions of the sampling and decontamination procedures are provided in the Quality Assurance Project Plan (QAPP) presented in Section 5.0 of this report. In addition, Quality Assurance/Quality Control (QA/QC) samples to be collected in the field during this project are described in the QAPP. As stated earlier, the proposed soil boring and monitoring well locations are presented on Figure 3-1.



NOTES:

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2. THE APPROXIMATE LOCATIONS AND DIMENSIONS OF THE PARK FEATURES AND STRUCTURES HAVE BEEN FIELD VERIFIED.

LEGEND:

- PROPERTY LINE
- FENCE
- TEMPORARY FENCE
- PREVIOUS SOIL PROBE LOCATION (ADVANCED TO A DEPTH OF 8 FEET BELOW GRADE – MARCH 2002)
- PREVIOUS EXPOSURE POINT SAMPLING LOCATION (COLLECTED FROM THE 0–2" DEPTH INTERVAL – MARCH 2002 (EP–1 THROUGH EP–19) OR MAY 2002 (EP–20 THROUGH EP–27))
- PROPOSED SOIL BORING LOCATION
- PROPOSED MONITORING WELL LOCATION

0 50' 100'
SCALE: 1"=50'

NO.	DATE	REVISION	INT.
--	10/02	ORIGINAL DRAWING	M.R.H.

PROJECT ENGINEER:	DRAWN BY:
B.M.V.	D.G.C.
DESIGNED BY:	CHECKED BY:
M.R.H.	B.M.V.

TOWN OF OYSTER BAY
BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK

DELINEATION SAMPLING PROGRAM
PROPOSED SAMPLE LOCATION PLAN

PROJECT NO.: 1572–06
DATE: OCTOBER 2002
SCALE: AS NOTED
DRAWING NO.: **3-1**

It should be noted that, since the total depth of each boring will be field determined based on visual observations and instrumentation, it not known how many soil samples will actually be collected for analysis. As a result, the soil sample quantities listed on the following tables represent the number of soil samples to be collected from the borings if all borings are only advanced to a depth of 12 feet below grade. Therefore, the soil sample quantities listed on the following tables may represent the minimum number of soil samples which may be collected during the Delineation Sampling Program. In addition, during the field activities, the proper number of QA/QC samples will be collected based on the total number of soil samples collected, as described in the QAPP (Section 5.0 of this Work Plan).

3.2.1 Monitoring Well Installation

In order to assess whether groundwater has been adversely impacted, two monitoring wells will be installed in the Bethpage Community Park. Monitoring well BCPMW-1 will be installed in the southern portion of the recharge basin area and monitoring well BCPMW-2 will be installed near the southeast corner of the parking lot (see Figure 3-1 for well locations). These wells will be installed using the hollow stem auger drilling method using a 2-inch diameter PVC well screen and casing.

Prior to installing the monitoring wells, the well casings and screens will be decontaminated as described in Section 5.0 of this Work Plan. The monitoring wells will consist of a 2-inch diameter, 15-foot long, 0.020-inch slot (or 0.010-inch slot if fine sand/silt is encountered), PVC well screen and Schedule 40 PVC riser pipe. The wells will be set at approximately 10 feet below the water table. The water table is anticipated at approximately 58 feet below ground surface. A number 1 or 2 grade silica sand pack will be tremied in place to a depth of 2 feet above the top of the well screen.

A finer grain sand pack (100% passing No. 30 sieve and less than 2% passing the No. 200 sieve) approximately 6 inches thick will be placed above the sand pack. This finer sand pack will be placed by the tremie method.

The remaining annular space above the sand pack will be filled with "Pure Gold" bentonite manufactured by the American Colloid Co. The bentonite will be placed in the annular space by the tremie method from the top of the sand pack to the ground surface.

A protective steel casing with a locking cap will be set at the ground surface. The protective casing will be flush mounted at ground surface. The casing will be set in a minimum 2-foot cube concrete pad finished approximately 2 inches above the ground surface. The pad will have a surface that slopes radially away from the well cover.

At the completion of the monitoring well construction, a vented PVC cap will be placed on the riser pipe and the wells will be labeled with the well number. A well construction as-built log will be provided showing details of the monitoring well construction, description of the materials used and elevations of well features.

3.2.2 Monitoring Well Development

The monitoring wells will be developed at the completion of construction after allowing a minimum of 24 hours for the grout material to set. The wells will be developed in accordance with NYSDEC-approved methods and criteria such as, but not limited to, pump and surge, air lift, or surge block and bailing.

The monitoring wells will be developed until the discharged water has achieved a turbidity of 50 Nephelometric Turbidity Units (NTUs) or less for a minimum of three consecutive measurements. Sample measurements will be collected at every three to five well volumes. One well volume is considered the amount of water contained in the well riser pipe and sand pack. Well development monitoring will be supplemented by additional measurements of pH, conductivity and temperature. These measurements will be collected concurrent with the turbidity measurements. Well development will continue until the turbidity requirements are achieved. However, it is understood that conditions may exist where a natural turbidity of less than 50 NTUs is unachievable. If such conditions exist, then development will continue until

turbidity, pH, conductivity and temperature values have stabilized. Stabilized values are defined as three consecutive readings with 10% variation or less.

Well development water will be placed in 55-gallon drums for proper off-site disposal. Formation cuttings will also be placed in 55-gallon drums for proper off-site disposal.

General procedures to conduct well development are as follows:

- Calibrate meters and instruments prior to use. Record calibration notes in field book.
- Monitor air quality of the well head space and ambient air in the working zone immediately around the well. Determine the appropriate level of respiratory protection.
- Measure water level and total depth of well from fixed measuring point.
- Calculate Well Volume in gallons using the formula:

  $$V = (3.14)\ r2L \times (7.48\ \text{gallons/cf})$$

  Also include volume calculation of the saturated sand pack in the total volume calculation.
- Evacuate required volume of water in accordance with NYSDEC protocol and monitor for turbidity, pH, conductivity and temperature at the appropriate intervals. Ensure down hole tools and instruments have been properly decontaminated.
- At the completion of well development, remove down hole tools, and secure well site and well.

Downhole tools, such as bailers, pumps, surge blocks and air lines, will be decontaminated prior to use. Decontamination procedures are described in Section 5.0 of this Work Plan.

Table 3-1

NORTHROP GRUMMAN CORPORATION

SCOPE OF WORK SUMMARY
DELINEATION SAMPLING PROGRAM
AT THE
TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK

Program Element	Scope of Work Description
Bethpage Community Park	
• Surface and Subsurface Soil Sampling	A total of 11 soil borings will be advanced using the hollow stem auger/split spoon sampling system within the Town of Oyster Bay Bethpage Community Park. The soil borings will be advanced at the locations described previously in this section and presented on Figure 3-1. The borings will be advanced to field-determined depths as described previously in this section. In addition, the borings advanced at locations "BCPMW-1" and "BCPMW-2" (see Figure 3-1) will be advanced to 10 feet below the water table interface. Soil samples will be retrieved at 2-foot intervals and logged by a qualified geologist. Soil samples will be collected for laboratory analysis from the 0 to 2-inch depth interval, the 2-inch to 2-foot depth interval, and at 2-foot intervals from that point until 12 feet below grade (as stated previously, this depth was assumed for the purpose of estimating the number of soil samples to be collected). In addition, soil samples will be collected from any 2-foot depth interval deeper than 12 feet below grade which the field geologist determines is necessary. As a result, based on the 12-foot depth assumption, 77 soil samples will be collected for laboratory analysis. All soil samples collected will be analyzed for PCBs by USEPA Method 8082, total chromium by USEPA Method 6010, and hexavalent chromium by USEPA Method 7196.
• Groundwater Sampling	Two monitoring wells will be constructed within the Bethpage Community Park as located on Figure 3-1. Each well will be constructed with 2-inch I.D., Schedule 40, 15-foot long, 0.020-inch slot screens and threaded flush joint PVC casing, unless fine sand/silt is encountered. If fine sand/silt is encountered, 0.010-inch slot screens will be utilized.

Table 3-1 (continued)

NORTHROP GRUMMAN CORPORATION
SCOPE OF WORK SUMMARY
DELINEATION SAMPLING PROGRAM
AT THE
TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK

Program Element	Scope of Work Description
• Groundwater Sampling (continued)	The screens will be positioned to be 5 feet above the water table interface and 10 feet below. Each well will be installed with continuous split spoon sampling in order to characterize subsurface geology. Following well development and purging, one groundwater sample will be collected from each well. All groundwater samples collected will be analyzed for volatile organic compounds (VOCs) by USEPA Method 8260, semivolatile organic compounds (SVOCs) by USEPA Method 8270, Target Analyte List (TAL) metals by USEPA Method 6010/7471, PCBs by USEPA Method 8082, and hexavalent chromium by USEPA Method 7196.
• Surveying and Mapping	All new monitoring well locations and casing elevations will be surveyed by a licensed surveyor and located on the base map.

Table 3-2

NORTHROP GRUMMAN CORPORATION
SAMPLING PROGRAM SUMMARY
DELINEATION SAMPLING PROGRAM
AT THE
TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK

Program Element	Environmental Media	Location/Depth	Number of Samples*	Sampling Equipment	Laboratory Analysis**
Bethpage Community Park					
• Surface and Subsurface Soil Sampling	Soil	Surface soil sample and continuous sampling at 2-foot intervals to 12 feet below ground surface at 11 locations. At least 7 soil samples collected per location.	77 (est.)	Decontaminated split spoon sampler.	PCBs (USEPA Method 8082), total chromium (USEPA Method 6010) and hexavalent chromium (USEPA Method 7196)
• Groundwater Sampling	Groundwater	Install two monitoring wells and collect groundwater samples from each well.	2	Disposable polyethylene bailer and electronic water level logger.	VOCs (USEPA Method 8260), SVOCs (USEPA Method 8270), TAL metals (USEPA Method 6010/7471), PCBs (USEPA Method 8082) and hexavalent chromium (USEPA Method 7196)

Table 3-2 (continued)

NORTHROP GRUMMAN CORPORATION
SAMPLING PROGRAM SUMMARY
DELINEATION SAMPLING PROGRAM
AT THE
TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK

Program Element	Environmental Media	Location/Depth	Number of Samples*	Sampling Equipment	Laboratory Analysis**
• Surveying and Mapping	All new monitoring well locations and casing elevations will be surveyed by a licensed surveyor and located on the base map.				

*Does not include QA/QC samples. See Section 5.0 of this Work Plan for a summary of QA/QC samples.
**Assumes a standard 28-day turnaround time for sample analytical results will be provided by the laboratory, unless otherwise specified.

4.0 PROJECT MANAGEMENT PLAN

This section presents the management plan for completing the various aspects of this soil sampling project. As stated earlier, Northrop Grumman Corporation is undertaking this program based on the findings of the soil sampling program undertaken in March 2002, and subsequent meetings with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH).

4.1 Project Organization

Since this project is still in the planning phase, the consultants/contractors to be retained in order to complete this Delineation Sampling Program have not been determined. However, the consultants/contractors selected will be experienced in environmental investigation and remediation services. In addition, the laboratory selected to perform the analytical services will be a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory and be capable of providing Category B data deliverables.

5.0 QUALITY ASSURANCE PROJECT PLAN

5.1 Project Identification

Facility Name:	Town of Oyster Bay Bethpage Community Park
Project Name:	Delineation Sampling Program
Project Manager:	John E. Cofman, P.E. (*Northrop Grumman Corporation*)
	Henry Wilkie (*New York State Department of Environmental Conservation*)
	Consultant representative (*to be determined*)
Quality Assurance Officer:	Consultant representative (*to be determined*)
Field Operations Manager:	Consultant representative (*to be determined*)

5.2 Objective and Scope

The objective of the Town of Oyster Bay Bethpage Community Park Delineation Sampling Program is to further characterize the quality of soil located within the park and determine the environmental condition of groundwater. The purpose of this Quality Assurance Project Plan (QAPP) is to develop and describe the detailed sample collection and analytical procedures that will ensure high quality data.

5.3 Data Usage

The data generated from the field sampling program will be used to monitor for the health and safety of the workers on the site and the health and safety of persons off-site. As

described above, it will also be used to assess the quality of the soil and groundwater located within the Town of Oyster Bay Bethpage Community Park.

5.4 Sampling Program Design and Rationale

The following presents a general discussion of the sampling to be conducted during the sampling phase of the program.

- Surface and Subsurface Soil: Since the depths of the borings and selection of soil samples for analysis will be field determined by a qualified geologist, for the purposes of this Work Plan, it is assumed that 77 soil samples will be collected from 11 soil boring locations advanced to a depth of 12 feet below grade. Soil samples will be collected from each boring at 2-foot intervals as follows: samples will be collected from the 0 to 2-inch depth interval, the 2-inch to 2-foot depth interval and at 2-foot intervals from that point until the total depth of the borings is reached. Note: If the field geologist determines that a particular boring should be advanced to a greater depth, then additional soil samples may be collected.

- Groundwater: Two groundwater samples will be collected from two monitoring wells to be constructed within the park.

For a detailed discussion of the sampling program and selection of sample matrices and locations, see the Field Investigation section of this Work Plan (Section 3.2).

5.5 Analytical Methods

Analysis of the surface and subsurface soil samples will consist of total chromium, hexavalent chromium and PCBs as identified in the 2000 NYSDEC Analytical Services Protocol (ASP). The groundwater samples will be analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), Target Analyte List (TAL) metals, PCBs and hexavalent chromium as identified in the 2000 NYSDEC ASP.

Table 5-1 presents a summary of the parameters/sample fractions to be analyzed. The table also lists the sample location, type of sample, sample matrix, number of samples, frequency

Table 5-1

TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	No. of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Soil	Grab	Surface and Subsurface Soil	Chromium	77 (est.)	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	6 months for analysis	6/00 NYSDEC ASP, Method 6010
			Hexavalent Chromium	77 (est.)	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	24 hours for analysis	6/00 NYSDEC ASP, Method 7196
			Polychlorinated Biphenyls (PCBs)	77 (est.)	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	10 days after VTSR for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Method 8082
Site Study Area	Matrix Spike/ Matrix Spike Duplicate	Soil	Chromium	4**	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	6 months for analysis	6/00 NYSDEC ASP, Method 6010
			Hexavalent Chromium	4**	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	24 hours for analysis	6/00 NYSDEC ASP, Method 7196
			Polychlorinated Biphenyls (PCBs)	4**	1	Glass, clear/8 oz./1 ICHEM 200 series or equivalent	Cool to 4°C	10 days after VTSR for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Method 8082

*Holding times based upon VTSR.
**Four sets of MS/MSDs based on 77 surface and subsurface soil samples collected.

VTSR - Verified time of sample receipt at the laboratory.

Table 5-1 (continued)

TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	No. of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Monitoring Wells	Grab	Groundwater	Volatile Organic Compounds (VOCs)	2	1	Glass, clear/40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C	7 days for analysis	6/00 NYSDEC ASP, Method 8260
			Semivolatile Organic Compounds (SVOCs)	2	1	Glass, amber/1 L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Method 8270
			Target Analyte List (TAL) Metals	2	1	Plastic/1 L/1 ICHEM 300 series or equivalent	HNO_3 to pH <2, cool to 4°C	26 days for mercury analysis, 6 months for analysis of others	6/00 NYSDEC ASP, Method 6010/7471
			Polychlorinated Biphenyls (PCBs)	2	1	Glass, amber/1 L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Method 8082
			Hexavalent Chromium	2	1	Plastic/500 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	24 hours for analysis	6/00 NYSDEC ASP, Method 7196
Site Study Area	Matrix Spike/ Matrix Spike Duplicate	Groundwater	Volatile Organic Compounds (VOCs)	1***	1	Glass, clear/40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C	7 days for analysis	6/00 NYSDEC ASP, Method 8260
			Semivolatile Organic Compounds (SVOCs)	1***	1	Glass, amber/1 L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Method 8270
			Target Analyte List (TAL) Metals	1***	1	Plastic/1 L/1 ICHEM 300 series or equivalent	HNO_3 to pH <2, cool to 4°C	26 days for HR analysis, 6 months for analysis of others	6/00 NYSDEC ASP, Method 6010/7471

Table 5-1 (continued)

TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK
SUMMARY OF MONITORING PARAMETERS/SAMPLE FRACTIONS

Sample Location	Sample Type	Sample Matrix	Sample Fraction	No. of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Site Study Area (continued)	Matrix Spike/ Matrix Spike Duplicate	Groundwater	Polychlorinated Biphenyls (PCBs)	1***	1	Glass, amber/1 L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Method 8082
			Hexavalent Chromium	1***	1	Plastic/500 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	24 hours for analysis	6/00 NYSDEC ASP, Method 7196
Site Study Area	Field Blank	Groundwater	Volatile Organic Compounds (VOCs)	1***	1	Glass, clear/40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C	7 days for analysis	6/00 NYSDEC ASP, Method 8260
			Semivolatile Organic Compounds (SVOCs)	1***	1	Glass, amber/1 L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Method 8270
			Target Analyte List (TAL) Metals	1***	1	Plastic/1 L/1 ICHEM 300 series or equivalent	HNO_3 to pH <2, cool to 4°C	26 days for HR analysis, 6 months for analysis of others	6/00 NYSDEC ASP, Method 6010/7471
			Polychlorinated Biphenyls (PCBs)	1***	1	Glass, amber/1 L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP, Method 8082
			Hexavalent Chromium	1***	1	Plastic/500 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	24 hours for analysis	6/00 NYSDEC ASP, Method 7196
Site Study Area	Trip Blank	Groundwater	Volatile Organic Compounds (VOCs)	1	1	Glass, clear/40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C	7 days for analysis	6/00 NYSDEC ASP, Method 8260

*Holding times based upon verified time of sample receipt at the laboratory.
***One set of MS/MSDs and one field blank based on two groundwater samples collected.

of sample collection, type of sample container, method of preservation, holding time and analytical method.

5.6 Data Quality Requirements and Assessment

Data quality requirements and assessments are provided in the 2000 NYSDEC ASP, which includes the detection limit for each parameter and sample matrix (see Exhibit 5A). Note that quantification limits, estimated accuracy, accuracy protocol, estimate precision and precision protocol are determined by the laboratory and will be in conformance with the requirements of the 2000 NYSDEC ASP, where applicable. Table 5-2 presents a summary of the data quality requirements.

In addition to meeting the requirements provided in the 2000 NYSDEC ASP, the data must also be useful in evaluating the nature and extent of contamination. Data obtained during the field investigation will be compared to specific Standards, Criteria and Guidelines (SCGs). The SCGs to be utilized include:

Matrix	**SCG**
Surface and Subsurface Soil	NYSDEC's Technical and Administrative Guideline Memorandum (TAGM) HWR-94-4046 for the Determination of Soil Cleanup Objectives and Cleanup Levels dated January 1994.
Groundwater	Class GA Groundwater Standards/Guidance Values found in NYSDEC's Technical and Operational Guidance Series (TOGS) 1.1.1 – "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations."

5.6.1 Data Representativeness

Representative samples will be collected as follows:

- Surface and Subsurface Soil – Samples will be collected directly from properly decontaminated split spoons and transferred into the sample container with a sterile polystyrene scoop and/or wooden tongue depressor.

Table 5-2

TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY

Parameter	Sample Matrix	CRDL*	Estimated Accuracy	Accuracy Protocol	Estimated Precision	Precision Protocol
VOCs	Groundwater	10 ug/L	0.1 – 0.5 ug/L	Exhibit D, SW-846, Method 8260, Table 7	0.1 – 0.5 ug/L	Exhibit D, SW-846, Method 8260, Table 7
SVOCs	Groundwater	10 – 50 ug/L	0.29 – 1.23 ug/L	Exhibit D, SW-846, Method 8270, Table 7	0.29 – 1.23 ug/L	Exhibit D, SW-846, Method 8270, Table 7
TAL Metals	Groundwater	0.2 – 5,000 ug/L	—	Exhibit D, SW-846, Method 6010/7471, Table 4	—	Exhibit D, SW-846, Method 6010/7471, Table 4
Chromium	Soil	1,000 ug/kg	—	Exhibit D, SW-846, Method 6010, Table 4	—	Exhibit D, SW-846, Method 6010, Table 4
PCBs	Groundwater	1.0 – 2.0 ug/L	0.66 – 0.97 ug/L	Exhibit D, SW-846, Method 8082, Table 10	0.15 – 0.47 ug/L	Exhibit D, SW-846, Method 8082, Table 10
	Soil	17 – 34 ug/kg	—	Exhibit D, SW-846, Method 8082, Table 10	—	Exhibit D, SW-846, Method 8082, Table 10
Hexavalent Chromium	Groundwater	30 ug/L	—	Exhibit D, SW-846, Method 7196, Table 1	—	Exhibit D, SW-846, Method 7196, Table 1
	Soil	30 ug/kg	—	Exhibit D, SW-846, Method 7196, Table 1	—	Exhibit D, SW-846, Method 7196, Table 1

*Contract Required Detection Limits.

Table 5-2 (continued)

TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY

Matrix/Parameter	Precision (%)	Accuracy (%)
Groundwater		
VOCs[a]	See Table 5-2a	See Table 5-2a
SVOCs[a]	See Table 5-2b	See Table 5-2b
TAL Metals[b]	±25%	75 – 125
PCBs[a]	See Table 5-2c	See Table 5-2c
Hexavalent Chromium[b]	±25%	75 – 125
Soils		
PCBs[a]	See Table 5-2c	See Table 5-2c
Chromium[b]	±25%	75 – 125
Hexavalent Chromium[b]	±25%	75 – 125

Notes:

[a] Accuracy will be determined as percent recovery of surrogate spike compounds and matrix spike compounds. Surrogate and matrix spike compounds for VOCs, SVOCs and PCBs are listed in Tables 5-2a, 5-2b and 5-2c, respectively. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.

[b] Accuracy will be determined as percent recovery of matrix spikes when appropriate or the percent recovery of a QC sample if spiking is inappropriate. Precision will be determined as relative percent difference of matrix spike duplicate samples, or duplicate samples if spiking is inappropriate.

Source: NYSDEC ASP

Table 5-2a

TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK
DATA QUALITY REQUIREMENTS
ACCURACY AND PRECISION REQUIREMENTS FOR VOCs

	Spike Recovery Limits (%) Groundwater
Surrogate Compound	
Toluene-d8	88 - 110
4-Bromofluorobenzene	86 – 115
1,2-Dichloroethane-d4	76 – 114
Dibromofluoromethane	86 – 118
Matrix Spike Compound	
1,1-Dichloroethene	61 – 145
Trichloroethane	71 – 120
Chlorobenzene	75 – 130
Toluene	76 – 125
Benzene	76 – 127

Source: NYSDEC ASP

Table 5-2b

TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK
DATA QUALITY REQUIREMENTS
ACCURACY AND PRECISION REQUIREMENTS FOR SVOCs

	Spike Recovery Limits (%) Groundwater
Surrogate Compound	
Nitrobenzene-d_5	35 - 114
2-Fluorobiphenyl	43 - 116
Terphenyl-d_{14}	33 - 141
Phenol-d_5	10 - 110
2-Fluorophenol	21 – 110
2,4,6-Tribromophenol	10 – 123
2-Chlorophenol-d_4	33 – 110
1,2-Dichlorobenzene-d_4	16 – 110
Matrix Spike Compound	
Phenol	12 – 110
2-Chlorophenol	27 – 123
1,4-Dichlorobenzene	36 – 97
N-Nitroso-di-n-propylamine	41 – 116
1,2,4-Trichlorobenzene	39 – 98
4-Chloro-3-methylphenol	23 – 97
Acenaphthene	46 – 118
4-Nitrophenol	10 – 80
2,4-Dinitrotoluene	24 – 96
Pentachlorophenol	9 – 103
Pyrene	26 – 127

Source: NYSDEC ASP

Table 5-2c

TOWN OF OYSTER BAY BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK
ADVISORY RECOVERY LIMITS
SURROGATE AND MATRIX SPIKE COMPOUNDS
FOR PESTICIDES/PCBs*

	Advisory Recovery Limits (%)	
	Soil	Groundwater
Surrogate Compound		
Decachlorobiphenyl	60-150	60 – 150
Tetrachloro-m-xylene	60-150	60 – 150
Matrix Spike Compound		
Aroclor 1016 mix	75-125	75 – 125

*Samples do not have to be reanalyzed if these recovery limits are not met.

Source: NYSDEC ASP

- Groundwater – Samples will be collected from newly installed monitoring wells using disposable polyethylene bailers and poured directly into the sample container.

- Equipment Calibration - Field equipment used for air monitoring will be calibrated daily before use according to the manufacturer's procedures.

- Equipment Decontamination - Non-sterile sampling equipment will be decontaminated prior to use at each location according to the NYSDEC-approved procedures described in Section 5.8 of this QAPP.

5.6.2 Data Comparability

All data will be presented in the units designated by the methods specified by a NYSDOH Environmental Laboratory Approval Program (ELAP) and Contract Laboratory Program (CLP) certified laboratory, and the 2000 NYSDEC ASP. In addition, sample locations, collection procedures and analytical methods from earlier studies will be evaluated for comparability with current procedures/methods.

5.6.3 Data Completeness

The acceptability of 100% of the data is desired as a goal for this project. The acceptability of less than 100% complete data, meeting all laboratory Quality Assurance/Quality Control (QA/QC) protocols/standards, will be evaluated on a case-by-case basis.

The laboratory utilized to perform the analyses on the soil and groundwater samples will provide NYSDEC ASP Category B data deliverables.

5.7 Detailed Sampling Procedures

Surface and subsurface soil will be collected from different locations within the Town of Oyster Bay Bethpage Community Park in order to characterize soil quality. In addition, groundwater samples will be collected from monitoring wells to be constructed during the program. Soil sample collection methods will consist of surface soil sampling and soil borings. The location of each soil boring and monitoring well is presented in the Scope of Investigation

(Section 3.0) of this Work Plan. Sampling procedures and equipment are described in this section. Sample collection will be performed in conformance with the procedures outlined in this Quality Assurance Project Plan and the Site-Specific Health and Safety Plan, both contained in this Work Plan.

When collecting soil and groundwater samples, care will be taken to maintain sample integrity by preserving its physical form and chemical composition to as great an extent as possible. First, the equipment utilized to collect the samples must be properly decontaminated. An appropriate sampling device (e.g., sterile polyethylene scoops, polyethylene bailer, etc.) will be utilized to transfer the sample into the laboratory-supplied sample container. The sample should reflect and contain a good representation of the matrix from which it was collected. The sample will be transferred into the sample container as quickly as possible, with no mixing.

There are several steps performed after the transfer of the sample into the sample container that are necessary to properly complete the collection activities. Once the sample is transferred into the appropriate container, the container will be capped and, if necessary, the outside of the container will be wiped with a clean paper towel to remove excess material. A clean paper towel moistened with distilled/deionized water will be used for this purpose.

Prior to sample collection, the sample container will be properly labeled. Information such as the sample identification number, location, collection time and sample description will be recorded in the field log book. Associated paper work (e.g., Chain of Custody forms) will then be completed and will stay with the sample. The samples will be packaged in a manner that will allow the appropriate storage temperature to be maintained during transportation to the laboratory. Samples will be delivered to the laboratory within 48 hours of collection.

Proper personal protective equipment and monitoring equipment will be used at all times during sample collection to further maintain sample integrity and protection of worker health and safety.

5.7.1 Sample Identification

All samples collected during the field activities undertaken at the Town of Oyster Bay Bethpage Community Park will be labeled with a sample identification code. The code will identify the sample location, sample matrix and series numbers for sample locations with more than one sample. Samples will be labeled according to the following system:

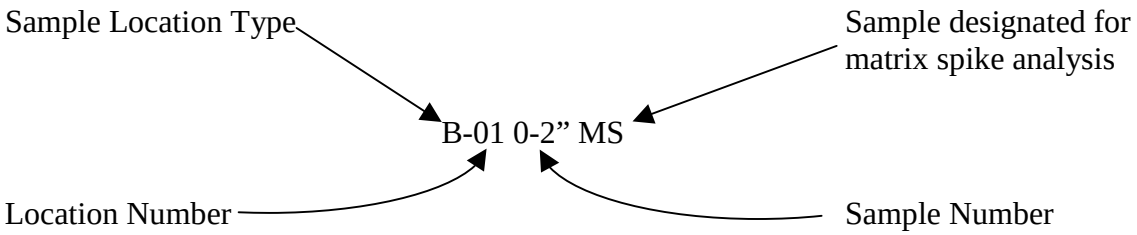
Sample Location Type: - Borehole "B" or monitoring well "BCPMW."

Location Number: - Each boring and monitoring well will be assigned an identification number. As an example, boring 1 will be denoted "1." Boring and monitoring well identification numbers are identified on Figure 3-1 of this Work Plan.

Sample Number: - For borings only, the sample number will correspond to the depth at which the sample was collected from grade. Samples will be denoted as follows: the 0 to 2-inch depth interval will be denoted "0-2,"" the 2-inch to 2-foot interval "2"-2'," the 2 to 4-foot interval "2'-4'" and so on.

Matrix Spike and Matrix Spike Duplicate: - An "MS" or "MSD" as appropriate will be attached at the end of the sample identification name.

Based on the above sample identification procedures, an example of a sample label may be:



5.7.2 Sample Handling, Packaging and Shipping

All analytical samples will be placed in the appropriate sample containers as specified in the NYSDEC June 2000 ASP. The holding time criteria identified in the ASP will be followed, as specified in Table 5-1.

Prior to packaging any samples for transportation to the laboratory, the sample containers will be checked for proper identification and compared to the field log book for accuracy. The samples will then be wrapped with a cushioning material (e.g., bubble wrap) and placed in a cooler (or laboratory shuttle) with a sufficient quantity of bagged ice or "blue ice" packs to maintain the samples at 4°C until arrival at the laboratory.

All necessary documentation required to accompany the samples during transportation will be placed in a sealed plastic bag and taped to the underside of the cooler lid. The cooler will then be sealed with fiber (duct) tape, and custody seals will be placed in such a manner that any opening of the cooler prior to arrival at the laboratory can be detected.

All samples will be shipped to ensure receipt at the laboratory within 48 hours of sample collection in accordance with ASP requirements.

5.7.3 Surface Soil

The following protocol will be adhered to for the collection of surface soil samples if the sample is not to be collected directly from the split spoon sampler:

1. Be certain that the sample location is noted on sample location sketch (see Section 5.10).
2. If a dedicated sampling device is not used, be certain that the sampling equipment has been decontaminated utilizing the procedures outlined in Section 5.8.
3. Remove a laboratory-supplied, precleaned sample container from the sample cooler, label container with an indelible marker and fill out a Chain of Custody form (refer to Section 5.10.2).
4. At the sample location, clear surface debris (e.g., vegetation, rocks, twigs, woodchips, etc.). Collect an adequate amount of soil from a depth of 0 to 2 inches using a decontaminated or disposable scoop and/or sterile wooden tongue depressor. Transfer the sample directly into the sample container.
5. Return the sample container to the cooler.

6. If reusable, decontaminate the sampling equipment according to the procedures described in Section 5.8.

7. Place all disposable personal protective equipment and disposable sampling equipment into a 55-gallon drum or other approved container for disposal.

5.7.4 Soil (Boring)

Each sample location must be cleared of utilities prior to the initiation of the field activities. The following protocol will be adhered to for the collection of soil samples:

1. Be certain that the sample location is noted on sample location sketch (see Section 5.10).

2. If a dedicated sampling device is not used, be certain that the sampling equipment (e.g., split spoon) has been decontaminated utilizing the procedures outlined in Section 5.8.

3. Remove a laboratory-supplied, precleaned sample container from the sample cooler, label container with an indelible marker and fill out a Chain of Custody form (refer to Section 5.10.2).

4. Auger into the soil to the desired depth and drive split spoon sampler.

5. Retrieve the sampler and, immediately after opening the sampler, obtain an organic vapor measurement and describe sample in log book (refer to Section 5.10.3).

6. Remove a sample aliquot from the sampler using a disposable scoop or sterile wooden tongue depressor, place into the open sample container and replace the container cover.

7. Return the sample container to the cooler.

8. If reusable, decontaminate the sampling equipment according to the procedures described in Section 5.8.

9. Place all disposable personal protective equipment and disposable sampling equipment into a 55-gallon drum or other approved container for disposal.

5.7.5 Groundwater

The following protocol will be adhered to for the collection of groundwater samples:

1. Be certain that the sample location is noted on sample location sketch (see Section 5.10).

2. If dedicated sampling equipment is not used, be certain that the sampling equipment has been decontaminated utilizing the procedures outlined in Section 5.8.

3. Remove monitoring well cover and well cap and measure the depth of the water within the monitoring well and the total depth of the well using a decontaminated water level indicator. Calculate the volume of standing water within the well.

4. Purge three to five well volumes from the well utilizing a decontaminated submersible pump fitted with disposable tubing or utilizing a disposable polyethylene bailer or decontaminated Teflon or stainless steel bailer. All purge water will be placed in a 55-gallon drum for off-site disposal following waste characterization.

5. Measurements of pH, conductivity, turbidity, dissolved oxygen, temperature and salinity will be recorded initially and for each half well volume purged. Purging will be determined to be complete following the removal of three to five well volumes from the well and the stabilization of the parameters mentioned previously. (Note: the turbidity must be less than 50 NTUs prior to the collection of a sample for metals analysis. Greater than 50 NTUs may require filtering of the sample or waiting a maximum of 24 hours for the turbidity to decrease.)

6. Remove a set of laboratory-supplied, precleaned sample containers from the sample cooler, label containers with an indelible marker and fill out a Chain of Custody form (refer to Section 5.10.2).

7. Retrieve a groundwater sample from the well utilizing a disposable polyethylene bailer or decontaminated Teflon or stainless steel bailer. The order in which the sample containers will be filled is: VOCs, SVOCs, PCBs, hexavalent chromium and metals.

8. If the turbidity exceeds 50 NTUs, then the a second sample container for metals analysis will be collected. This second metals sample will be placed in an unpreserved sample container to allow filtering of the sample by the laboratory contracted to perform the sample analyses. This sample container should be properly marked as unpreserved for metals analysis and the Chain of Custody should request that this sample be filtered by the laboratory prior to analysis for metals.

9. Gently pour the sample into each sample container taking care not to spill on the outside of the container or overfill the container. Replace the cover on the sample container. Samples for VOC analyses will have no air spaces in the sample container prior to sealing. This is performed by filling the container such that there is a meniscus on top. Wet the bottom of the container cap with a few drops of the sample and carefully place the cap atop the container. Check for bubbles by turning the container upside down and tapping it lightly. If bubbles appear, reopen the container

and add more sample. Replace the cap and check for bubbles. Repeat until the container is free of all bubbles.

10. Return the sample containers to the cooler.

11. Place any unused portion of the groundwater sample into the 55-gallon drum containing the purge water.

12. Following sample collection, replace the well cap on the well and reinstall the well cover.

13. If reusable, decontaminate the sampling equipment according to the procedures described in Section 5.8.

14. Place all disposable personal protective equipment and disposable sampling equipment into a 55-gallon drum or other approved container for disposal.

5.8 Decontamination Procedures

Whenever feasible, all field sampling equipment should be dedicated to a particular sampling location. In instances where this is not possible, a field cleaning (decontamination) procedure will be used in order to reduce the risk of cross-contamination between sample locations. A decontamination station will be established for all field activities. This will be an area located at some distance from the sampling locations so as not to adversely impact the decontamination procedure while still allowing the sampling teams to keep equipment handling to a minimum.

5.8.1 Field Decontamination Procedures

All nondisposable equipment will be decontaminated at appropriate intervals (e.g., prior to initial use, prior to moving to a new sampling interval or location, and prior to leaving the site). Different decontamination procedures are used for the various types of equipment utilized to perform the field activities. When designing a field decontamination program, it is advisable to initiate environmental sampling in the area of the site with the lowest contaminant probability and proceed through to the areas of highest suspected contamination.

5.8.2 Decontamination Procedures for Drilling Equipment

All equipment such as drill rigs, Geoprobes and other mobile equipment will receive an initial cleaning prior to use at the Town of Oyster Bay Bethpage Community Park. The initial wash may be performed prior to the equipment's arrival at the site. The frequency of subsequent cleanings while on-site will depend on how the equipment is actually used in relation to collecting environmental samples. Unless otherwise specified and approved, all wash/rinse solutions will be collected and contained on-site. The actual fate of this material will be determined after review of analytical data generated from soil and groundwater samples.

After the initial washing, cleaning may be reduced to those areas that are in close proximity to materials being sampled. Drill rig items such as auger flights, drill rods, and drill bits will always be cleaned between sample locations. All decontamination-generated waste will be contained in 55-gallon drums.

Drilling equipment will be decontaminated in the following manner:

- Wash thoroughly with nonresidual detergent (alconox) and tap water using a brush to remove particulate matter or surface film. This is necessary in order to remove any solids buildup on the back of the rig, auger flights, drill rods, drilling head, etc. Any loose paint chips, paint flakes and rust must also be removed.
- Rinse with tap water or steam clean (212°F).

Also, following the general cleaning procedures described above, all downhole/drilling items, such as split spoon samplers, Shelby tubes or any other item of equipment which will come into direct contact with a sample during drilling, will be decontaminated by the method listed in Section 5.8.3.

5.8.3 Decontamination Procedure for Sampling Equipment

All Teflon, polyvinyl chloride (PVC), high-density polyethylene (HDPE) and stainless steel sampling equipment will be decontaminated utilizing the following procedure:

- Wash thoroughly with nonresidual detergent (e.g., alconox) and clean potable tap water using a brush to remove particulate matter or surface film.
- Rinse thoroughly utilizing distilled or deionized water.
- Wrap completely in clean aluminum foil with dull side against the equipment.

The first step, a soap and water wash, is designed to remove all visible particulate matter and residual oils and grease. The distilled/deionized water rinse ensures complete removal of residual cleaning products and the aluminum wrap protects the equipment from contamination and keeps it clean for use at another sampling location.

5.8.4 Decontamination Procedure for Well Casing/Screen and Development/Purging Equipment

Field cleaning of each well casing and screen will consist of a manual scrubbing to remove foreign material and steam cleaning, inside and out, until all traces of oil and grease are removed. The cleaned items will then be stored in such a manner so as to preserve it in this condition. Special attention to threaded joints may be necessary to remove cutting oil or weld burn residues.

Materials and equipment that will be used within the monitoring well casing for the purposes of well development and purging will also be decontaminated by steam cleaning. An additional decontamination step will be performed which involves flushing the interior of any hose, pump, etc., with a nonphosphate detergent solution and potable water rinse prior to the development/purge of the next well. Any liquid waste generated will be contained, drummed and stored in a secure area.

5.9 Laboratory Sample Custody Procedures

A NYSDOH ELAP and CLP certified laboratory meeting the requirements for sample custody procedures, including cleaning and handling sample containers and analytical

equipment, will be used. The Standard Operating Procedures of the laboratory selected to undertake the analysis of environmental samples for this program will be available upon request.

5.10 Field Management Documentation

Proper management and documentation of field activities is essential to ensure that all necessary work is conducted in accordance with this Quality Assurance Project Plan in an efficient and high quality manner. Field management procedures include following proper chain of custody procedures to track a sample from collection through analysis, noting when and how samples are split (if required), completing Chain of Custody forms and maintaining a Daily Field Log Book. Proper completion of the Chain of Custody and the field log book are necessary to support the future actions that may result from the sample analysis. This documentation will support that the samples were properly gathered and handled.

5.10.1 Location Sketch

Each sampling point shall have its own location sketch with permanent references if possible.

5.10.2 Chain of Custody

A Chain of Custody (COC) form is initiated at the lab with container preparation and transportation to the site. The COC must remain with the samples at all times and bear the name of the person assuming responsibility for the samples. This person is tasked with ensuring secure and proper handling of the containers and samples. When the form is complete, it should indicate that there were no lapses in sample accountability.

A sample is considered to be in an individual's custody if any of the following conditions are met:

- It is in the individual's physical possession, or

- It is in the individual's view after being in his or her physical possession, or
- It is secured by the individual so that no one can tamper with it, or
- The individual puts it in a designated and identified secure area.

In general, Chain of Custody forms are provided by the laboratory contracted to perform the analytical services. At a minimum, the following information shall be provided on these forms:

- Project name and address
- Project number
- Sample identification number of each sample contained in the sample cooler
- Date of sample collection
- Time of sample collection
- Sample location
- Sample type/matrix
- Analyses requested
- Number of containers and volume collected
- Remarks (e.g., preservation, special handling, etc.)
- Sampler(s) name(s) and signature(s)
- Spaces for relinquished by/received by signature and date/time

For this particular study, Chain of Custody forms provided by the laboratory will be utilized.

The Chain of Custody form is completed and signed by the person performing the sampling activities. The original form travels with the samples and is signed and dated each time the samples are relinquished to another party, until it reaches the laboratory or analysis is

completed. The field sampler maintains a copy of the Chain of Custody form and a copy is retained for the project file. Each sample container must also be labeled with an indelible marker with a minimum of the following information:

- Sample identification number
- Project name/location
- Analysis to be performed
- Date and time of collection
- Sampler's initials

A copy of the completed Chain of Custody form is returned by the laboratory with the analytical results.

5.10.3 Field Log Book

Field log books must be bound and should have consecutively numbered, water resistant pages. All pertinent information regarding the site, project and sampling procedures must be documented. Notations should be made in log book fashion, noting the time and date of all entries. Information recorded in the log book should include, but is not necessarily be limited to, the following:

The first page of the log contains the following information:

- Project name and address
- Name, address and phone number of field contact
- Name, address and phone number of subcontractors and contact persons

Daily entries are made for the following information:

- Purpose of sampling
- Sampling location
- Number(s) and volume(s) of sample(s) collected
- Description of sample location and sampling methodology
- Date and time of sample collection and personnel arrival and departure
- Geologic description of each sample interval
- Collector's sample identification number(s)
- Sample distribution and method of storage and transportation
- References, such as sketches of the sample location or photographs of sample collection with dimensions
- Field observations such as weather conditions, visual signs of staining and/or stressed vegetation
- Signature of personnel responsible for completing log entries

5.11 Calibration Procedures and Preventive Maintenance

The following information regarding equipment will be maintained at the project site:

1. Equipment calibration and operating procedures which will include provisions for documentation of frequency, conditions, standards and records reflecting the calibration procedures, methods of usage and repair history of the measurement system. Calibration of field equipment will be completed daily at the sampling site so that any background contamination can be taken into consideration and the instrument calibrated accordingly.

2. A schedule of preventive maintenance tasks, consistent with the instrument manufacturer's specific operation manuals, that will be carried out to minimize down time of the equipment.

3. Critical spare parts, necessary tools and manuals will be on hand to facilitate equipment maintenance and repair.

5.12 Performance of Field Audits

During field activities, if determined to be necessary, the QA/QC Officer will accompany sampling personnel into the field, verify that the site sampling program is being properly implemented and detect and define problems so that resolutions can be determined and implemented. All findings will be documented and provided to the Field Operations Manager.

5.13 Control and Disposal of Contaminated Material

Contaminated materials generated during this field program will primarily be limited to spent protective clothing, spent disposable sampling equipment, development/purge water and wastes generated as a result of equipment decontamination.

Any contaminated materials generated as a result of the field program will be contained in U.S. Department of Transportation (DOT) 55-gallon drums and staged in a designated area for subsequent waste characterization. Each drum will be identified by the type of material contained.

Decisions regarding the disposal of drummed material will be made, at least in part, based on the analytical results of the samples collected during this program. At the present time, there is no provision for separate analysis of contained material.

Decontamination water, sediment and development/purge water will be contained in 55-gallon drums. A decision regarding disposal of this material will be made following receipt of the sample results. Analysis of decontamination water/sediment and development/purge water may be required for proper management.

DOT-approved 55-gallon drums will be available for disposal of spent protective clothing and disposable sampling equipment (e.g., sterile scoops, tongue depressors, bailers, etc.). These drums will be marked and labeled as containing personnel protective and sampling equipment.

These drums will not be sampled. All drums will be sealed and staged on site to await proper off-site disposal.

5.14 Data Validation

Data validation will be performed in order to define and document analytical data quality in accordance with NYSDEC requirements that project data must be of known and acceptable quality. The analytical and validation processes will be conducted in conformance with the June 2000 NYSDEC ASP and USEPA CLP Statement of Work (SOW) dated June 1999. The validation will be performed by an individual meeting the qualification requirements for a data validator for the NYSDEC.

The USEPA Functional Guidelines for Evaluating Organics and Inorganics Analyses for the CLP will be used for the data validation process. The data validation process will ensure that all analytical requirements specific to this sampling program, including this Quality Assurance Project Plan, are followed. Procedures will address validation of routine analytical services (RAS) results based on the NYSDEC Target Compound List (TCL) for standard sample matrices.

The data validation process will provide an informed assessment of the laboratory's performance based upon contractual requirements and applicable analytical criteria. The report generated as a result of the data validation process will provide a base upon which the usefulness of the data can be evaluated by the end user of the analytical results. The overall level of effort and specific data validation procedure to be used will be equivalent to a "20% validation" of all analytical data in any given data package.

During the review process, it will be determined whether the contractually-required laboratory submittals for sample results are supported by sufficient back-up data and QA/QC results to enable the reviewer to conclusively determine the quality of data. Each data package will be checked for completeness and technical adequacy of the data. Upon completion of the

review, the reviewer will develop a QA/QC data validation report for each analytical data package.

"Qualified" analytical results for any one field sample are established and presented based on the results of specific QC samples and procedures associated with its sample analysis group or batch. Precision and accuracy criteria (i.e., QC acceptance limits) are used in determining the need for qualifying data. Where test data have been reduced by the laboratory, the method of reduction will be described in the report. Reduction of laboratory measurements and laboratory reporting of analytical parameters shall be verified in accordance with the procedures specified in the NYSDEC program documents for each analytical method (i.e., recreate laboratory calculations and data reporting in accordance with the method specific procedure). The standard operating guideline manuals and any special analytical methodology required are expected to specify documentation needs and technical criteria and will be taken into consideration in the validation process. Copies of the complete data package and the validation report, including the laboratory results data report sheets, with any qualifiers deemed appropriate by the data reviewer, and a supplementary field QC sample result summary statement, will be submitted to the NYSDEC, if requested.

Examples of standard organic and inorganic data validation reporting formats and completeness inventory lists which are proposed for use on this project are contained in Exhibit 5B. These report forms will be modified as necessary and appropriate for any project specific or NYSDEC requirements.

The following is a description of the two-phased approach to data validation planned to be used in this project. The first phase is called "checklisting" and the second phase is the analytical quality review, with the former being a subset of the latter.

- Checklisting - The data package is checked for correct submission of the contract required deliverables, correct transcription from the raw data to the required deliverable summary forms and proper calculation of a number of parameters.

- Analytical Quality Review - The data package is closely examined to recreate the analytical process and verify that proper and acceptable analytical techniques have

been performed. Additionally, overall data quality and laboratory performance is evaluated by applying the appropriate data quality criteria to the data to reflect conformance with the specified, accepted QA/QC standards and contractual requirements.

At the completion of the data validation, a Summary Data Validation/Usability Report will be prepared and submitted to the NYSDEC, if requested.

5.15 Performance and System Audits

A NYSDOH ELAP and CLP certified laboratory, which has satisfactorily completed performance audits and performance evaluation samples shall be used.

5.16 Corrective Action

A NYSDOH ELAP and CLP certified laboratory shall meet the requirements for corrective action protocols, including sample "cleanup" to attempt to eliminate/mitigate "matrix interference." Sample "cleanup" is not required for samples to be analyzed for volatile organic compounds or metals. However, sample "cleanup" is required for samples to be analyzed for semivolatile organic compounds or polychlorinated biphenyls.

5.17 Trip Blanks

The primary purpose of a trip blank sample is to detect additional sources of contamination that might potentially influence contaminant values reported in actual samples both quantitatively and qualitatively. A trip blank consists of a set of two 40 milliliter sample vials filled at the laboratory with laboratory-demonstrated analyte-free water. Trip blanks should be handled, transported and analyzed in the same manner as the samples collected that day, except that the sample containers themselves are not opened in the field. Rather, these containers only travel with the sample cooler. Trip blanks must accompany samples at a rate of one trip blank per shipment or cooler, whichever is more frequent. The temperature of the trip blanks

must be maintained at 4°C while on-site and during transportation. Trip blanks must return to the lab with the same set of bottles they accompanied in the field.

The purpose of a trip blank is to control sample bottle preparation and blank water quality as well as sample handling. Thus, the trip blank travels to the site with the empty sample bottles and back from the site with the collected samples in an effort to simulate sample handling conditions. Contaminated trip blanks may indicate inadequate bottle cleaning or blank water of questionable quality. Trip blanks are implemented when collecting water samples and analyzed for volatile organic compounds only. As a result, trip blanks will only be implemented with the groundwater samples collected during this program.

5.18 Field Blanks

The primary purpose of a field blank sample is to provide a check on possible sources of contamination. A field blank is used to indicate potential contamination from ambient air and from sampling equipment used to collect and transfer samples from point of collection into the sample containers.

A field blank is obtained using two identical sets of precleaned laboratory-supplied sample containers. One set of containers is empty and will serve to hold the sample for analysis. The second set of containers is filled at the laboratory with laboratory-demonstrated analyte-free water. Field blanks should be handled, transported and analyzed in the same manner as the samples acquired that day. At the field location, preferably in the most contaminated area, this analyte-free water is passed through clean/decontaminated sampling equipment and placed in the empty sample container for analysis. The reason for suggesting that field blanks be performed in the most contaminated area is to attempt to simulate a worst case scenario regarding field ambient air and equipment contributions to sample contamination. Field blanks must be performed daily or for each "batch" of 20 samples collected in the same manner. Field blanks must be returned to the laboratory with the same set of sample bottles they accompanied into the field. Field blanks must be packaged with their associated matrix and analyzed for the same range of compounds as the environmental samples collected in each "batch."

During this program, field blank samples will be performed during the collection of groundwater samples but will not be performed during the collection of soil samples since the sampling equipment is not expected to contribute any of the constituents of concern for soil.

5.19 Matrix Spikes/Matrix Spike Duplicates

Matrix spike samples and blanks are quality control procedures, consistent with the June 2000 NYSDEC ASP specifications, used by the laboratory as part of its internal Quality Assurance/Quality Control program. The matrix spike and matrix spike duplicate samples are aliquots of a designated environmental sample (water or soil) which are spiked with known quantities of specified compounds. These samples are used to evaluate the matrix effect of the sample upon the analytical methodology as well as to determine the precision of the analytical method used. The procedure and frequency regarding the matrix spike (MS) and matrix spike duplicate (MSD) samples are defined in the June 2000 NYSDEC ASP. Matrix Spike/Matrix Spike Duplicate samples must be collected daily or for each “batch” of 20 samples collected in the same manner.

EXHIBIT 5A

DETECTION LIMITS

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)

	Volatiles	CAS Number	Quantitation Limits* Water µg/L	Low Soil µg/Kg	Med Soil µg/Kg	On Column (ng)
1.	Dichlorodifluoromethane	75-71-8	10	10	1200	(50)
2.	Chloromethane	74-87-3	10	10	1200	(50)
3.	Bromomethane	74-83-9	10	10	1200	(50)
4.	Vinyl chloride	75-01-4	10	10	1200	(50)
5.	Chloroethane	75-00-3	10	10	1200	(50)
6.	Trichlorofluoromethane	75-69-4	10	10	1200	(50)
7.	1,1-Dichloroethene	75-35-4	10	10	1200	(50)
8.	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	10	10	1200	(50)
9.	Acetone	67-64-1	10	10	1200	(50)
10.	Carbon Disulfide	75-15-0	10	10	1200	(50)
11.	Methyl Acetate	79-20-9	10	10	1200	(50)
12.	Methylene chloride	75-09-2	10	10	1200	(50)
13.	trans-1,2-Dichloroethene	156-60-5	10	10	1200	(50)
14.	Methyl tert-Butyl Ether	1634-04-4	10	10	1200	(50)
15.	1,1-Dichloroethane	75-35-3	10	10	1200	(50)
16.	cis-1,2-Dichloroethene	156-59-2	10	10	1200	(50)
17.	2-Butanone	78-93-3	10	10	1200	(50)
18.	Chloroform	67-66-3	10	10	1200	(50)
19.	1,1,1-Trichloroethane	71-55-6	10	10	1200	(50)
20.	Cyclohexane	110-82-7	10	10	1200	(50)
21.	Carbon tetrachloride	56-23-5	10	10	1200	(50)
22.	Benzene	71-43-2	10	10	1200	(50)
23.	1,2-Dichloroethane	107-06-2	10	10	1200	(50)
24.	Trichloroethene	79-01-6	10	10	1200	(50)
25.	Methylcyclohexane	108-87-2	10	10	1200	(50)
26.	1,2-Dichloropropane	78-87-5	10	10	1200	(50)
27.	Bromodichloromethane	75-27-4	10	10	1200	(50)
28.	cis-1,3-Dichloropropene	10061-01-5	10	10	1200	(50)
29.	4-Methyl-2-pentanone	108-10-1	10	10	1200	(50)
30.	Toluene	108-88-3	10	10	1200	(50)
31.	trans-1,3-Dichloropropene	10061-02-6	10	10	1200	(50)
32.	1,1,2-Trichloroethane	79-00-5	10	10	1200	(50)
33.	Tetrachloroethene	127-18-4	10	10	1200	(50)
34.	2-Hexanone	591-78-6	10	10	1200	(50)
35.	Dibromochloromethane	124-48-1	10	10	1200	(50)

Superfund Target Compound List (TCL) and
Contract Required Quantitation Limits (CRQL)

	Volatiles (cont.)	CAS Number	Quantitation Limits* Water µg/L	Low Soil µg/Kg	Med Soil µg/Kg	On Column (ng)
36.	1,2-Dibromoethane	106-93-4	10	10	1200	(50)
37.	Chlorobenzene	108-90-7	10	10	1200	(50)
38.	Ethyl Benzene	100-41-4	10	10	1200	(50)
39.	Total Xylenes	1330-20-7	10	10	1200	(50)
40.	Styrene	100-42-5	10	10	1200	(50)
41.	Bromoform	75-25-2	10	10	1200	(50)
42.	Isopropylbenzene	98-82-8	10	10	1200	(50)
43.	1,1,2,2-Tetrachloroethane	79-34-5	10	10	1200	(50)
44.	1,3-Dichlorobenzene	541-73-1	10	10	1200	(50)
45.	1,4-Dichlorobenzene	106-46-7	10	10	1200	(50)
46.	1,2-Dichlorobenzene	95-50-1	10	10	1200	(50)
47.	1,2-Dibromo-3-chloropropane	96-12-8	10	10	1200	(50)
48.	1,2,4-Trichlorobenzene	120-82-1	10	10	1200	(50)

* Quantitation Limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the protocol, will be higher.

Superfund Target Compound List (TCL) and
Contract Required Quantitation Limits (CRQL)*

	Semivolatiles	CAS Number	Quantitation Limits* Water µg/L	Low Soil µg/Kg	Med Soil µg/Kg	On Column (ng)
34.	Phenol	108-95-2	10	330	10,000	(20)
35.	bis(2-Chloroethyl) ether	111-44-4	10	330	10,000	(20)
36.	2-Chlorophenol	95-57-8	10	330	10,000	(20)
37.	1,3-Dichlorobenzene	541-73-1	10	330	10,000	(20)
38.	1,4-Dichlorobenzene	106-46-7	10	330	10,000	(20)
39.	1,2-Dichlorobenzene	95-50-1	10	330	10,000	(20)
40.	2-Methylphenol	95-48-7	10	330	10,000	(20)
41.	2,2'-oxybis(1-Chloro-propane) #	108-60-1	10	330	10,000	(20)
42.	4-Methylphenol	106-44-5	10	330	10,000	(20)
43.	N-Nitroso-di-n-propylamine	621-64-7	10	330	10,000	(20)
44.	Hexachloroethane	67-72-1	10	330	10,000	(20)
45.	Nitrobenzene	98-95-3	10	330	10,000	(20)
46.	Isophorone	78-59-1	10	330	10,000	(20)
47.	2-Nitrophenol	88-75-5	10	330	10,000	(20)
48.	2,4-Dimethylphenol	105-67-9	10	330	10,000	(20)
49.	bis(2-Chloroethoxy) methane	111-91-1	10	330	10,000	(20)
50.	2,4-Dichlorophenol	120-83-2	10	330	10,000	(20)
51.	1,2,4-Trichlorobenzene	120-82-1	10	330	10,000	(20)
52.	Naphthalene	91-20-3	10	330	10,000	(20)
53.	4-Chloroaniline	106-47-8	10	330	10,000	(20)
54.	Hexachlorobutadiene	87-68-3	10	330	10,000	(20)
55.	4-Chloro-3-methylphenol	59-50-7	10	330	10,000	(20)
56.	2-Methylnaphthalene	91-57-6	10	330	10,000	(20)
57.	Hexachlorocyclopentadiene	77-47-4	10	330	10,000	(20)
58.	2,4,6-Trichlorophenol	88-06-2	10	330	10,000	(20)
59.	2,4,5-Trichlorophenol	95-95-4	25	800	25,000	(50)
60.	2-Chloronaphthalene	91-58-7	10	330	10,000	(20)
61.	2-Nitroaniline	88-74-4	25	800	25,000	(50)
62.	Dimethyl phthalate	131-11-3	10	330	10,000	(20)
63.	Acenaphthylene	208-96-8	10	330	10,000	(20)
64.	2,6-Dinitrotoluene	606-20-2	10	330	10,000	(20)
65.	3-Nitroaniline	99-09-2	25	800	25,000	(50)
66.	Acenaphthene	83-32-9	10	330	10,000	(20)

Previously known by the name bis(2-Chloroisopropyl) ether

Superfund Target Compound List (TCL) and
Contract Required Quantitation Limits (CRQL)

	Semivolatiles	CAS Number	Quantitation Limits* Water µg/L	Low Soil µg/Kg	Med Soil µg/Kg	On Column (ng)
67.	2,4-Dinitrophenol	51-28-5	25	800	25,000	(50)
68.	4-Nitrophenol	100-02-7	25	800	25,000	(50)
69.	Dibenzofuran	132-64-9	10	330	10,000	(20)
70.	2,4-Dinitrotoluene	121-14-2	10	330	10,000	(20)
71.	Diethylphthalate	84-66-2	10	330	10,000	(20)
72.	4-Chlorophenyl phenyl ether	7005-72-3	10	330	10,000	(20)
73.	Fluorene	86-73-7	10	330	10,000	(20)
74.	4-Nitroaniline	100-01-6	25	800	25,000	(50)
75.	4,6-Dinitro-2-methylphenol	534-52-1	25	800	25,000	(50)
76.	N-nitrosodiphenylamine	86-30-6	10	330	10,000	(20)
77.	4-Bromophenyl phenyl ether	101-55-3	10	330	10,000	(20)
78.	Hexachlorobenzene	118-74-1	10	330	10,000	(20)
79.	Pentachlorophenol	87-86-5	25	800	25,000	(50)
80.	Phenanthrene	85-01-8	10	330	10,000	(20)
81.	Anthracene	120-12-7	10	330	10,000	(20)
82	Carbazole	86-74-8	10	330	10,000	(20)
83.	Di-n-butyl phthalate	84-74-2	10	330	10,000	(20)
84.	Fluoranthene	206-44-0	10	330	10,000	(20)
85.	Pyrene	129-00-0	10	330	10,000	(20)
86.	Butyl benzyl phthalate	85-68-7	10	330	10,000	(20)
87.	3,3'-Dichlorobenzidine	91-94-1	10	330	10,000	(20)
88.	Benz[a]anthracene	56-55-3	10	330	10,000	(20)
89.	Chrysene	218-01-9	10	330	10,000	(20)
90.	bis(2-Ethylhexyl)phthalate	117-81-7	10	330	10,000	(20)
91.	Di-n-octyl phthalate	117-84-0	10	330	10,000	(20)
92.	Benzo[b]fluoranthene	205-99-2	10	330	10,000	(20)
93.	Benzo[k]fluoranthene	207-08-9	10	330	10,000	(20)
94.	Benzo[a]pyrene	50-32-8	10	330	10,000	(20)
95.	Indeno(1,2,3-cd]pyrene	193-39-5	10	330	10,000	(20)
96.	Dibenz[a,h]anthracene	53-70-3	10	330	10,000	(20)
97.	Benzo[g,h,i]perylene	191-24-2	10	330	10,000	(20)

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the Laboratory for soil/sediment, calculated on dry weight basis as required by the Protocol, will be higher.

Superfund Target Compound List (TCL) and
Contract Required Quantitation Limits (CRQL)*

	Pesticides/Aroclors	CAS Number	Quantitation Limits* Water µg/L	Soil µg/Kg	On Column (pg)
98.	alpha-BHC	319-84-6	0.05	1.7	5
99.	beta-BHC	319-85-7	0.05	1.7	5
100.	delta-BHC	319-86-8	0.05	1.7	5
101.	gamma-BHC (Lindane)	58-89-9	0.05	1.7	5
102.	Heptachlor	76-44-8	0.05	1.7	5
103.	Aldrin	309-00-2	0.05	1.7	5
104.	Heptachlor epoxide	1024-57-3	0.05	1.7	5
105.	Endosulfan I	959-98-8	0.05	1.7	5
106.	Dieldrin	60-57-1	0.10	3.3	10
107.	4,4'-DDE	72-55-9	0.10	3.3	10
108.	Endrin	72-20-8	0.10	3.3	10
109.	Endosulfan II	33213-65-9	0.10	3.3	10
110.	4,4'-DDD	72-54-8	0.10	3.3	10
111.	Endosulfan sulfate	1031-07-8	0.10	3.3	10
112.	4,4'-DDT	50-29-3	0.10	3.3	10
113.	Methoxychlor	72-43-5	0.50	17.0	50
114.	Endrin ketone	53494-70-5	0.10	3.3	10
115.	Endrin aldehyde	7421-36-3	0.10	3.3	10
116.	alpha-Chlordane	5103-71-9	0.05	1.7	5
117.	gamma-Chlordane	5103-74-2	0.05	1.7	5
118.	Toxaphene	8001-35-2	5.0	170.0	500
119.	AROCLOR-1016	12674-11-2	1.0	33.0	100
120.	AROCLOR-1221	11104-28-2	2.0	67.0	200
121.	AROCLOR-1232	11141-16-5	1.0	33.0	100
122.	AROCLOR-1242	53469-21-9	1.0	33.0	100
123.	AROCLOR-1248	12672-29-6	1.0	33.0	100
124.	AROCLOR-1254	11097-69-1	1.0	33.0	100
125.	AROCLOR-1260	11096-82-5	1.0	33.0	100

* Quantitation Limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the Laboratory for soil/sediment, calculate on dry weight basis, as required by the Protocol, will be higher.

RCRA Target Compound List (TCL) and
Contract Required Quantitation Limit
(Continued)

Parameter		CAS Number	Contract Required Quantitation Limits Low Water (µg/L)	Low Soil/Sediments (µg/Kg)
F.	Appendix IX Substances (cont.)			
	Inorganics			
214.	Antimony		60	6,000
215.	Arsenic		10	1,000
216.	Barium		200	20,000
217.	Beryllium		5.0	500
218.	Cadmium		5.0	500
219.	Chromium		10	1,000
220.	Cobalt		50	5,000
221.	Copper		25	2,500
222.	Cyanide	57-12-5	40	4,000
223.	Lead		5.0	500
224.	Mercury		0.2	20
225.	Nickel		40	4,000
226.	Selenium		5.0	500
227.	Silver		10	1,000
228.	Sulfide	18496-25-8	10,000	-
229.	Thallium		10	1,000
230.	Tin		40	4,000
231.	Vanadium		50	5,000
232.	Zinc		20	2,000
G.	Volatile Organics (Method 8240)			
1.	Acetone	67-64-1	10	10
2.	Benzene	71-43-2	10	10
3.	Bromodichloromethane	75-27-4	10	10
4.	Bromoform	75-25-2	10	10
5.	Bromomethane	74-83-9	10	10
6.	2-Butanone (Methyl ethyl ketone)	78-93-3	10	10
7.	Carbon disulfide	75-15-0	10	10
8.	Carbon tetrachloride	56-23-5	10	10
9.	Chlorobenzene	108-90-7	10	10
10.	Chloroethane	75-00-3	10	10
11.	2-Chloroethyl vinyl ether	110-75-8	10	10
12.	Chloroform	67-66-3	10	10
13.	Chloromethane	74-87-3	10	10
14.	Dibromochloromethane	124-48-1	10	10
15.	1,2-Dichlorobenzene	95-50-1	10	10

EXHIBIT 5B

DATA VALIDATION FORMS

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

I. Data Deliverable Requirements

A. Legible	Yes	No
B. Paginated	Yes	No
C. Arranged in order	Yes	No
D. Consistent dates	Yes	No
E. Case Narrative	Yes	No
F. Chain-of-Custody Record	Yes	No
G. Sample Data Complete	Yes	No
H. Standard Date Complete	Yes	No
I. Raw QC Data Complete	Yes	No

Comments: _____

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

II. Holding Times

Sample I.D.	Date Received	Date Extracted	Date Analyzed	Holding Time Exceeded?

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Fraction: _____

III. Tune Summary

Tune File I.D. Number	Acceptable ?	Comments
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Fraction: _____

IV. Initial Calibration Summary (GC/MS)

Date of Calibration: _____

A. Standard Data Files

Standard 1 ID: _____ Conc: _____

Standard 2 ID: _____ Conc: _____

Standard 3 ID: _____ Conc: _____

Standard 4 ID: _____ Conc: _____

Standard 5 ID: _____ Conc: _____

B. 1. All SPCC met Criteria ?

Yes No

2. Calculate a SPCC average RRF

Comments: _____

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Fraction: _____ Date of Calibration: _____

IV. Initial Calibration Summary (continued)

2. All CCC met Criteria ?

Yes No

Comments: _____

_____

Calculate a CCC % RSD

C. 1. Was the tune for the initial calibration acceptable ?

Yes No

2. Was the calibration conducted within 12 hours of the tune

Yes No

Comments: _____

_____

_____

D. Overall assessment of the initial calibration:
(list the associated samples)

_____

_____

_____

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Fraction: _____

VI. Continuing Calibration Summary (GC/MS)

Date of Initial Calibration: _____

Date of Continuing Calibration: _____ File ID: _____

A. 1. All SPCC met criteria ?

Yes No

Calculate a SPCC RRF

Comments: _____

_____

2. All CCC met criteria ?

Yes No

Calculate a CCC % D

Comments: _____

_____

B. Overall assessment of Continuing Calibration
(list associated samples)

_____

_____

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Fraction: _____

VIII. Internal Standard Area Summary (GC/MS)

Were all internal standard peak areas within the contract limits ?

Yes No

If No, please note below

Sample	Internal Standard Outside Limits	Amount Above Contract Requirement	Comments

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Fraction: _____

IX. Blank Summary

Date/Time of Analysis: _____ File ID: _____

Compound	Concentration	≤ CROL	Comments

List the samples associated with this method blank.

_____

_____

_____

_____

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Fraction: _____

X. Surrogate Recovery Summary

Were all surrogate recoveries within the contract limits ?

Yes No

If No, please note below.

Sample	Surrogate Compound Outside Recovery Limits	Amount Above Contract Requirement	Comments

DATA VALIDATION – ORGANICS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Fraction: _____

XI. Matrix Spike/Matrix Spike Duplication Summary

Sample ID: _____ Matrix: _____

Did the MS/MSD recovery data meet the contract recommended requirements ?

Yes No

If No, please note below.

_____

_____

_____

_____

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

I. Holding times

Sample	Date Received	Date Digested	Date Analyzed	Holding Time Exceeded?

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Associated Samples: _____

II. Initial Calibration

1. Were all initial instrument calibrations performed?

   Yes No

   Comments:

_____

_____

_____

2. Were the initial calibration verification standards analyzed at the contract specified frequency?

   Yes No

   Comments:

_____

_____

_____

3. Were the initial calibration results within the control limits listed below?

   For tin and mercury: 80-120% of the true value
   For all other metals: 90-110% of the true value

   Yes No

   If "No", note analytes _____

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

Associated Samples: _____

III. Continuing Calibration

1. Were the continuing calibration verification standards analyzed at the contract specified frequency?

   Yes No

   Comments:

_____

_____

_____

2. Were the continuing calibration results within the control limits listed below?

   For tin and mercury: 80-120% of the true value
   For all other metals: 90-110% of the true value

   Yes No

   If "No", note analytes _____

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

IV. Blank Summary

A. Method Blanks

1. Was a method blank prepared and analyzed at the contract specified frequency?

   Yes No

2. Were all the analytes below the CRDL in the method blank?

   Yes No

Comments:

_____

_____

_____

B. Calibration Blanks

1. Were all initial and continuing calibration blanks analyzed at the contract specified frequency/

   Yes No

2. Were all the analytes below the CRDL in all the calibration blanks?

   Yes No

Comments:

_____

_____

_____

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

V. Duplicate Analysis

1. Was a duplicate prepared and analyzed at the contract specified frequency?

   Yes No

   Comments:

_____

_____

_____

2. Were control limits for the relative percent differences (RPD) met for each analyte?

   Yes No

   Comments:

_____

_____

_____

For sample values >5 times the CRDL, the RPD control limit is ±20%.

For sample values ≤ 5 times the CRDL, the RPD control limit is ±CRDL.

If sample results were outside of the control limits, all data associated with that duplicate sample should have been flagged with a "*".

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

VI. Matrix Spike Analysis

1. Was a matrix spike prepared and analyzed at the contract specified frequency?

   Yes No

   Comments:

_____

_____

_____

2. Were the matrix spike recoveries within the contract specified control limits (75-125%)?

   Yes No

   If "No", note analytes _____

   Data should have been flagged with "N" for analytes out of control limits. If the sample concentration exceeds the spike concentration by a factor of four or more, no flag is required.

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

VII. ICP Interference Check Sample Summary

1. Was the ICP serial dilution analyzed at the contract specified frequency?

   Yes No

   Comments:

_____

_____

_____

2. Were the serial dilution differences within the contract specified limits of +/- 10%?

   Yes No

   Comments:

_____

_____

_____

3. Was the ICP CRDL check standard analyzed at the contract specified frequency for the analytes required?

   Yes No

   Comments:

_____

_____

_____

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

VII. ICP Interference Check Sample Summary (continued):

4. Was the ICP interference check sample analyzed at the contract specified frequency:

   Yes No

   Comments:

_____

_____

_____

5. Were the ICP interference check sample results within the control limit of ± 20% of the mean value?

   Yes No

   If "No", not analytes _____

DATA VALIDATION – METALS

Site Name: _____ Laboratory Name: _____

Reviewer: _____ Date of Review: _____

VIII. Laboratory Control Sample Analysis

1. Was a laboratory control sample analyzed at the contract required frequency?

   Yes No

   Comments:

_____

_____

_____

2. Were the percent recoveries within the control limits of 80-120% (except for Ag and Sb) for each analyte?

   Yes No

   Comments:

_____

_____

_____

6.0 SITE-SPECIFIC HEALTH AND SAFETY PLAN

6.1 General

This Site-Specific Health and Safety Plan (HASP) is intended to meet the requirements found in 29 CFR §1910.120 and §1926, the NIOSH/OSHA/USCG/EPA Guidance Manual for Hazardous Waste Site Activities (NIOSH No. 85-115), the Environmental Protection Agency (EPA) "Standard Operating Safety Guides," and Superfund Amendments and Reauthorization Act (SARA), Title I, Section 126. This HASP addresses activities associated with the field investigation and soil and groundwater sampling activities to be conducted at the Town of Oyster Bay Bethpage Community Park located in Bethpage, Nassau County, New York (see Figures 6-1 and 6-2). The facility shall be referred to in this HASP as "the site." Compliance with this HASP is required of all on-site personnel entering the site for the purpose of conducting soil sampling activities. Visitors, contractors and other personnel associated with any on-site soil or groundwater sampling activity are also required to comply with all Northrop Grumman Corporation procedures addressing health and safety.

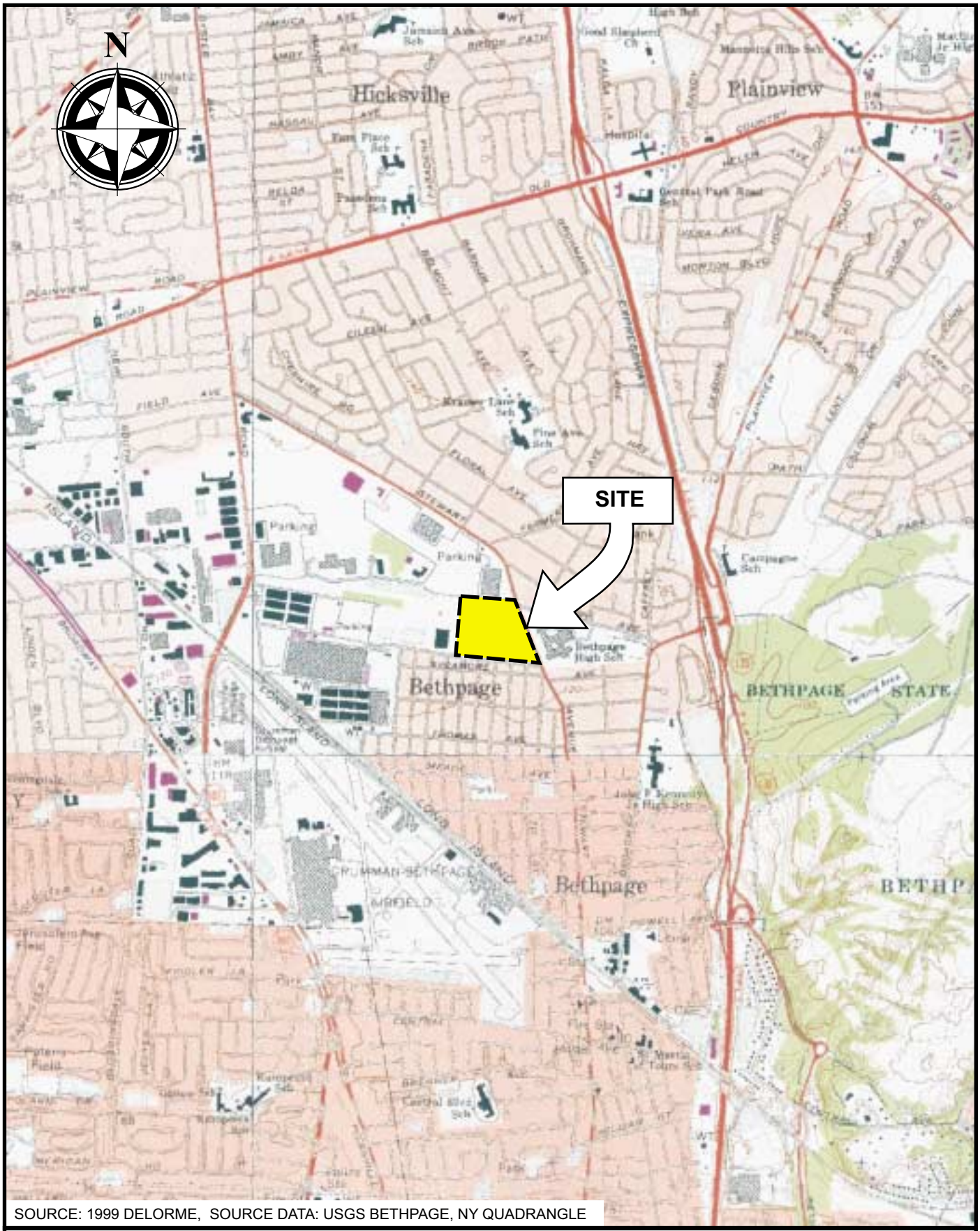
6.1.1 Site Information

Site Name:	Town of Oyster Bay Bethpage Community Park
Address:	Stewart Avenue Bethpage, NY 11714
Date of HASP Preparation:	October 2002

6.2 Purpose and Scope

6.2.1 Purpose and Scope of the Field Investigation

The Delineation Sampling Program is being undertaken within the Town of Oyster Bay Bethpage Community Park in order to further delineate the contamination detected on-site during



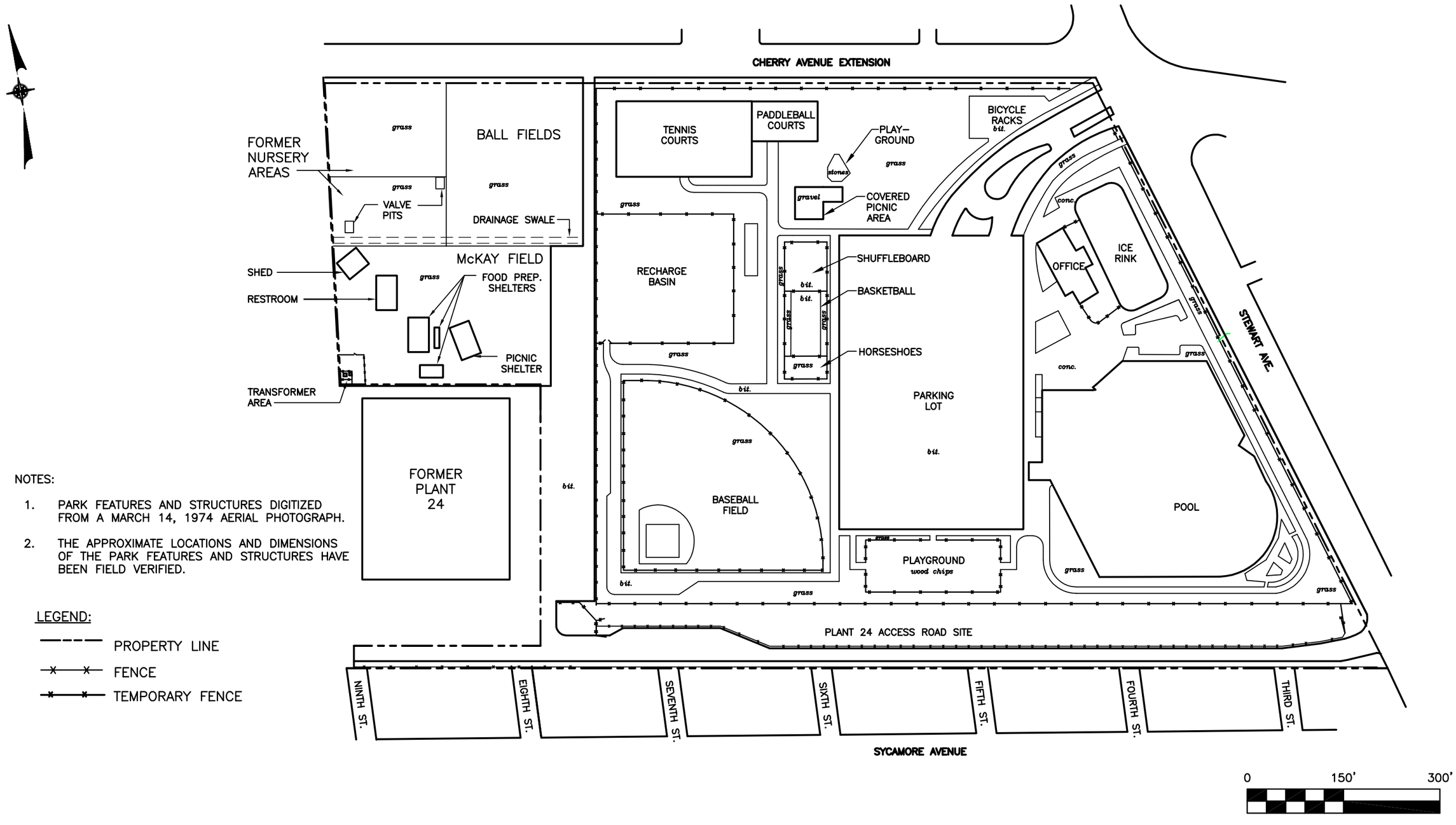
SOURCE: 1999 DELORME, SOURCE DATA: USGS BETHPAGE, NY QUADRANGLE

RLA/MAPS/NORTHROP1572(10/23/02)

TOWN OF OYSTER BAY
BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK

SITE LOCATION MAP

FIGURE 6-1



NOTES:

1. PARK FEATURES AND STRUCTURES DIGITIZED FROM A MARCH 14, 1974 AERIAL PHOTOGRAPH.
2. THE APPROXIMATE LOCATIONS AND DIMENSIONS OF THE PARK FEATURES AND STRUCTURES HAVE BEEN FIELD VERIFIED.

LEGEND:

- PROPERTY LINE
- FENCE
- TEMPORARY FENCE

TOWN OF OYSTER BAY
BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK

SITE PLAN AND SURROUNDING AREAS

FIGURE 6–2

the soil sampling program undertaken in March 2002. In order to complete this task, 11 soil borings are proposed in the park to be located in the baseball field area and immediately adjacent areas. The borings will be advanced to depths determined in the field by a qualified geologist. Soil samples will be collected from the 0 to 2-inch depth interval, the 2-inch to 2-foot depth interval, and at 2-foot intervals from that point until the total depth of the boring is reached. The field geologist will be responsible for selecting which intervals are sampled. All soil samples will be analyzed for PCBs, total chromium and hexavalent chromium. In addition, two of the borings will be converted to monitoring wells for the purpose of determining whether groundwater quality has been adversely impacted. The groundwater samples collected from these monitoring wells will be analyzed for Target Compound List (TCL) volatile organic compounds, TCL semivolatile organic compounds, Target Analyte List metals, PCBs and hexavalent chromium.

The procedures for collecting the soil and groundwater samples are outlined in the site-specific Quality Assurance Project Plan (QAPP) provided in Section 5.0 of this Work Plan.

6.2.2 Purpose and Scope of this HASP

The purpose of this HASP is to ensure the health and safety of the field personnel during drilling, sampling and related investigation activities conducted at the Town of Oyster Bay Bethpage Community Park by setting forth requirements for on-site health and safety supervision, air monitoring, medical monitoring, personal protective equipment, controls, safe work practices and proper decontamination.

6.3 Summary of Existing Information

6.3.1 Site Location and Ownership

The Town of Oyster Bay Bethpage Community Park is located on Stewart Avenue in Bethpage, Nassau County, New York and is situated adjacent to the northeastern portion of the Northrop Grumman Corporation (NGC) Bethpage Facility. The site is comprised of

approximately 18 acres and is currently owned by the Town of Oyster Bay. The site is bordered by the Cherry Avenue Extension and the Robert Plan Company building (formerly NGC's Plant 30) to the north, Stewart Avenue and a high school to the east, the Plant 24 Access Road Site (currently owned by NGC) to the south, and a second Robert Plan Company building (formerly NGC's Plant 24) and the McKay Field property, ball fields and former nursery areas (currently owned by NGC) to the west.

6.3.2 Site Description and History

As stated previously, the park property is comprised of approximately 18 acres and is available for use by community residents. Recreational structures located in the park include tennis, paddleball, shuffleboard, basketball and horseshoe courts, ice rink, pool, baseball field and two playground areas. The park is available to community residents year round.

The site was used primarily for agricultural purposes up until the 1940s when the property was purchased by Grumman Aircraft Engineering Corporation (the former name of Northrop Grumman Corporation) as part of the Bethpage Facility. No manufacturing activities were ever conducted on the property and no buildings or structures were ever constructed by Grumman Aircraft Engineering Corporation on the site.

Grumman Aircraft Engineering Corporation donated the property which the park was constructed upon to the Town of Oyster Bay on October 17, 1962. Shortly thereafter, the park as it appears now was constructed on the property.

6.3.3 Previous Investigations

On November 16 and 17, 1994, an investigation was conducted by Halliburton NUS Corporation on behalf of the U.S. Department of the Navy to determine whether polychlorinated biphenyl (PCB) contamination from the Naval Weapons Industrial Reserve Plant (NWIRP) Site 1 had migrated and impacted downwind off-site locations. Of the 17 locations sampled during this investigation, one was located on the Town of Oyster Bay Bethpage Community Park

property adjacent to the basketball court. A soil sample was collected in this location from the 0 to 6-inch depth interval below grade and analyzed for PCBs. The analytical results of this sample indicated that PCBs were not present at concentrations exceeding the New York State Department of Environmental Conservation's (NYSDEC's) Technical and Administrative Guidance Memorandum (TAGM) No. 4046 Recommended Soil Cleanup Objectives. The results of the program were summarized in the report entitled, "Off-site Soil Sampling and PCB Analysis Report, NWIRP, Bethpage, New York - CTO 0089." The report did not recommend additional sampling since PCB concentrations in excess of the TAGM criteria were not detected.

In April 1998, the Town of Oyster Bay retained EDER Associates (EDER) to conduct a surface soil sampling program within the Town of Oyster Bay Bethpage Community Park to determine whether PCBs were present in the surface soil. As part of this program, EDER collected surface soil samples from 5 locations within the park including the picnic area (2 locations), the baseball field (2 locations) and the area between the ice rink and the pool along Stewart Avenue (1 location). Soil samples were collected from the surface at each location and analyzed for PCBs. The analytical results of the surface soil samples indicated that PCBs were not present at concentrations exceeding the NYSDEC's TAGM 4046 Recommended Soil Cleanup Objectives. The results of the program were summarized in the letter report entitled, "Soil Sampling - Polychlorinated Biphenyls, Bethpage Community Park" dated April 27, 1998. Recommendations for additional sampling were not presented in the letter report since PCB concentrations in excess of the TAGM criteria were not detected.

In March 2002, as a result of detecting PCB concentrations in excess of the NYSDEC TAGM 4064 Recommended Soil Cleanup Objectives on an adjacent property, Northrop Grumman Corporation retained Dvirka and Bartilucci Consulting Engineers to conduct a soil sampling program within the Bethpage Community Park. The program consisted of advancing 60 soil probes on a 100-foot grid to a depth of 8 feet below grade. Soil samples were collected from the 0 to 2-inch depth interval, the 2-inch to 2-foot depth interval and at 2-foot intervals from that point until the total depth of each boring was reached (a total of 5 soil samples per probe). In addition, surface soil samples were collected from 19 "exposure point locations." All soil samples collected were laboratory analyzed for PCBs and Resource Conservation and

Recovery Act (RCRA) metals. The analytical results of the soil samples indicated that PCBs and some RCRA metals were present at some locations in the park at concentrations exceeding the NYSDEC's TAGM 4046 Recommended Soil Cleanup Objectives. The results of the program were summarized in the report entitled, "Town of Oyster Bay Bethpage Community Park, Soil Sampling Program, Report of Findings" dated June 2002. Subsequent to this soil sampling program, in May 2002, the Town of Oyster Bay closed the Bethpage Community Park. The park has not reopened to the public since that time.

As a result of the March 2002 soil sampling program, NYSDOH inspected the park and requested that Northrop Grumman Corporation perform additional exposure point sampling in 8 locations within the Bethpage Community Park and perform some surface horizontal delineation sampling around a soil probe located in left center field of the baseball field (probe P-31). In May 2002, Northrop Grumman Corporation retained Dvirka and Bartilucci Consulting Engineers to conduct the additional exposure point sampling and limited surface horizontal delineation around P-31 within the Bethpage Community Park. This program consisted of collecting surface (0 to 2 inches below grade) soil samples from 8 exposure point locations and 12 locations surrounding P-31 (radii of 5, 10 and 50 feet with 4 soil samples collected at each distance). However, since the soil samples collected from the 10 and 50-foot radii would only be analyzed if the samples from the 5-foot radius exceeded the NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives, only the 4 soil samples from the 5-foot radius, in addition to the 8 exposure point samples, were analyzed. All soil samples were analyzed for PCBs and RCRA metals. The results of the program were summarized in a letter report entitled, "Additional Soil Sampling Program, Town of Oyster Bay Bethpage Community Park, Bethpage, New York" dated July 18, 2002.

It should be noted that the Town of Oyster Bay's consultant, Gannett Fleming Engineers and Architects (Gannett Fleming), and the NYSDEC split soil samples with Dvirka and Bartilucci Consulting Engineers during the Additional Soil Sampling Program conducted in May 2002. In addition to the samples listed previously, Gannett Fleming had the 8 soil samples collected from the 10 and 50-foot radii surrounding P-31 analyzed, and collected soil samples from the recharge basin area at two locations from the 0 to 2-inch and 2-inch to 2-foot depth

intervals below grade for analysis. The NYSDEC collected surface soil samples from only 7 of the locations from which Dvirka and Bartilucci Consulting Engineers collected soil samples.

6.4 Personnel Organization and Responsibilities

This project will require the interaction of contractors and technical specialists, both on-site and off-site. The project team will be composed of representatives of various subcontractors.

6.4.1 Project Manager

The Project Manager will assure that all elements of this HASP are implemented where applicable and that all project staff are protected and working in a safe manner.

6.4.2 Field Health and Safety Officer

The Field Health and Safety Officer (HSO) has overall responsibility for ensuring that the policies and procedures of this HASP are implemented. For the purposes of this HASP, the Field HSO is also the Field Operations Manager (FOM).

The Field HSO will be on-site during the project and has the authority to stop work at any time unsafe work conditions are present. Any potentially hazardous condition posing a risk beyond the defined role or mission currently anticipated will require the Field HSO to consult with the Project Manager and representatives of Northrop Grumman Corporation.

The Field HSO shall document daily activities with health and safety relevance including references to maintenance and calibration of health and safety equipment in the project log book.

6.4.3 Field Operations Manager

The Field Operations Manager (FOM), or designee, will be responsible for conducting the work and for ensuring that the work is conducted in accordance with the requirements of the

site-specific sampling plan. The FOM will be on-site during the project and will manage all day-to-day activities of all parties on this project.

The FOM will be responsible for implementing safety precautions and procedures during all investigation phases.

The FOM has authority to resolve health and safety issues at the site in consultation with the Project Manager and representatives of Northrop Grumman Corporation.

6.4.4 NGC Project Manager

The Northrop Grumman Corporation (NGC) Project Manager will be responsible for providing all NGC personnel who become involved with this project with the HASP as well as any other information concerning chemical or other safety concerns.

6.4.5 Technical Support

Technical support shall be provided by a Certified Hazardous Materials Manager (CHMM), a Certified Industrial Hygienist (CIH), or designee and shall remain available off-site on an as-needed basis to provide technical support to the project team. Any decisions requiring use or selection of personal protective equipment (PPE) or monitoring devices other than those described in this HASP must be approved by the CHMM, CIH or designee.

6.4.6 Security Officer

A security officer will not be provided specifically for the project conducted under this HASP by Northrop Grumman Corporation.

6.4.7 Physician

The physician will be responsible for all medical review, diagnosis and certification of all field personnel.

6.4.8 Designations of Personnel

Designation of the above-referenced personnel will be established prior to initiation of the project conducted in accordance with this HASP.

6.4.9 General Health and Safety Requirements for all Employees

The following general health and safety requirements will apply to all persons working at the site:

1. All persons working on the investigation team shall read, sign and become familiar with this HASP (a copy of the Field Team Review Form is provided in Exhibit 6A). If any information is unclear, the reader shall contact the Field HSO for clarification prior to any field work. A copy of the HASP will be available for review through the Project Manager, FOM or his designee.

2. No employee will be allowed in the active investigation areas without the prior knowledge and approval of the Field HSO, Project Manager or FOM.

3. Sufficient backup personnel will be available for all site activities. At a minimum, one person shall be present at any location during investigation activities.

4. All personnel involved in the investigation at the site will notify the Field HSO, Project Manager or FOM of any unsafe conditions or activities.

5. Standard hygiene practices will be implemented such as no smoking, eating or drinking during site investigation work activities, and requiring a thorough washing of hands and face prior to smoking, eating or drinking. These activities will only occur at a designated area at the site. At all times, personnel should perform investigative activities from upwind directions.

6. Workers will avoid unnecessary potential exposure such as walking through, sitting on, leaning on or kneeling in areas that are being investigated.

7. All site personnel shall observe their coworkers for any signs of adverse effects associated with the work activity and will inform their coworkers or supervisor of any unusual signs or symptoms that they are experiencing themselves.

6.5 Hazard Assessment and Risk Analysis

6.5.1 Potential Health Hazards

The general health hazard potential at the facility is characterized in Table 6-1. The primary concern at the site is to protect the workers from potential exposure to contaminated subsurface soils, vapors, splashes and any structure or material uncovered while conducting the investigation activities. As with any project where penetration of the soil is conducted, there is a potential health hazard due to encountering unanticipated or unknown contamination. Therefore, this HASP is designed to protect the workers from potential exposure to known and unknown contaminated structures, containers or other items or materials uncovered as a result of performing the investigation activities.

6.5.1.1 - Health Hazard Identification

Based on the soil sampling program conducted in March 2002, the primary constituents of concern for the site are PCBs and chromium. Permissible Exposure Limits (PELs) for PCBs and chromium have been provided on Table 6-2.

As with any program where penetration of the surface is conducted, site personnel will have and don the appropriate personal protective equipment for the contamination or contaminated areas encountered. Following detection of any contamination, an assessment of the contamination will be conducted in order to determine the appropriate personal protective equipment and reassess work conditions and practices. Site personnel will contact the Field Health and Safety Officer to ensure that the proper personal protective equipment is selected based on the conditions encountered.

Table 6-1

SUMMARY OF CHARACTERISTICS AND HEALTH HAZARDS

Type of site	Recreational area
Classification	Active
Apparent hazard	Moderate for inhalation Moderate for skin exposure
Potential source	Subsurface soil and potentially groundwater
Contamination characteristics	Toxic
Form of hazards	Soil, dusts, liquids and vapors
Routes of exposure	Inhalation, ingestion, skin and eyes

Table 6-2

PERMISSIBLE EXPOSURE LIMITS (PELs) AND PRIMARY HEALTH HAZARDS FOR CONTAMINANTS OF CONCERN

Chemical	ACGIH TLV	ACGIH STEL/ Ceiling	OSHA PEL	OSHA Acceptable Ceiling Concentration*	Primary Health Hazards (Target Organs)
Chromium	0.5 mg/m^3	——	1 mg/m^3	——	Eyes, skin, respiratory system
Polychlorinated biphenyls (PCBs) 40% chlorine	1 mg/m^3 skin	——	1 mg/m^3 skin	——	Skin, eyes, liver, reproductive system
Polychlorinated biphenyls (PCBs) 54% chlorine	0.5 mg/m^3 skin	——	0.5 mg/m^3 skin	——	Skin, eyes, liver, reproductive system

*See OSHA 1910.1000 Table Z-2.

6.5.1.2 - Health Hazard Evaluation

The primary potential health hazards of concern to workers from contaminants are from the inhalation of vapors and dust, and skin exposure to skin absorptive poisons. Potential for these exposures would exist during drilling of soil borings and sampling of soil and groundwater.

OSHA Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) may be exceeded during investigative activities. The activities include drilling soil boring and soil and groundwater sampling activities. These activities will be closely monitored and evaluated to determine potential for exceeding standards and the need to implement control measures to protect personnel and the environment. Evaluation of health hazards will be conducted by the FOM, Project Manager and the Field Health and Safety Officer.

Based upon a review of available data for the related areas, it is expected that the potential for exposure to hazardous levels of the constituents of concern is moderate for inhalation and skin exposure.

6.5.1.3 - Potential Exposures

Potentially contaminated materials include site soil and groundwater. The risk of exposure would most likely be from inhalation, ingestion, or skin or eye contact with the contamination or vapors released from the contamination. Potential exposures will be mitigated through appropriate investigation procedures, work practices, air monitoring and personal protective equipment. Duration and frequency of exposure will be short and intermittent over a suitable work period. All personnel related to the investigation will keep upwind of all soil disturbances and sampling activities at all times whenever possible.

6.5.1.4 - Physical and Biological Hazards

Due to the site being a recreational area, few physical hazards are anticipated to be present. However, some physical hazards arise as a result of performing the field activities and must be given careful consideration. Workers may encounter sharp objects or unsecured footing. Improper or careless use of sampling and drilling equipment increases the risks of accidents from underground or overhead utilities and operation of the equipment. In addition, workers may be exposed to poison ivy, stinging and biting insects, ticks and vermin.

Open excavations, pits, trenches or other confined spaces are not anticipated to be encountered. However, if present, these units represent hazards and under no circumstances should be entered unless written procedures are in place and anyone performing confined space operations has received the necessary training.

6.5.2 Activity Safety and Health Hazard Analysis

Activities which will be performed by the field personnel during the field activities at the site are drilling and collecting soil and groundwater samples.

Potential safety risks will vary with the specific activity and equipment used and with the sampling locations themselves due to the presence of utilities. When any new data is collected, potential health and safety hazards will be evaluated and related to the current and planned activities at the site. All sampling work in which the potential hazards have not been identified may require additional precautions to assure protection against potential hazards. Any modifications of the sampling plan will require evaluation to determine if the existing HASP is adequate for protecting on-site field personnel.

As with most field work involving soil boring, some safety risks inherent with these activities may be expected. The locations of all underground utilities must be determined in areas where subsurface investigation is to be performed. The drilling subcontractor shall be required to

call-in for utility “mark-outs” for all sampling locations prior to initiation of subsurface investigation activities.

The direct handling of contaminated drums, containers or concentrated pure chemicals is not expected during any investigation conducted under this HASP. In the event that such materials are encountered during the field program, the operation will cease, uncovered containers which have been damaged will be immediately covered with soil to minimize vapor release, the condition of the containers and the location will be recorded and the field team will be instructed to secure the area until health and safety risks are properly assessed.

6.5.2.1 - Drilling and Sampling

Hazardous Substances and Conditions

Hazardous substances and conditions include: exposure to surface and/or subsurface contaminants or mechanical hazards, slips/trips/falls, heavy equipment, “strike” or “struck-by” hazards, excessive noise, electrical hazards, active or inactive waste management units and pipes located below or above ground, heat/cold stress, sunlight and ultraviolet (UV) radiation, and biological hazards.

Gases such as methane or hydrogen sulfide may be encountered in drains, sump pits, dry wells or ditches.

Initial Level of Protection and Monitoring Equipment

All intrusive and non-intrusive work will initially be conducted in Level D. However, monitoring will be conducted and the level of protection upgraded if determined to be necessary. Monitoring equipment to be utilized may include any of the following: portable photoionization detector (PID), flame ionization detector (FID) with methane filter and/or a digital respirable dust indicator.

Other instrumentation and sampling systems may be utilized if deemed necessary by the HSO. The HSO may modify these requirements as deemed necessary.

Site Risks

Health Hazards

The presence of contamination at the site poses a potential of health hazards. Field personnel will be wary of and avoid to the maximum extent possible potential inhalation, ingestion and/or dermal contact of any material while at the site. UV radiation and heat/cold stress also pose potential health hazards. In addition, if determined to be necessary by the HSO, field personnel will don the appropriate personal protective equipment.

Safety Hazards

Drilling and related operations pose potential hazards to field personnel. There is the potential for mechanical and physical striking and "struck-by" hazards associated with the equipment and sampling activities, and the potential for electrical hazards from underground power lines, overhead lines and use of electrical equipment and tools.

Confined Space Hazards

Confined space hazards are not anticipated to be encountered during this program since all sampling areas are located outdoors in open areas. However, should entry into any confined space be required, all OSHA procedures for permit-required confined space entry will be followed under the supervision of the HSO.

Conclusion/Risk Assessment

The tasks to be performed during this program may represent possible health risks for inhalation and skin exposure given the potential to encounter contaminated material.

The risk associated with safety hazards for soil and groundwater sampling and drilling activities will depend on the particular location. The safety hazard risk is low to moderate for routine activities, and moderate to high where special hazards exist (e.g., confined space, electrical, mechanical, fire/explosion, etc.). Airborne contaminants are not anticipated to be encountered but may dictate the use of appropriate personal protective equipment as deemed necessary by the HSO.

Proper wearing of protective equipment and employment of stringent personal hygiene practices should reduce potential health hazards.

Restricting access of on-site personnel to all equipment operations, maintaining safe distances from equipment and wearing proper safety equipment will reduce risk of injuries.

6.6 Training Requirements

6.6.1 General Health and Safety Training

All field personnel assigned to or regularly entering the sampling locations other than the Support Zone (if established) must be trained in accordance with 29 CFR 1910.120. This training will be required for personnel performing or supervising work; for health, safety, security or administrative purposes; for maintenance; or for any other site-related function. These training requirements also apply to site visitors who enter the Exclusion Zone or the Contaminant Reduction Zone, if established (see Section 6.10 for clarification).

The training shall include a minimum of 40 hours of general health and safety training and supervised field experience. Documentation of all such training shall be made available to the HSO or FOM before any person shall be allowed to enter the Exclusion Zone or the Contaminant Reduction Zone, if established. If work zones are established at the site, then a Site Worker Training and Medical Examination Record shall be maintained (see Exhibit 6B).

6.6.2 Site-Specific Training

As mentioned previously, all site personnel shall become familiar with the HASP and certify their understanding of this plan (see Section 6.4.9). In addition, all site personnel shall be required to read the site-specific work plan and QAPP. Also, site personnel shall receive project-specific information from the Project Manager and/or HSO regarding the overall methods to be employed at the site to protect health and safety. Through this training along with the OSHA 40-hour course and the personnel's field experience, site personnel shall be familiar with the following items:

- Hazard analysis (chemical/physical hazards).
- Standard safety operating procedures.
- Personal hygiene.
- Safety equipment to be used.
- Personal protective equipment to be worn including care, use and proper fitting.
- Decontamination procedures.
- Areas of restricted access and prohibitions in work areas.
- Emergency procedures and plans.
- Respiratory equipment training and qualitative fit-testing protocols (banana oil and irritant smoke).
- First aid procedures.
- On-site and off-site communications.
- Hazardous materials handling procedures.
- Air monitoring instrumentation use and calibration.
- Confined space entry and rescue operations.
- Sample collection.
- Hazardous materials recognition.

Training sessions for visitors entering the Exclusion and Contaminant Reduction Zones (if established) shall be conducted by the HSO, as needed. Section 6.10.2 of this HASP provides descriptions of the Exclusion and Contaminant Reduction Zones. Abbreviated awareness training for visitors who remain in the Support Zone (if established) will also be provided by the HSO.

Proof of training for all on-site personnel shall be included in Exhibit 6B if work zones are established. Personnel who have not successfully completed the required training shall not be permitted to enter the Exclusion Zone or the Contaminant Reduction Zone (if established).

As mentioned above, new employees involved in hazardous activities shall be indoctrinated by the HSO prior to entering the site to work. All training requirements must be completed by new employees prior to indoctrination. Indoctrination will be comprised of the site-specific refresher training program, the task/operation safety and health risk analysis and the phased accident prevention plan. This training shall be documented in the Site Worker Training and Medical Examination Record if work zones are established (see Exhibit 6B).

6.7 Personal Protective Equipment

6.7.1 General

All on-site personnel shall be issued appropriate personal protective equipment (PPE). All PPE is to be used properly and kept clean and well maintained. The HSO shall maintain constant communication with the Project Manager when conducting air monitoring and consult the Project Manager with regard to "action levels" at which the specified minimum levels of protection are either upgraded or downgraded based upon air monitoring results and direct contact potential. The HSO has the authority to require the use of additional equipment, if necessary, for specific operations.

6.7.2 General Site Safety Equipment Requirements

The basic work uniform will primarily be worn. If conditions warrant, the proper PPE will be donned and continue to be worn until the hazard necessitating the use of the PPE is no longer present.

6.7.2.1 - Equipment

- Coveralls (optional, may be disposable type).
- Boots/shoes (OSHA compliant construction footwear).
- Hard hat with splash shield - ANSI approved (optional).
- Gloves (optional).
- Safety glasses - ANSI approved (optional).

6.7.3 Level D Protection

Level D protection initially shall be worn during all sampling and investigative activities. If conditions warrant, the level of protection shall be upgraded.

6.7.3.1 - Equipment

- Gloves (neoprene or nitrile).
- Boots - Outer (vulcanized rubber or equivalent); Inner (steel toe and shank, or equivalent combination) (ANSI approved).
- Safety glasses or goggles, if necessary (ANSI approved).
- Hard hat with splash shield, if necessary (ANSI approved).
- Hearing protection (if work is near heavy or noisy equipment)

6.7.4 Level C Protection

If determined to be necessary based upon site conditions or instrument readings, upgrade to Level C protection shall be performed in order to protect the health and safety of the workers. Level C protection shall continue to be worn until such time that the hazard which required the upgrade diminishes to acceptable levels or disappears completely. Level C protection shall be worn when a modified level of respiratory protection is needed. Selection shall be made when air monitoring results for the work area exceed the action level criteria.

6.7.4.1 - Equipment

- Full-facepiece, air-purifying respirator with combination organic vapor and high efficiency particulate air (HEPA) cartridges (OSHA/NIOSH approved).
- Hooded one piece chemical resistant suit, PE - Tyvek or equivalent (modification of protective suits may be made upon approval of the HSO).
- Gloves - Outer (nitrile or equivalent); Inner (nitrile).
- Boots - Outer (neoprene or equivalent); Inner (steel toe and shanks, or equivalent combination) (ANSI approved).
- Two way radio communications (for remote operations).
- Hard hat with splash shield (ANSI approved).
- Hearing protection (if work is near heavy or noisy equipment).

6.7.5 Confined Spaces

Confined spaces are not anticipated to be encountered during this program. If encountered, under no circumstances shall confined spaces be entered unless discussed with the Project Manager and authorized by the HSO. Only employees who have received Confined Space Entry Training and are prepared to deal with confined space hazards shall be authorized to enter a confined space.

6.7.6 Standing Orders

All prescription eyeglasses used in the work area shall be safety glasses. Prescription lens inserts shall be provided for use with full-face respirators. All eye and face protection shall conform to OSHA 1910.133.

Programs for respiratory protection shall conform to OSHA 1910.134 and ANSI Z88.2-1980.

Personnel unable to pass a fit test shall not enter or work in the Exclusion Zone or Contaminant Reduction Zone (if established).

Each respirator shall be individually assigned and not interchanged between workers without cleaning and sanitizing. Cartridges/canisters and filters shall be changed daily or upon breakthrough, whichever occurs first. If breakthrough occurs, a reevaluation by the HSO of the protection level is warranted. A procedure for assuring periodic cleaning, maintenance and replacement of filters shall be followed by each respirator wearer. This procedure is described in Exhibit 6C - Care and Cleaning of Respirators.

A hard hat shall be worn by all personnel if determined to be necessary by the HSO. All head protection shall conform to the requirements in OSHA 1910.135.

All non-disposable Level C or D personal protective equipment worn on-site shall be decontaminated before being reissued. The HSO is responsible for ensuring all non-disposable personal protective equipment is decontaminated before being reissued. Disposable PPE shall be properly disposed of according to NYSDEC requirements and regulations.

All safety boots shall conform to OSHA 1910.136.

Power equipment may generate excessive noise levels (in excess of 85 decibels). Proper ear protection shall be provided and used in accordance with OSHA 1926.52, if determined to be necessary.

6.8 Medical Surveillance

All on-site personnel involved in hazardous waste operations must have satisfactorily completed a comprehensive medical examination prior to the initiation of hazardous waste operations at the site. Medical examinations are required for any and all personnel entering the Exclusion or Contamination Reduction Zones, if established (with the exception of visitors wearing respiratory protection as deemed necessary by the HSO).

Medical examinations are not required for people making periodic deliveries provided they do not enter the Exclusion or Contamination Reduction Zones, if established.

As mentioned previously, the date of each site worker's physical examination will be included in Exhibit 6B if work zones are established - Site Worker Training and Medical Examination Record. Additionally, if work zones are established, a specific Medical Data Sheet for each individual will be filed with the HSO, prior to commencing operations, and with the Project Manager (see Exhibit 6D for Medical Data Sheet).

All field personnel who will enter the Exclusion Zone or the Contaminant Reduction Zone (if established) shall be provided with medical surveillance at the start of their employment (entrance examination), and, at a minimum, at the end of the on-site personnel's employment (exit examination). Nonscheduled medical examinations may be conducted. In addition to nonscheduled examinations, any medical or biological monitoring required by an OSHA standard when OSHA Action Levels are exceeded will be performed.

6.8.1 Medical Surveillance Protocol

Medical surveillance protocol is the physician's responsibility but shall meet the requirements of OSHA Standard 29 CFR 1910.120 for all personnel. The protocol shall be selected by the physician.

Additional clinical tests may be included at the discretion of the attending physician performing the medical examination.

6.8.2 Nonscheduled Medical Examinations

The scope of the nonscheduled medical examinations shall be determined by the physician.

Companies contracted by Northrop Grumman Corporation to perform work on-site in the Exclusion Zone or Contaminant Reduction Zone (if established), shall provide equivalent medical surveillance to their on-site personnel and supply Northrop Grumman Corporation with documentation to that effect.

Nonscheduled medical examinations shall be conducted under the following circumstances:

- After acute exposure to any toxic or hazardous material.
- At the discretion of the Project Manager and/or the physician when an employee has been exposed to potentially dangerous levels of toxic or hazardous materials.
- At the discretion of the Project Manager and/or the physician and at the request of an employee with demonstrated symptoms of exposure to toxic or hazardous materials.

6.8.3 Documentation and Record Keeping

The examining physician shall notify the Project Manager in writing that the individual has received a medical examination and shall advise as to any specific limitations upon such individual's ability to work at the project site which were identified as a result of the examination. Appropriate action shall be taken in light of the advice given pursuant to this paragraph.

The ability of on-site personnel to wear respiratory protection during hazardous waste activities shall be certified by the physician. Cardiopulmonary system examination and pulmonary function testing are minimum requirements.

The physician shall maintain and provide access for employees to his medical surveillance records according to OSHA requirement (29 CFR 1910.20). These records shall be maintained for a period of 40 years.

6.9 Environmental and Personal Monitoring Program

6.9.1 General

In order to protect site workers from harmful levels of airborne toxic materials, potentially explosive environments or excessively hot/cold conditions, regular environmental and personnel monitoring may be accomplished to document exposures and to determine when to increase protective measures.

6.9.2 Air Monitoring

The field activities may require the utilization of specific air monitoring equipment to identify unknown environments.

Air monitoring will be conducted by the HSO or FOM utilizing a photoionization detector for the express purpose of safe guarding the health and welfare of the site workers. In addition, soil samples will be screened to assist in sample selection.

6.9.2.1 - Air Monitoring Instrumentation

On-site air monitoring will be performed using any of the following direct reading instruments, as necessary:

- Portable flame ionization detector (FID) for detection of volatile organic vapors (with and without a methane filter).
- Portable photoionization detector (PID) with a 10.6 eV lamp for the detection of organic vapors.
- Colorimetric tubes for specific air contaminants (i.e., perchloroethene, etc.). Multigas colorimetric detector tubes will be used in conjunction with the PID to detect and quantify the concentration of selected contaminants in the air. The detector tubes to be employed must be sensitive in the concentration ranges in the action level range for those contaminants. It should be realized that some "compound specific" detector tubes will also detect interference from other aromatic or aliphatic hydrocarbons; readings do not differentiate between which compounds are present. A hand pump and detector tubes for target compounds will be utilized as needed.
- If PID/FID readings are elevated when compared to background (e.g., 1 ppm or more above background) or if separate phase product or odorous material is detected, then detector tubes for target compounds will be utilized.
- Portable combustible gas/oxygen/hydrogen sulfide detector will be available for determining lower explosive limits, oxygen and hydrogen sulfide levels in any identified confined spaces. Under no circumstances shall confined spaces be entered unless discussed with the Project Manager and authorized by the HSO. Only employees who have received confined space entry training and are prepared to deal with confined space hazards shall be authorized to enter a confined space.
- Digital respirable dust indicator for monitoring of particulate emissions.
- An FID equipped with a methane filter to monitor for methane. The methane filter screens out all organic vapors except for methane. The readings obtained from the FID with the methane filter represent the level of methane present. A methane meter may also be utilized to screen for methane.

All monitoring and surveillance equipment will be operated, maintained and calibrated each working day in accordance with the manufacturer's instructions and quality assurance procedures. Organic vapor monitoring will be conducted by trained field staff prior to, during and following sampling, and disturbance of soils or sediments at a sampling site. Should contamination levels indicate high hazard potential, the HSO will review monitoring procedures and results.

A daily air monitoring form will be used to record monitoring data if work zones are established (see Exhibit 6E).

Monitoring and surveillance equipment is impacted by humidity (PID), cold weather (all electrical devices), communication transmissions and possibly high voltage electrical transmission wires and other interferences. Any unusual meter responses should be noted on the air monitoring form and a diagnosis of potential influencing factors made to determine and eliminate the cause.

6.9.2.2 - Contaminants of Concern

As stated earlier, based on the results of the soil sampling program undertaken in March 2002, the contaminants of concern for the site are PCBs and chromium. Monitoring will be conducted throughout the course of the project for health and safety purposes.

6.9.2.3 - Air Monitoring Locations and Action Level Criteria

The primary areas to be monitored during the project are the work zones established around drilling and sampling locations as identified in the site-specific sampling plan (see Section 3.0 of this Work Plan).

Air monitoring protocols for each area will differ since target populations, contaminant concentrations and atmospheric conditions may vary. Monitoring will be conducted directly at the location of soil disturbance (i.e., the boring or monitoring well).

Air monitoring conducted at the sampling locales will focus on workers' breathing zones and thus may include personal breathing zone samples. Air monitoring just outside of these locations will consist of instruments attempting to quantify the types and degrees of emissions originating from the sampling sites.

If determined to be necessary based on readings in the workers' breathing zones or at a boring location and if work zones are established, then a Community Air Monitoring Program in accordance with the requirements of the NYSDOH will be established. A summary of the various air monitoring activities and associated action levels are presented in Table 6-3.

Duration, Frequency and Protocol

Monitoring is required daily or as deemed necessary by the HSO, during all activities in the Exclusion Zone (if established), particularly during intrusive activities. The HSO may modify the work zone sampling frequency upon review of previously analyzed work zone samples.

Background Air Monitoring

Background air monitoring for contaminants must occur at the upwind perimeter of the Exclusion Zone (if established) prior to allowing workers to enter the Exclusion Zone.

Air monitoring will occur continuously, or at the discretion of the HSO, downwind and crosswind while work is occurring in the Exclusion Zone (if established). Data must be annotated in the Air Monitoring Form for that day.

Changes in wind direction will require reassessment of air monitoring locations. Wind directions may be determined with the aid of a wind sock. Levels of contaminants that warrant use of respiratory protection by site workers may require initiation of site perimeter and personal air sampling as deemed necessary by the HSO.

Table 6-3

SUMMARY OF AIR MONITORING PROGRAM AND ACTION LEVELS

Action Level	Level of Protection	Action to be Taken
INTRUSIVE ACTIVITIES		
Starting intrusive activities	Level D	Work shall be started in Level D.
PID/FID		
Background (BKGD) to 5 units and no benzene is present	Level D	
5 units above BKGD at breathing zone and below 150 units	Level C	Halt work, evacuate area and allow area to ventilate prior to resuming work. Should levels persist, HSO, Project Manager or FOM will evaluate conditions prior to upgrading to Level C.
> 150 units above BKGD	Level B	Proceed with caution and monitor continuously. Should levels above 150 units persist, HSO, Project Manager or FOM will evaluate conditions prior to upgrading to Level B. This action would require the work area protocol be amended for Level B protection as discussed in this HASP.
DRAEGER COLORIMETRIC TUBE		
Benzene >1 ppm	Level C	Halt work, evaluate condition prior to upgrading to Level C protection.
Benzene >25 ppm	Level B	If levels persist, upgrade to Level B protection is required upon approval by HSO or FOM.
Other colorimetric detector tubes > PEL (used when necessary by HSO when PID readings are > 1 unit or if phase product or odorous material is detected)	Level C	Halt work, evaluate condition prior to upgrading to Level C protection.
DIGITAL DUST INDICATOR		
Respirable dust 150 ug/m^3	Level C	Halt work, evacuate area and allow to ventilate prior to resuming work. Should levels persist, upgrade to Level C protection is required upon approval by HSO or FOM.

Table 6-3 (continued)

SUMMARY OF AIR MONITORING PROGRAM AND ACTION LEVELS

Action Level	Level of Protection	Action to be Taken
COMBUSTIBLE GAS METER		
> 10% LEL scale		Halt work, evacuate area and allow to ventilate to below 10% LEL prior to resuming work. Contact HSO and FOM.
OXYGEN		
< 20.5%		Continuous monitoring. Consider engineering controls.
< 19.5%		Evacuate work area. Institute ventilation and engineering controls. Maintain site condition for at least 10 minutes before proceeding. Notify HSO and FOM.
> 22%		Continuous monitoring. Identify combustion sources.
> 23.5%		Evacuate. Institute engineering controls as necessary before proceeding. Explosive condition may be present. Notify HSO and FOM.
OTHER		
Any worker experiences symptoms of chemical exposure		Stop work, evacuate the area, seek medical attention and notify HSO and FOM for proper incident reporting and follow-up.

Exclusion Zone Air Monitoring

Air monitoring conducted in the Exclusion Zone (if established) will focus on real time measurement of toxic compounds that pose inhalation hazards, levels of flammable compounds for explosive hazards and oxygen deficient atmospheres. Such air monitoring will be conducted within the breathing zone at each locale.

Vapor Emission

If the ambient air concentration of organic vapors exceeds 5 ppm (or 5 units) above background in the breathing zone within the work area, activities at that location will be stopped and the area evacuated until a review of work procedures, air monitoring needs and use of appropriate respiratory protection and equipment is performed by the HSO or FOM. In addition, downwind monitoring at the site perimeter will be performed with direct reading instruments to determine whether off-site contaminant migration is occurring. Work will proceed only after review and approval by the HSO or FOM, and the appropriate corrective action is taken or level of protection established. More frequent intervals of monitoring will be conducted as directed by the HSO, including Draeger screening for specific contaminants.

If the organic vapor level decreases below 5 ppm (5 units) above background, activities can resume but more frequent intervals of monitoring, as directed by the HSO, must be conducted. If the organic vapor levels are greater then 5 ppm but less than 150 ppm over background in the breathing zone within the work area, activities can resume provided Level C protection is utilized.

If the organic vapor level is above 150 ppm within the breathing zone, work activities must be shut down. When work shutdown occurs, downwind air monitoring as directed by the HSO will be implemented to ensure that vapor emissions do not impact the nearest residential or commercial structure. Following reevaluation, work may resume if Level B protection is utilized.

Respirable Dust

Dust may have the potential to be generated during field investigation activities. It may also be generated by activities not related to the investigation such as vehicle traffic or other site activities. Dust suppression techniques including the wetting of surface areas or the use of cover material will be implemented should the digital dust monitor indicate action is required **or** visible emissions can be avoided and dust may be a result of investigative activities of contaminated areas. Vehicle speeds in unpaved areas of the site will be restricted to 5 mph.

Any dust generated will be monitored for the presence of respirable particles (< 10 um) in order to preclude potential hazards. Background and work area dust particulate levels will be determined prior to and during field activities that may generate dust. If respirable dust particulate levels exceed 2.5 times background or 150 ug/m^3, then corrective action will be required. If the above action levels are exceeded, all operations will stop.

General visual observation shall also be used during all intrusive activities to identify airborne releases (e.g., vapors, smoke, etc.), changes in the coloration of excavated materials, changes to the structural integrity of the surface or changes to the mechanical integrity of the equipment. Should such conditions be noticed or encountered, work shall be halted and the area evacuated until such time that the FOM can be contacted and specific procedures for characterizing and handling the hazard can be developed.

The HSO, or his on-site designee, shall observe site conditions daily with special attention to the aforementioned conditions. Depending on site conditions, additional personal protection measures shall be implemented during the course of site work.

6.9.2.4 - Personal Exposure Monitoring

In addition to direct reading measurements, personal sampling may be conducted based on results of air monitoring and site conditions. The results of personal monitoring will be evaluated by the CIH or designee.

If results are above the OSHA PELs, an exposure monitoring program will be set up for the duration of the project. Personal samples for respirable silica dust may be collected depending on the Digital Respirable Dust Indicator readings and effectiveness of work practices and controls.

6.9.2.5 - Heat/Cold Stress Monitoring

Heat/Cold Stress guidelines are described in detail in Exhibit 6F.

6.9.3 Quality Assurance and Control

All monitoring instruments will be protected from surface contamination during use to allow easy decontamination. All instrumentation shall be calibrated before and after use and operational checks conducted periodically in the field over the duration of the day's field activities.

The following data shall be recorded by the HSO on the Air Monitoring Results form if work zones are established:

- Date and time of monitoring;
- Air monitoring location;
- Instrument, model number and serial number;
- Calibration/background levels;
- Results of monitoring; and,
- HSO signature.

Note: The Air Monitoring Results Form is provided in Exhibit 6E.

Interpretation of the data and any further recommendations shall be made by the HSO.

Air monitoring results shall be given verbally to the FOM following each site scan that indicates volatile organic vapor concentrations in excess of the action levels. Results will then be documented in writing and provided to the FOM by the end of that work day.

6.10 Site Control Measures

6.10.1 Site Management

The Town of Oyster Bay Bethpage Community Park is currently an active facility. All equipment, materials and supplies used for drilling, and equipment and supplies used for decontamination will be stored at a Town of Oyster Bay approved location within the park. The decontamination pad, constructed if necessary, will also be located within the park in a Town of Oyster Bay approved location. Any drums containing decontamination, development or purge water will be staged within a designated area on pallets.

6.10.2 Work Zones

Based on the concentrations of the constituents of concern detected during the soil sampling program conducted in March 2002, work zones do not need to be established at the onset of this program. However, the tasks discussed previously in Section 6.5 may be subject to zonation depending upon the results of the monitoring conducted during the field activities for sample selection and health and safety purposes. If determined to be necessary, Restricted, Exclusion, Contaminant Reduction and Support Zones will be established surrounding the work area.

The Restricted Zone (RZ) will be identified as the area within which all project operations take place. At each sampling location, three work areas shall be established: the Exclusion Zone (EZ), the Contaminant Reduction Zone (CRZ), and the Support Zone (SZ). Only authorized personnel will be allowed in the RZ. Typically, a five foot wide (or other distance determined by the HSO or FOM) strip of land bordering the EZ is considered the CRZ. In

addition to this strip of land, a specially demarcated area that connects the decontamination area to the CRZ is treated as an extension of the CRZ. All other areas inside the restricted area that are not an active Exclusion or Contaminant Reduction Zones are treated as the Support Zone.

6.10.2.1 - Exclusion Zone

The Exclusion Zone includes the intrusive activities and isolates the area of contaminant generation and restricts (to the maximum extent possible) the spread of contamination from active areas of the site to support areas and off-site locations. This area will encompass all intrusive work. The Exclusion Zone is demarcated by the Hot Line (i.e.; a tape, rope line or physical barrier). Personnel entering the Exclusion Zone must:

- enter through a controlled access point (the Contaminant Reduction Zone),
- wear the prescribed level of protection (see Section 6.7), and
- be authorized to enter the Exclusion Zone (see Sections 6.4, 6.6 and 6.8).

Any personnel, equipment or materials exiting the Exclusion Zone will be inspected for contamination. Personnel will be subject to decontamination if deemed necessary by the HSO or FOM; equipment and materials (e.g., drill rods) will be transported to the decontamination area.

Specific access for emergency services to areas of specific site operations will be established by the HSO prior to commencing any operation. The delineated area of the Exclusion Zone may vary with task.

6.10.2.2 - Contaminant Reduction Zone

As stated earlier, CRZ will consist of a five-foot wide strip of land surrounding the EZ and also includes a strip of land connecting the EZ to the decontamination area. However, the extent and exact configuration of the CRZ will be at the discretion of the HSO or FOM. Sampling equipment and drills will be placed in plastic-lined boxes and transported to the decontamination area where they will be decontaminated. Certain safety equipment (e.g.,

emergency eye wash, fire extinguisher and first aid kit) will be located near the sampling location.

The level of protection to be used for decontamination will normally be Level D. However, the HSO shall determine appropriate levels of protection based upon air monitoring readings and visual inspection of personnel and equipment operations in the EZ. Equipment operators physically performing tasks outside the EZ may be exempt from this requirement as approved by the HSO or FOM.

6.10.2.3 - Support Zone

The Support Zone shall be the remaining area within the RZ which is not part of the EZ or CRZ. The Support Zone will be used for storage of equipment and materials, paperwork, Material Safety Data Sheets (MSDSs), emergency equipment, communications center and command post. Personal hygiene facilities will be located within the Support Zone or the site's buildings.

A log of all persons entering the site will be maintained by the FOM.

6.10.3 Operations Start-up

Based on the concentrations of the constituents of concern detected during the soil sampling program conducted in March 2002, work zones do not need to be established at the onset of this program nor are any special conditions or procedures necessary during operations start-up. However, as a safety precaution, no personnel will be positioned downwind of the work area during boring and sampling activities. In addition, the location of the staging area for support equipment will be upwind and in close proximity to the work area.

6.10.4 Buddy System

The buddy system will be employed if it becomes necessary to establish work zones during the field activities. In this case, all on-site personnel will be required to utilize the buddy system whenever any task performed at the site requires:

- Personnel to assist in completing an activity.
- Intrusive work performed in the Exclusion Zone.
- The use of protective clothing.
- Communication between the Exclusion Zone and confined space work and the Command Post (e.g., security, safety, etc.).

The HSO shall enforce the buddy system and has the authority to modify the criteria stated above to deal with changing site specific and environmental conditions.

In order to ensure that help will be provided in an emergency, all on-site personnel shall be in line-of-sight contact or in communication with the HSO or FOM when working in the Exclusion Zone.

6.10.5 Site Communications Plan

All communications at the site will be verbal. If determined to be necessary, internal communications will be established and used by on-site supervisory personnel. The HSO shall ensure all site personnel are trained to use established internal communications to:

- alert personnel on-site of emergencies;
- pass along safety information (such as for heat stress/cold stress control, rest period time, etc.);
- changes in work scope, scheduling or sequencing of operations; and

- maintain site control (such as notification of vandalism, intruders or violations of HASP protocol, etc.).

Verbal communications and hand signals shall be used for all tasks of the project.

If it becomes necessary to establish work zones, existing site communications will be reevaluated to determine their suitability and effectiveness. For those tasks performed in Level C or Level B, radio communications may be used. Any Exclusion Zone work activity being performed out of the line-of-sight of the HSO may require use of radio communications. The HSO may designate a radio operator at the location where the work activity is being performed.

Air horns shall be positioned at any Exclusion Zone work area to be used for emergency response only. The HSO shall designate air horn blast sequences for identification of work location, type of emergency and the need for evacuation of all personnel. Exhibit 6G presents a listing of emergency “air horn” and “hand” signals.

Wind direction indicators shall be installed such that a line-of-sight is maintained with all personnel in all work zones. The HSO shall designate specific locations for wind direction indicators.

All moving machinery, bulldozers, cranes, dump trucks, etc. shall have working backup alarms.

External communications shall be maintained on-site and be used to coordinate emergency response, report to management and maintain contact with essential off-site personnel.

All on-site personnel shall be informed of external communications hardware (such as telephone, etc.) and the necessary telephone numbers to contact in the event of an emergency situation (e.g., fire, police, medical, etc.).

All emergency numbers shall be available at the site. Exhibit 6H presents a listing of important telephone numbers.

Appropriate action shall be taken should any hazardous environmental condition be observed on-site. These conditions and the appropriate action to be taken are as follows:

Observation	Potential Hazard	Action
Muddy condition	Personnel/slip, equipment instability	Monitor work until condition improves
Lightning	Electrocution	Stop work until condition subsides
Horn blasts or other notification by site personnel	Site emergency	Stop work - evacuate to trailer - follow emergency notification procedures
Personal injury	Other personnel may be affected	Follow emergency notification procedures
Personal fatigue	Heat stress	Follow heat stress guidelines
Windy condition	Overhead hazards, visual impairment	Stop work until condition subsides

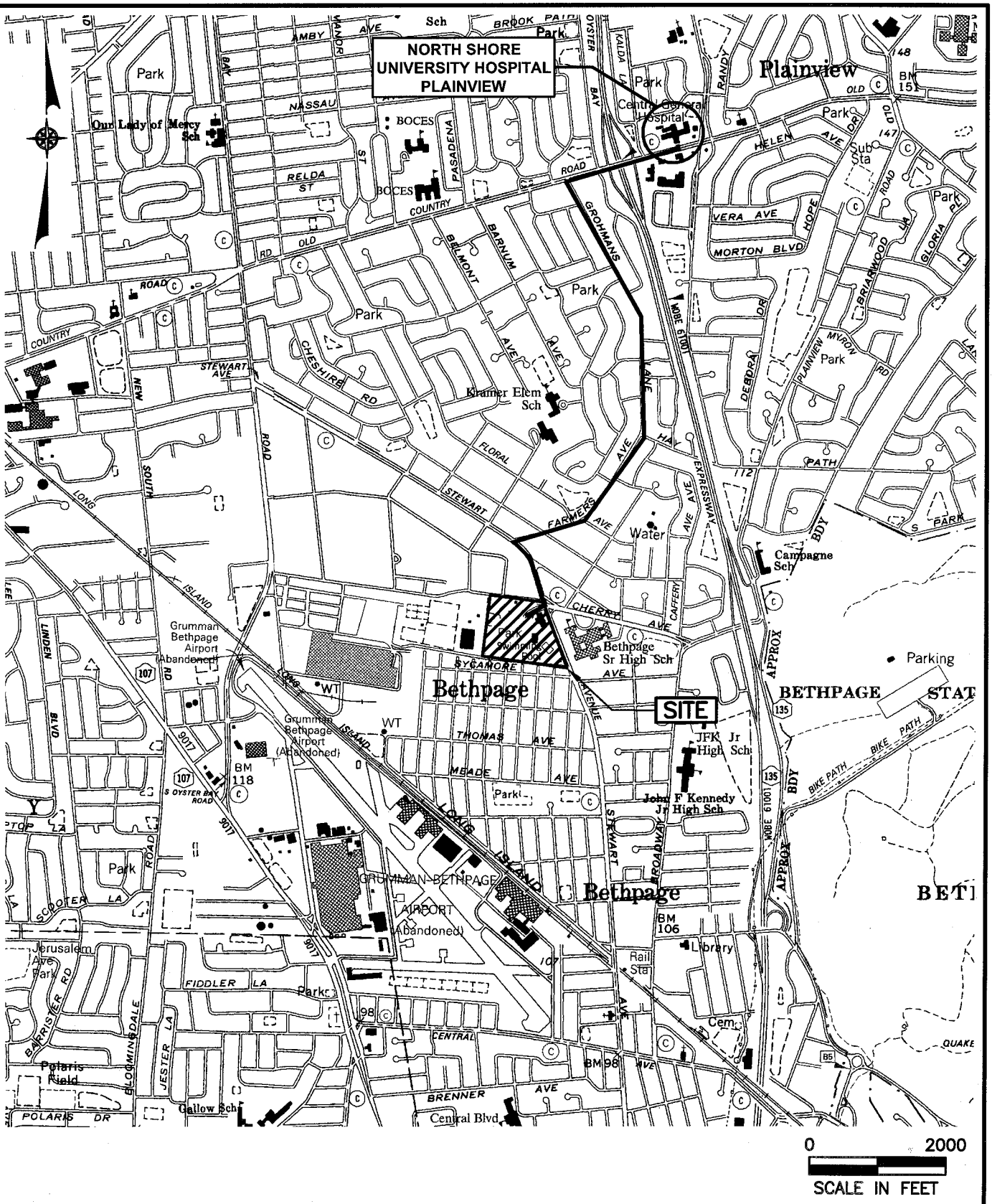
6.10.6 Medical Assistance

The following information and Exhibit 6H provide a complete listing of the emergency contacts.

The primary source of medical assistance for the site is:

Emergency Notification
Telephone: 911

Depending on the severity of an injury, emergency first aid may be administered prior to transportation of the injured to the local hospital. A hospital route map is provided as Figure 6-3.



TOWN OF OYSTER BAY
BETHPAGE COMMUNITY PARK
BETHPAGE, NEW YORK

HOSPITAL ROUTE MAP

FIGURE 6-3

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EMERGENCY TELEPHONE NUMBERS

Agent/Facility	Telephone	Emergency Number
EMS - Ambulance	911	911
Police Department	(516) 573-6800	911
Fire Department	(516) 931-0666	911
Hospital (North Shore University Plainview)	(516) 719-3000	911
Poison Control Center	(516) 542-2323	911
Gas Emergencies	(800) 490-0045	911
Electric Emergencies	(800) 490-0075	911

ON-SITE FIRST AID EQUIPMENT

A first aid kit will be available at the site.

EMERGENCY MEDICAL INFORMATION FOR SUBSTANCES POTENTIALLY PRESENT

Substance	Exposure Symptoms	First Aid
VOCs (e.g., PCE, TCE, TCA, DCE, etc.)	Dermal: irritation	Rinse affected area with water
	Inhalation: dizziness, nausea	Ventilate, artificial respiration
H_2S (hydrogen sulfide)	Inhalation: irritation	Ventilate, artificial respiration
Methane	Inhalation: dizziness, nausea	Ventilate, artificial respiration

GENERAL EMERGENCY PROCEDURES

The following standard emergency procedures will be used by on-site personnel. The HSO shall be notified of any on-site emergencies and shall be responsible for ensuring that the appropriate procedures are followed.

Personnel Injury: Administer first aid and/or CPR, and arrange for medical attention.

Fire/Explosion: The fire department shall be notified by site personnel. Personnel shall move to a safe distance from the area involved.

6.10.7 Safe Work Practices

This section provides practices and procedures for conducting operations safely at drilling and sampling locations where potentially hazardous materials may be encountered.

Workers are expected to adhere to established safe work practices for their respective specialties. The need to exercise caution in the performance of specific work tasks is made more acute due to:

- Physical, chemical and toxicological properties of contaminated materials, if encountered;
- Other types of hazards present, such as heavy equipment, falling objects, loss of balance or tripping;
- Weather restrictions;
- Restricted mobility and reduced peripheral vision caused by the protective gear itself;
- The need to maintain the integrity of the protective gear; and,
- The increased difficulty in communicating caused by respirators.

Work at the site will be conducted according to established protocols and guidelines for the safety and health of all personnel involved. Among the most important of these principles are the following:

6.10.7.1 - General

- In any unknown situation, always assume the worst-case conditions and plan responses accordingly.

- Because no personal protective equipment is 100 percent effective, all personnel must minimize contact with any suspected contaminated materials. Plan work areas, decontamination areas and procedures accordingly.

- Smoking, eating, chewing gum or tobacco, or drinking in the work areas will not be allowed. Oral ingestion of contaminants is the second most likely means of introducing toxic substances into the body (inhalation is the first).

- Work breaks should be planned to prevent stress-related accidents or fatigue related to wearing protective gear.

- Medicine and alcohol can potentiate the effects from exposure to toxic chemicals and heat stress. Prescribed drugs should not be taken if working in the Contaminant Reduction Zone or Exclusion Zone (if established), unless approval has been given by the physician. Alcoholic beverage consumption shall be prohibited on site.

- Personnel must be observant of not only one's own immediate surrounding, but also those of others. Everyone will be working under constraints, therefore, a team effort is needed to notice and warn of impending dangerous situations. Extra precautions are necessary when working near heavy equipment and while utilizing personal protective gear because vision, hearing and communication will be restricted.

- Contact lenses are not allowed to be worn on site; if corrosive or lachrymose substances enter the eyes, proper flushing is impeded by the contact lenses.

- All facial hair that interferes with the respirator facepiece fit must be removed prior to donning a respirator for all tasks requiring **Level B** or **Level C** protection.

- Personnel must be aware that chemical contaminants may mimic or enhance symptoms of other illnesses or intoxication. Avoid use of alcohol or working while ill during the duration of task assignment.

- The HSO will maintain records in a bound notebook (e.g., daily activities, meetings, incidents and data). Notebooks will remain on-site for the duration of the project so that other safety and health personnel may add information, thereby maintaining continuity. These notebooks and daily records will become part of the permanent project file.

6.10.7.2 - Site Personnel

- All personnel at the site shall be identified to the HSO and FOM.
- All personnel operating in respective work zones (if established) shall dress according to the protection levels set forth in this HASP.
- Red head wooden matches or lighters of any kind will not be allowed in the Contaminant Reduction Zone or Exclusion Zone (if established).
- All personnel will have their "buddy" with them when the buddy system is in effect.
- All personnel will notify the HSO or FOM of any unusual occurrences that might effect the overall safe operation of the site.
- Any time a fire extinguisher is used, personnel shall notify the HSO or FOM of what took place.
- All injuries and accidents shall be immediately reported to the HSO or FOM and the appropriate reports filed.

6.10.7.3 - Traffic Safety Rules

- Any vehicles that will not be involved in the site operations will be secured and the motor turned off.
- Only personnel assigned to the site will be allowed to enter the work area. Any other people, whether from OSHA, EPA or vendors supplying equipment, etc., shall be met prior to entering the work area.
- At no time will any equipment be allowed to block any access road. If, in moving the equipment, a temporary blockage will exist, that equipment shall have an operator available to move that equipment.
- The locations of all fire fighting equipment, valves, hydrants, hose storage places and fire extinguishers will be indicated to all personnel to prevent their inadvertent blockage at any time.

6.10.7.4 - Equipment Safety Rules

- Proper loading and operation of trucks on-site shall be maintained in accordance with DOT requirements covering such items as grounding, placarding, driver qualifications and the use of wheel chocks.

- Operation of heavy construction equipment shall be in accordance with OSHA regulations 29 CFR 1910 and 1926.

- All equipment that is brought on-site will be available for inspection by the HSO.

- The HSO, or designee, will assign protective equipment to all site personnel. This equipment will be made available for inspection at any time.

- All equipment shall be installed with appropriate equipment guards and engineering controls including rollover protection structures.

- Safe distances will be maintained when working around heavy equipment.

- All equipment and tools to be operated in potentially explosive environments must be intrinsically safe and not capable of sparking or be pneumatically or hydraulically driven. Portable electric tools and appliances can be used (where there is no potential for flammable or explosive conditions present); three-wire grounded extension cords must be used to prevent electric shocks; ground fault interrupters shall be used as well.

- With hydraulic power tools, fire-resistant fluid that is capable of retaining its operating characteristics at the most extreme temperatures shall be used.

- Cutting or welding operations shall not be carried out without the approval of the HSO and the FOM.

- At the start of each work day and on a weekly basis, inspection of brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering and splash protection shall be made by the equipment operators.

- All non-essential personnel shall be kept out of the work area.

- Loose-fitting clothing or loose long hair around moving machinery shall be prohibited.

- Cabs shall be free of all non-essential items and all loose items shall be secured.

- The rated load capacity of a vehicle shall not be exceeded.

- Dust control measures shall be employed by the contractor to prevent the movement of dust away from work areas. The method employed shall be determined by the contractor and reviewed by the HSO and the FOM.

- Equipment operators shall report to their supervisor(s) any abnormalities such as equipment failure, oozing liquids, unusual odors, etc.

- When an equipment operator must negotiate in tight quarters, a second person shall be used to ensure adequate clearance.

- A signalman shall be used to direct vehicle backing, as necessary.

- Refueling shall be conducted in safe areas. Engines should not be refueled while running. Ignition sources near a fuel area shall be prohibited.

- All blades and buckets shall be lowered to the ground and parking brakes set before shutting off the vehicles.

- An ongoing maintenance program for all tools and equipment shall be implemented by the responsible contractor equipment supervisor. All tools and moving equipment shall be regularly inspected to ensure that parts are secured and intact with no evidence of cracks or areas of weakness, that the equipment turns smoothly with no evidence of wobble, and that it is operating according to the manufacturer's specifications.

- Tools shall be stored in clean, secure areas so that they will not be damaged, lost or stolen.

- All heavy equipment that is used in the Exclusion Zone (if established) shall be kept in that zone until the project is complete or the equipment is decontaminated. All equipment shall be thoroughly decontaminated prior to moving it into the Support Zone.

6.10.7.5 - Drilling Equipment Safety Rules

Drilling equipment maintenance and safety is the responsibility of the equipment operator. The following sections are provided as general guidelines for safe drilling practices on-site.

Off-Road Movement of Drilling Equipment

The following safety guidelines relate to off-road movements:

- Before moving any drilling equipment, walk the route of travel, inspecting for depressions, slumps, gullies, ruts and similar obstacles.

- Always check the brakes of equipment before traveling, particularly on rough, uneven or hilly ground.

- Offload all passengers before moving equipment on rough or hilly terrain.

- Engage the front axle (for 4x4, 6x6, etc., vehicles or carriers) when traveling off highway on hilly terrain.

- Use caution when traveling on side hills. Conservatively evaluate side-hill capability of equipment because the arbitrary addition of equipment and supplies may raise the center of mass. Whenever possible, travel directly uphill or downhill.

- Attempt to cross obstacles such as small logs and small erosion channels or ditches perpendicularly, not at an angle.

- Use the assistance of someone on the ground as a guide when lateral or overhead clearance is close.

- After the equipment has been moved to a new location, set all brakes and/or locks. When grades are steep, block/chock the wheels.

- Never travel off-road with the mast (derrick) of the drill rig or any other equipment in the raised or partially raised position.

- Tie down loads on the drilling equipment, support trucks or other equipment during transport.

Overhead and Buried Utilities

- The use of drilling equipment near electrical power lines and other utilities requires that special precautions be taken by both supervisors and members of the exploration crew. Electricity can shock, burn and cause death!

- Overhead/buried utilities should be located, noted and emphasized on all boring and excavation location plans and boring assignment sheets.

- The drilling subcontractor shall be required to call-in for and obtain utility mark-outs using the “one call” number. Only after utilities have been properly marked-out may drilling and/or other subsurface investigation activities be undertaken.

- Before raising the equipment mast (derrick) on a site in the vicinity of power lines, walk completely around the equipment. Determine what the minimum distance from any point on the equipment to the nearest power line will be when the mast is raised and/or being raised. Do not raise the mast or operate the equipment if this distance is less than 20 feet. In general, the distance between the overhead power line and the boom should be no less than the height of the boom.

- Keep in mind that both hoist and overhead power lines can be moved toward each other by the wind.

- Operating personnel should double-check any site underground electrical and piping drawings prior to initiating drilling activities. If an obstruction is encountered during drilling activities, proceed with extreme caution until the possibility of an exposed electrical line or pipeline is excluded.

Clearing the Work Area

- Prior to any drilling or excavating activities, adequate site cleaning and leveling should be performed to accommodate the equipment and supplies and provide a safe working area.

- Drilling or excavation activities should not be commenced when tree limbs, protruding objects, unstable ground or site obstructions or debris can cause unsafe tool handling conditions and/or limited or awkward work spaces.

- An area clear of obstructions or debris should be maintained 180 degrees around the drilling or excavation equipment, wherever practical.

Note: In coordination with the drilling crew, the FOM will review the precautions taken to ensure that the drill rig is leveled and stabilized.

Housekeeping On and Around the Drilling Equipment

- The first requirement for safe field operations is that the drilling crew safety supervisor understands and fulfills the responsibility for maintenance and "housekeeping" on and around the drilling equipment.

- Suitable storage locations should be provided for all tools, materials and supplies so that they can be conveniently and safely handled without hitting or falling on a member of the drilling crew or a visitor, without creating tripping hazards and without protruding at eye or head level.

- Avoid storing or transporting tools, materials or supplies within or on the mast (derrick) of the drilling equipment.

- Pipe, drill rods, bit casings, augers and other drilling tools should be orderly stacked on racks or sills to prevent spreading, rolling and/or sliding.

- Driving hammers should be placed at a safe location on the ground or be secured to prevent movement when not in use.

- Work areas, platforms, walkways, scaffolding and other access ways should be kept free of materials, obstructions and substances such as ice, excess grease or oil that could cause a surface to become slick or otherwise hazardous.

- Keep all controls, control linkages, warning and operation lights and lenses free of oil, grease and/or ice.

- Do not store gasoline in any portable container other than a non-sparking, red container with a flame arrester in the fill spout and having the word "gasoline" labeled on the container in an easily visible location.

- Welding gas cylinders should be stored in an upright position to avoid gas leaks.

Safe Use of Hand Tools

There are numerous hand tools that can be used on or around drilling equipment. "Using the tool for its intended purpose" is the most important rule. The following are a few specific and some general suggestions which apply to the safe use of several hand tools that are often used on and around drilling equipment:

- When a tool becomes damaged, either repair it before using it again or dispose of and replace it.

- When using a hammer or chisel for any purpose, wear safety glasses and require all individuals around you to wear safety glasses.

- Keep all tools clean and stored in an orderly fashion when not in use.

- Replace hook and heel jaws when they become visibly worn.

- When breaking tool joints on the ground or on a drilling platform, position hands so that fingers will not be smashed between the wrench handle and the ground or the platform, should the wrench slip or the joint suddenly let go.

Safe Use of Wire Line Hoists, Wire Rope and Hoisting Hardware

- The use of wire line hoists, wire rope and hoisting hardware should be as stipulated by the American Iron and Steel Institute's Wire Rope Users Manual.

- All wire ropes and fittings should be visually inspected during use and thoroughly inspected at least once a week for abrasion, broken wires, wear, reduction in rope diameter, reduction in wire diameter, fatigue, corrosion, damage from heat, improper weaving, jamming, crushing, bird caging, kinking, core protrusion and damage to lifting hardware and any other feature that would lead to failure. Wire ropes should be replaced when inspection indicates excessive damage according to the wire rope users manual.

- If a ball-bearing type hoisting swivel is used to hoist drill rods, swivel bearings should be inspected and lubricated daily to ensure that the swivel freely rotates under load.

- If a rod slipping device is used to hoist drill rods, do not drill through or rotate drill rods through the slipping device, do not hoist more than 1 foot (0.3 m) of the drill rod column above the top of the mast (derrick), do not hoist a rod column with loose tool joints and do not make up, tighten or loosen tool joints while the rod column is being supported by a slipping device. If drill rods should slip back into the borehole, do not attempt to break the fall of the rods with hands.

- Most sheaves on drill rigs are stationary with a single part line. The number of part lines should never be increased without first consulting with the manufacturer of the drill rig. Wire ropes must be properly matched with each sheave.

- The following procedures and precautions must be understood and implemented for safe use of wire ropes and rigging hardware.

- Use tool handling hoists only for vertical lifting of tools (except when angle hole drilling). Do not use tool handling hoists to pull on objects away from the drill rig; however, drills may be moved using the main hoist as the wire rope is pulled through the proper sheaves according to the manufacturer's recommendations.

- When stuck tools or similar loads cannot be raised with the hoist, disconnect the hoist line and connect the stuck tools directly to the feed mechanisms of the drill. Do not use hydraulic leveling jacks for added pull to the hoist line or the feed mechanisms of the drill.

- When attempting to pull out a mired down vehicle or drill rig carrier, only use a winch on the front or rear of the vehicle or drill rig carrier and keep personnel as far as possible away from the wire rope. Do not attempt to use tool hoists to pull out a mired down vehicle or drill rig carrier.

- Minimize shock loading a wire rope - apply loads smoothly and steadily.
- Protect wire rope from sharp corners or edges.
- Replace faulty guides and rollers.
- Replace worn sheaves or worn sheave bearings.
- Replace damaged safety latches on safety hooks before use.
- Know the safe working load of the equipment and tackle being used. Never exceed this limit.
- Clutches and brakes of hoists should be periodically inspected and tested.
- Know and do not exceed the rated capacity of hooks, rings, links, swivels, shackles or other lifting aids.
- Always wear gloves when handling wire ropes.
- Do not guide wire ropes or hoist drums with hands.
- Following the installation of a new wire rope, lift a light load to allow the wire rope to adjust.
- Never carry out any hoisting operations when the weather conditions are such that hazards to personnel, the public or property are created.
- Never leave a load suspended in the air when the hoist is unattended.
- Keep hands away from hoists, wire rope, hoisting hooks, sheaves and pinch points as slack is being taken up and when the load is being hoisted.
- Never hoist a load over the head of the clutch, or leave the hydraulic rotation control disengaged, or the transmission in low gear, or the engine running at low RPM.
- The operator and tool handler should establish a system of responsibility for the series of various activities required for auger drilling, such as connecting and disconnecting auger sections, and inserting and removing the auger fork. The operator must insure that the tool handler is well away from the auger column and that the auger fork is removed before starting rotation.
- Only use the manufacturer’s recommended method of securing the auger to the power coupling. Do not touch the coupling or the auger with hands, a wrench or any other tool during rotation.
- Whenever possible, use tool hoists to handle auger sections.

- Never place hands or fingers under the bottom of an auger section when hoisting the auger over the top of the auger section in the ground or other hard surfaces such as the drill rig platform.

- Never allow feet to get under the auger section being hoisted.

- When rotating augers, stay clear of the rotating auger and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason whatsoever.

- Never place hands between the drill rig and an auger, even when attempting to free a damaged or bound Shelby tube from the auger.

- Never use hands or feet to move cuttings away from the auger.

- Augers should be cleaned only when the drill rig is in neutral and the augers are not rotating.

Safety During Drilling

Drilling tools should be safety checked prior to drilling:

- Water swivels and hoisting plugs should be lubricated and checked for "frozen" bearings before use.

- Drill rod chuck jaws should be checked periodically and replaced when necessary.

- The capacities of hoists and sheaves should be checked against the anticipated weight of the drill rod string plus other expected hoisting loads. All cables should be inspected daily.

- Special precautions that should be taken for safe rotary or core drilling involve chucking, joint break, hoisting and lowering of drill rods.

- Drill rods should not be braked during lowering into the hole with drill rod chuck jaws.

- Drill rods should not be held or lowered into the hole with pipe wrenches.

- If a string of drill rods are accidentally or inadvertently released into the hole, do not attempt to grab the falling rods with hands or a wrench.

- In the event of a plugged bit or other circulation blockage, the high pressure in the piping and hose between the pump and the obstruction should be relieved or bled down before breaking the first tool joint.

- When drill rods are hoisted from the hole, they should be cleaned for safe handling with a rubber or other suitable rod wiper. Do not use hands to clean drilling fluids from drill rods.

- If work must progress over a portable drilling fluid (mud) pit, do not attempt to stand on narrow sides or cross members. The mud pit should be equipped with a rough surface, fitted with cover panels of adequate strength to hold drill rig personnel.

- Drill rods should not be lifted and leaned unsecured against the mast. Either provide some method of securing the upper ends of the drill rods sections for safe vertical storage or lay the rods down.

- All hydraulic lines should be periodically inspected for integrity and replaced as needed.

Start Up

- All drilling personnel and visitors should be instructed to "stand clear" of the drilling equipment immediately prior to and during starting of the engine.

- Make sure all gear boxes are in neutral, all hoist levers are disengaged, all hydraulic levers are in the correct non-actuating positions and the cathead rope is not on the cathead before starting a drill rig engine.

General Safety During Drilling Operations

- Safety requires the attention and cooperation of every worker and site visitor.

- Do not drive the drilling equipment from hole to hole with the mast (derrick) in the raised position.

- Before raising the mast (derrick), check for overhead obstructions. (Refer to previous section on overhead and buried utilities.)

- Before raising the mast (derrick), all drill rig personnel and visitors (with exception of the operator) should be cleared from the areas immediately to the rear and the sides of the mast. All drill rig personnel and visitors should be informed that the mast is being raised prior to raising it.

- Before the mast (derrick) of a drill rig is raised and drilling is commenced, the drill rig must first be leveled and stabilized with leveling jacks and/or solid cribbing. The drill rig should be re-leveled if it settles after initial set up. Lower the mast (derrick)

only when leveling jacks are down and do not raise the leveling jack pads until the mast (derrick) is lowered completely.

- Before initiating drilling operations, secure and/or lock the mast (derrick), if required, according to the drill manufacturer's recommendations.

- The operator of the drilling equipment should only operate the drilling equipment from the position of the controls. The operator should shut down the equipment engine before leaving the vicinity of the drilling equipment.

- Do not consume alcoholic beverages or other depressants or chemical stimulants prior to starting work on drilling equipment or while on the job.

- Watch for slippery ground when mounting and dismounting from the platform.

- All unattended boreholes must be adequately covered or otherwise protected to prevent drilling personnel, site visitors or animals from stepping or falling into the hole. All open boreholes should be covered, protected or adequately backfilled according to local or state regulations upon completion of the drilling project.

- "Horsing around" within the vicinity of the drilling equipment and tool and supply storage areas shall not be allowed, even when the drilling equipment is shut down.

- Be careful when lifting heavy objects. Before lifting a relatively heavy object, approach the object by bending at the knees, with back vertical and unarched while obtaining a firm footing. Grasp the object firmly with both hands and stand slowly and squarely with back vertical and unarched. In other words, perform the lifting with the muscles in the legs, not the muscles in the lower back.

- Drilling operations should be terminated during any electrical storm.

- The minimum number of personnel necessary to achieve the objectives shall be within 25 feet of the drilling or sampling activity. Back-up personnel should remain at least 25 feet from the drilling or sampling activity, wherever practical.

- Steel boots shall be worn by all personnel in the vicinity of the drilling activities. Hard hats shall be worn if a drill rig is utilized. Drilling personnel should not wear loose-fitting or baggy clothing which may be awkward or get caught on equipment. Jewelry, including rings and necklaces, should not be worn around electrical wires or rotating equipment.

6.10.7.6 - Daily Housekeeping

The site and all work areas shall be kept in an orderly fashion and the site is to be left safe and secure upon completion of each day's work.

6.10.7.7 - Site Personnel Conduct

- All site personnel shall conduct themselves properly and in accordance with generally accepted good work practice.
- At all times, the HSO will monitor all safe operations at the site. Any operation not within the scope of this HASP will be discussed fully before that operation begins.

6.11 Personal Hygiene

6.11.1 General

All personnel performing or supervising investigation activities within a hazardous work area, or exposed or subjected to exposure to hazardous chemical vapors, liquids or contaminated solids, will observe and adhere to the personal hygiene-related provisions of this section. Any personnel found to be repeatedly disregarding the personal hygiene-related provisions of this HASP shall be barred from the site by the HSO. All on-site personnel shall wear personal protective equipment as required at all times whenever entering the Exclusion Zone (if established) or the Decontamination Area. Personal hygiene and decontamination facilities, in accordance with OSHA 29 CFR 1910.120 (N), will be provided on-site and include the following:

- Storage and disposal containers for used disposable outerwear (if necessary).
- Hand washing facilities.
- An uncontaminated lunch area.
- An uncontaminated rest/break area.
- Toilet.

Since the personnel hygiene areas presented above are already existing at the Town of Oyster Bay Bethpage Community Park (with the exception of storage/disposal containers), these

areas do not have to be provided for this project as long as site personnel remove PPE and mud from their person prior to utilizing these areas. However, in the event that work zones are established, specific areas and facilities shall be established solely for use by the personnel involved with this project.

In the event that work zones are established, all personnel must enter and leave the work site through these established areas and facilities.

- The personal hygiene and decontamination facilities will be provided so that any personnel leaving the Exclusion Zone (if established) may perform decontamination, safely remove all protective outer clothing and wash face and hands.
- Decontamination shall be performed prior to taking breaks, eating lunch or leaving the work site.
- All site personnel will be given orientation training for the use and operation of the personal hygiene and decontamination facilities.

6.11.2 Contamination Prevention

In order to minimize the potential for contamination, the following will be adhered to:

- Personnel will make every effort not to walk through any areas suspected to be contaminated (i.e., liquids, discolored surfaces, smoke/vapor clouds, etc.).
- Personnel will not kneel or sit on the ground in the Exclusion Zone and/or the Decontamination Area (if established).

6.11.3 Personal Hygiene Policy

Smoking and chewing tobacco shall be prohibited except in a designated break area. Eating and drinking shall be prohibited except in the designated lunch or break area. All outer protective clothing (e.g., chemical protective suits, gloves and boots) shall be removed and personnel shall thoroughly cleanse their hands and other exposed areas before entering the break or lunch area.

Drinking of replacement fluids shall be permitted in a designated area outside the Exclusion Zone (if established). Personnel shall, at a minimum, remove outer and inner gloves, respirator and coverall top, and wash hands prior to drinking replacement fluids.

All personnel should change into fresh clothing after each working period or shift. Showering is mandatory upon return to each individual's rest place.

6.12 Decontamination

Since work zones are not anticipated to be established during this program, no special conditions or procedures are necessary as far as decontamination is concerned outside of those decontamination procedures and activities routinely performed during investigation activities undertaken at nonhazardous waste sites. However, the sections which follow are provided in the event that work zones are established for this program.

6.12.1 Personnel Decontamination Procedures

Decontamination procedures are followed by all personnel leaving the Exclusion Zone. Generalized procedures for decontamination follow. All procedures apply for Level C protection. However for Level D protection, only Steps 3, 4 and 8 apply. The HSO may modify these procedures based on site conditions.

Step 1: Drop tools, monitors, samples and trash at designated drop stations (i.e., plastic containers or drop sheets). Refer to following sections for equipment decontamination specifics.

Step 2: Scrub outer boots and outer gloves with decontamination solution or detergent and water. Rinse outer boots and outer gloves with water.

Step 3: Remove tape from outer boots (if applicable) and remove boots; discard tape in disposal container. Discard outer boots in disposal container or place boots on boot rack (if to be reused).

Step 4: Remove tape from outer gloves (if applicable) and remove outer gloves only; discard in disposal container.

Step 5: This is the last step in the decontamination procedure if the worker has left the Exclusion Zone to exchange the cartridges on his/her air purifying respirator. The cartridges should be exchanged, new outer gloves and boot covers donned, joints taped, if necessary, and the worker returns to duty.

Step 6: Remove outer garments and discard in disposal container. New outer garments shall be issued at the beginning of each work day or as deemed necessary by the HSO.

Step 7: Remove respirator and place or hang in the designated area.

Step 8: Remove inner gloves and discard in disposal container.

Note: Disposable items (i.e., coveralls, gloves and boots) will be changed on a daily basis unless there is reason to change sooner. Dual respirator cartridges will be changed daily, unless more frequent changes are deemed appropriate by site surveillance data, cartridge breakthrough or by assessments made by the HSO.

Pressurized sprayers or other designated equipment will be available in the decontamination area for wash down and cleaning of personnel, samples and equipment.

A waterless hand cleaner and paper towels may be used for hands, arms and any other skin surfaces which potentially came in contact with suspected contaminated materials.

Respirators (if used) will be taken from the drop area and decontaminated daily. The masks will be disassembled, cartridges set aside and all other parts placed in a cleansing solution. After an appropriate time in the solution, the parts will be removed and rinsed with tap water.

Old cartridges will be discarded in a designated contaminated trash container for disposal. In the morning, the masks will be reassembled and new cartridges installed, if appropriate. Personnel will inspect their own masks and readjust the straps for proper fit.

6.12.2 Emergency Decontamination

Decontamination will be delayed if immediate medical treatment is required to save a life. Decontamination will then be performed after the victim is stabilized. Decontamination will be performed immediately when decontamination can be performed without interfering with medical treatment, or a worker has been contaminated with an extremely toxic or corrosive material that could cause additional injury or loss of life.

When decontamination cannot be performed, the victim will be wrapped in a chemical protective barrier (clothing or sheeting) to reduce contamination of other personnel. Emergency and off-site medical personnel will be informed of potential contamination and will be instructed about specific decontamination procedures. When the victim is transported from the site, personnel knowledgeable of the incident, the site and decontamination procedures will accompany the victim.

6.12.3 Equipment Decontamination - General

- All vehicles and equipment used in the Exclusion Zone shall be decontaminated at the decontamination area prior to leaving the site.
- No vehicle shall leave the Decontamination Area until it is properly inspected and approved by the HSO or FOM for general cleanliness of frame and tires.
- No vehicle shall leave the site unless it is in a broom-clean condition; free of loose dirt or material on tailgates, axles, wheels, etc.
- The HSO will monitor all vehicles to confirm proper decontamination prior to exiting. Approval shall be based on visual inspection of all exposed surfaces.
- Equipment decontamination wash water residues shall be collected for disposal.
- Personnel engaged in vehicle decontamination shall wear Level C or Level D equipment with respiratory protection consistent with the air monitoring results collected by the HSO, and perform personal decontamination at the completion of equipment decontamination.

- An equipment decontamination area will be located at the site for removing soil from all equipment leaving the work area and will include a wash area for equipment and vehicles.
- Only clean water will be used for personnel, equipment and vehicle decontamination.

6.12.4 Small Equipment Decontamination Procedures

Small equipment should be protected from contamination as much as possible by draping, masking or otherwise covering the instruments with plastic (to the maximum extent feasible) without hindering the operation of the unit. For example, the photoionization detector can be placed in a clear plastic bag to allow reading the scale and operation of the controls. The following procedure shall be utilized to decontaminate small equipment:

Step 1: Remove coverings from equipment left in the drop area and place the coverings in appropriate waste containers.

Step 2: Any soil or moisture will be brushed or wiped with a disposable paper wipe. Place all soiled wipes in appropriate containers.

Step 3: Bare units will then be placed in a clean plastic tub and wiped with a damp, clean, disposable wipe. Equipment will then be allowed to air dry.

Step 4: Following decontamination, equipment will be checked and recharged, as necessary, for the next day's operations.

Step 5: Prior to entering the Exclusion Zone, all small equipment will be covered with new, protective coverings, if necessary.

6.12.5 Heavy Equipment Decontamination Procedures

The decontamination area for the drilling equipment will be set up as described in 6.12.3. A wash/rinse will be performed on all surfaces that came in contact with contaminants (e.g., augers, etc.).

Prior to removing any heavy equipment or vehicles from the Exclusion Zone, they must be thoroughly decontaminated. Specific procedures are as follows:

Step 1: Initially, inspect equipment/vehicles to determine if gross decontamination is required. Particular attention must be paid to tires, under surfaces, points of contact with the ground and horizontal surfaces where dust or aerosols might settle.

Step 2: If visible contamination is present, the equipment/vehicle must be moved to the decontamination pad where gross contamination will be scraped, brushed or swept off.

Step 3: Following gross decontamination, or if visible contamination is no longer present, wash the equipment/vehicle with a high pressure washer as deemed necessary by the HSO. Efforts should be made to minimize water usage to reduce wastewater quantities.

Step 4: Prior to releasing any heavy equipment or vehicles from the Contaminant Reduction Zone, decontamination personnel will contact the HSO for final approval.

6.13 Emergency Response and Contingency Plan

6.13.1 General

This HASP has been prepared in accordance with 29 CFR 1910.120 (l) and will address the following potential emergencies:

- Emergencies outside the work area.
- Emergencies within the work area.
- Chemical exposures.
- Work area evacuation.

6.13.2 Emergency Equipment

Since work zones are not anticipated to be established during this program, no special emergency equipment is necessary at the site. Emergency equipment will be limited to a first aid kit and communication capabilities (e.g., telephone, cell phone, etc.). However, in the event that

work zones are established, the type and quantity of emergency equipment located on-site will be reassessed and upgraded if determined to be necessary.

6.13.3 Special Requirements

The Project Manager or FOM will be on call for any after hour emergencies resulting from adverse weather conditions. Incidents resulting from adverse weather will be reported to the FOM who will in turn contact the Project Manager.

First aid kit locations will have adequate water and other supplies necessary to cleanse and decontaminate burns, wounds or lesions. First aid stations, if established, will also stock buffer solutions for treating acid and caustic burns.

6.13.4 Emergency/Accident Reporting and Investigation

In the event of an emergency associated with the site work, the HSO or FOM will, without delay: 1) take diligent action to remove or otherwise minimize the cause of the emergency, 2) alert the Project Manager, and 3) institute whatever measures are necessary to prevent any repetition of any conditions or actions leading to, or resulting in, the emergency. Notification to the Project Manager will occur immediately and initially be verbal with written notification occurring within 24 hours of the incident (i.e., accident, explosion, serious exposure, etc.). The Incident Notification Form and the OSHA 200 Form, provided in Exhibits 6I and 6J, respectively, will be used for written notifications and documentation.

6.13.5 Emergency Medical Care

Emergency medical care will be provided to site workers and visitors by calling 911.

The hospital will be informed by the HSO or FOM of potential medical emergencies that could result from site operations and the types of materials that are located on-site. In the event

of an incident requiring their assistance, specific details of materials encountered should be provided to the hospital medical staff, if available.

6.13.6 Emergencies Outside the Bethpage Community Park

All work at the Town of Oyster Bay Bethpage Community Park will stop when advised by any authorized personnel and will remain so until otherwise instructed.

The contractor will keep the HSO and FOM fully advised of any work that may affect the safety of on-site persons or property.

Actions to be taken by field personnel in the event of an outside emergency will include:

- Cease all operations immediately; shut down and secure all equipment.
- All personnel will leave vehicles in work areas in a safe manner making sure any remaining vehicles will not hamper any emergency traffic in the area or block any fire hydrants.
- All personnel will evacuate to a prearranged muster area.
- All personnel will remain in the muster area to await further instructions.

6.13.7 Emergencies Within the Bethpage Community Park

The HSO will monitor all operations and assist any emergency personnel responding to an emergency within the work area.

It will be the HSO's responsibility to maintain communications with the Project Manager and Northrop Grumman Corporation personnel.

In the event of an emergency within the work area at the site, the emergency notification procedures shall be followed as described in Section 6.13 of this HASP.

In all emergency situations, it will be the responsibility of the HSO to ensure that all site personnel are accounted for.

6.13.8 Personnel Exposures

The emergency procedures to be used in the event of acute exposure (e.g., eyes, skin contact, inhalation) are described in Exhibit 6H.

6.13.9 Site Evacuation

The work area will be evacuated and fire and police departments will be notified in the event of fire, explosion or their potential. Exhibit 6H provides detail for such occurrences.

6.14 Posted Regulations

If work zones are established, regulations covering the three items listed below will be available on-site:

- Use of personal protective equipment.
- Personal hygiene.
- Provisions for smoking, eating, chewing and drinking.

These regulations may be supplemented based on the need to disseminate information or policy. All regulations will be coordinated through Northrop Grumman Corporation for approval prior to posting. The three specified regulations are presented in Exhibits 6K, 6L and 6M.

EXHIBIT 6A

FIELD TEAM REVIEW FORM
PROJECT HEALTH AND SAFETY PLAN

EXHIBIT 6A

FIELD TEAM REVIEW FORM
PROJECT HEALTH AND SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each person working on the subject work site. Upon completion, this form is to be given to the HSO.

JOB NUMBER: _____

CLIENT/PROJECT: Town of Oyster Bay Bethpage Community Park,
Delineation Sampling Program

DATE: _____

I represent that I have read and understand the contents of the above mentioned health and safety plan (HASP) and agree to perform my work in accordance with it:

_____
Signature

_____
Name Printed

_____
Company/Office

_____
Date Signed

EXHIBIT 6B

SITE WORKER TRAINING AND MEDICAL EXAMINATION RECORD

EXHIBIT 6B

SITE WORKER TRAINING AND MEDICAL EXAMINATION RECORD

Town of Oyster Bay Bethpage Community Park, Bethpage, New York

Name	Date Training Completed		Date of Last Physical Examination
	Initial	Refresher	

EXHIBIT 6C

CARE AND CLEANING OF RESPIRATORS

EXHIBIT 6C

CARE AND CLEANING OF RESPIRATORS

General Requirements

Any organization using respirators on a routine basis should have a program for their care and cleaning. The purpose of this program is to assure that all respirators are maintained at their original effectiveness. If they are modified in any way, their Protection Factors may be voided. Usually one person in an organization is trained to inspect, clean, repair and store respirators.

The program should be based on the number and types of respirators, working conditions and hazards involved. In general, the program should include:

- Inspection (including a leak check)
- Cleaning and Disinfection
- Repair
- Storage

Inspection

Inspect respirators after each use. Inspect a respirator that is kept ready for emergency use monthly to assure it will perform satisfactorily.

For air-purifying respirators, thoroughly check all connections for gaskets and "O" rings and for proper tightness. Check the condition of the facepiece and all its parts, connecting air tubes and headbands. Inspect rubber or elastomer parts for pliability and signs of deterioration.

Maintain a record of each respirator inspection including date, inspector and any unusual conditions or findings.

Cleaning and Disinfection

Collect respirators at a central location. Brief employees required to wear respirators on the respirator program and assure them that they will always receive a clean and sanitized respirator. Such assurances will boost morale. Clean and disinfect respirators as follows:

- Remove all cartridges, canisters and filters, including gaskets or seals not affixed to their seats.
- Remove elastic headbands.
- Remove exhalation cover.
- Remove speaking diaphragm.
- Remove inhalation valves.
- Wash facepiece and breathing tube in cleaner/sanitizer powder mixed with warm water, preferably at 120 to 140°F.
- Wash components separately from the facemask, as necessary. Remove heavy soil from surfaces with a hand brush.
- Remove all parts from the wash water and rinse twice in clean, warm water.
- Air dry parts in a designated clean area.

- Wipe facepieces, valves and seats with a damp lint-free cloth to remove any remaining soap or other foreign material.

Note: Most respirator manufacturers market their own cleaners/sanitizers as dry mixtures of a bactericidal agent and a mild detergent. One-ounce packets for individual use and bulk packages for quantity use are usually available.

Repairs

Only a trained person with proper tools and replacement parts should work on respirators. No one should ever attempt to replace components or to make adjustments or repairs beyond the manufacturer's recommendations. It may be necessary to send high pressure side components of a self-contained breathing apparatus (SCBA) to an authorized facility for repairs.

Make repairs as follows:

- Disassemble and hand clean the pressure-demand and exhalation valve assembly (SCBAs only). Exercise care to avoid damage to the rubber diaphragm.
- Replace all faulty or questionable parts or assemblies. Use parts only specifically designed for the particular respirator.
- Reassemble the entire respirator and visually inspect the completed assembly.
- Insert new filters, cartridges or canisters, as required. Make sure that gaskets or seals are in place and tightly sealed.

Storage

Follow the manufacturer's storage instructions, which are always furnished with new respirators or affixed to the lid of the carrying case. In addition, these general instructions may be helpful:

- After respirators have been inspected, cleaned and repaired, store them so to protect against dust, excessive moisture, damaging chemicals, extreme temperatures and direct sunlight.
- Do not store respirators in clothes lockers, bench drawers or tool boxes. Place respirators in wall compartments at work stations or in a work area designated for emergency equipment. Store respirators in the original carton or carrying case.
- Draw clean respirators from storage for each use. Each unit can be sealed in a plastic bag, placed in a separate box and tagged for immediate use.

EXHIBIT 6D

MEDICAL DATA SHEET

EXHIBIT 6D

MEDICAL DATA SHEET

This Medical Data Sheet will be completed by all on-site personnel and will be kept in the Support Zone during site operations.

Project: _____

Name: _____

Address: _____

Home Telephone: Area Code ( ) _____

Date of Birth: _____ Height: _____ Weight: _____

In case of Emergency, contact: _____
(name and relationship)

Address: _____

Telephone: Area Code ( ) _____

Do you wear contact lenses? ( ) Yes ( ) No

Allergies: _____

List medication taken regularly: _____

Particular sensitivities: _____

Previous/recent illnesses or exposures to hazardous chemicals: _____

_____

Name of Personal Physician: _____

Telephone: Area Code ( ) _____

EXHIBIT 6E

AIR MONITORING RESULTS REPORT

EXHIBIT 6E

AIR MONITORING RESULTS REPORT

Date: _____

Duration of Monitoring: _____

Work Location and Task: _____

_____

Instrument Reading _____ (Time)	Instrument Reading _____ (Time)	Instrument Reading _____ (Time)
_____	_____	_____
_____	_____	_____
_____	_____	_____

(Note: If instruments have recorders, just attach tape to report. Also, note any action levels when exceeded.)

Instrument Calibration: _____

Perimeter Samples Collected: _____

_____

Personnel Samples Collected: _____

_____

Perimeter and Personnel Sample Results From Previous Day (attach data once received):

_____

Comments: _____

_____

_____ _____

Name Title (Site Safety Officer)

Signature _____

EXHIBIT 6F

HEAT STRESS/COLD STRESS

EXHIBIT 6F

HEAT/COLD STRESS

1.0 HEAT STRESS

1.1 Personal Protective Clothing

All of the protective ensemble does not lend itself to the release of body heat generated during work. With this in mind, the following will be taken into consideration during the work schedule so as to minimize the heat stress to all personnel:

A. All personnel will be advised to wear lightweight undergarments with short sleeves, under the chemical protective coverall.

B. Personnel will be advised that extra clothing be on-site for use as the workday progresses due to the clothing becoming wet from perspiration.

C. Dressing-out will be performed in a designated area and be scheduled so as not to extend time in the protective ensembles.

D. The dress-out area will have a table with fresh water and/or other water replenishing liquids along with disposable cups. All personnel will be expected to drink liquids before each work cycle. The HSO will supervise dressing and water intake.

E. As the job progresses and more information becomes available as to the materials that the workers are coming in contact with, consideration of modifications to the protective ensemble will be examined, such as allowing personnel to keep the protective garment's hood down allowing for the release of heat. All decisions regarding the protective ensemble will be the HSO's decision based on available information.

F. After completion of each work cycle, personnel will pass through personnel decontamination and remove their protective ensembles in the designated area. All personnel will then be medically monitored, if deemed necessary by the HSO. Liquid replenishment will be mandatory after each work cycle.

G. Designated eating facilities will be established for meal periods. On days of extreme temperatures, the use of air conditioning will be limited so as not to have personnel exposed to temperature extremes.

1.2 Causes of Heat Stress

Wearing the expected levels of protection on-site can put personnel at risk of developing heat stress. This section will discuss heat stress and what steps will be taken to monitor personnel for the signs of it.

The body's chemical activities take place in a limited temperature range. Heat is generated by these processes. Any heat not needed to sustain the activities must be lost from the body to maintain a balance. HYPOTHERMIA is an abnormally high body temperature. The three main avenues for the release of body heat are:

A. Respiration is our breathing pattern. Care should be exercised to prevent the body from being fooled into believing it is cool based on skin temperature.

B. Radiation is how heat is released from the skin. Blood will pool on the surface of the skin when body temperature increases. The protective ensemble specified for this site does not allow for this type of heat release.

C. Evaporative Heat Loss normally allows for a body to cool itself through the evaporation of perspiration. Because the protective ensemble stops any contact with moving air, sweat cannot evaporate from the surface of the skin.

If any of these release mechanisms is out of balance, the following conditions can occur and may be considered emergencies needing care:

A. **HEAT RASH** is a common occurrence in areas where body parts rub causing friction. The level of protection will heighten its effects. Proper treatment includes washing the affected areas and administering powder to help healing.

B. **HEAT CRAMPS** occur when people are exposed to heat for extended periods of time. Due to wearing the required protective ensemble, heat cramps are expected. Victims will sweat heavily and require large quantities of water. The more the individual sweats, the more electrolytes are lost.

   If enough body salts are lost, the individual will begin to experience body cramps and pain in the extremities.

   Proper treatment includes slow replenishment of body fluids augmented by a proper salt solution along with cooling the individual, taking care not to expose the person to extreme cooling measures. The worker will not be allowed to return to work until the HSO has monitored and approved re-entry.

C. **HEAT EXHAUSTION** occurs when blood pools at the skin surface in an attempt to cool the body. Sweating is profuse, skin is moist and cool, and the individual will experience dizziness, nausea or fainting. This condition is an indicator of overwork given the conditions. Treatment includes those recommended for heat cramps with an extended rest period before re-entry. Depending on the worker's physical condition, the rest period may be from 30 to 60 minutes. After experiencing heat exhaustion, the worker should be closely monitored for symptoms reoccurring.

D. **HEAT STROKE** can occur if heat exhaustion is not cared for. This occurs when the body loses its ability to regulate its temperature. Sweating stops and, if not treated, can lead to death. Signs and symptoms include dry red skin with no perspiration along with nausea, dizziness and confusion. A strong, rapid pulse should be carefully monitored as this condition can lead to coma. Proper treatment begins by understanding that this is a true medical emergency and requires activating the emergency medical system as covered in other sections. When notifying the Emergency Medical Response organization, emphasis should be placed on the words HEAT STROKE and the need for rapid transportation to the medical facility. Emergency medical treatment in the field includes immediate cooling of the body with total body immersion preferable. Water temperature should be cool enough to absorb the high body heat but not cold. Ice packs can be applied to the person's head area and under the arms. Due to the personnel needed to treat the patient while awaiting emergency medical care, all work will stop and all attention will be devoted to the person in stress.

The First Aid Technician will evaluate all personnel after the patient is transported to determine if they also are showing signs of heat stroke.

To facilitate treatment of all of the above, air conditioning, fresh water supply and shower will be used if necessary. In all cases requiring treatment, emergency decontamination procedures based on the individual's degree of contamination will be performed prior to entry into the treatment area. Remember: *You* are your own best indicator of signs of heat stress.

2.0 COLD STRESS

The purpose of this section is to make all workers on-site aware of the problems associated with cold weather operations. As with heat related emergencies, cold weather injuries are progressive. That means that if the worker is aware of the problems beforehand, he may prevent further damage and remain working.

Cold related injuries may be divided into two types:

LOCAL COOLING affects the particular part of the body coming in direct contact with the cold air. This is commonly known as FROSTBITE.

GENERAL COOLING affects the entire body and is known as HYPOTHERMIA. Hypothermia is a true medical emergency and should be recognized as such and treated immediately by trained medical personnel.

As stated, cold related injuries are progressive. The body loses heat either by CONDUCTION or direct transfer of body heat into the cold environment. An example would be an unprotected head allowing the surface of the head to come into direct contact with the colder air. The other means by which the body loses heat is by CONVECTION. This occurs when colder air is allowed to pass over the surface of the body. When that air is also moist or the work garments become wet, a WATER CHILL or more commonly recognized WIND CHILL occurs. An example of wind chill would be a 20 mph wind occurring on a 10 degree day would produce the same effect as a -25 degree temperature. Both of these conditions may be easily prevented by proper work attire and safe work practices. Hardhat liners prevent the wind from blowing under the brim but will also affect your hearing ability. Lose layers of work clothes rather than bulky garments will allow the wearer to adapt to changing conditions. Use of rubber overboots will prevent leather workboots from getting wet and are excellent for stationary work to stop cold penetration.

SIGNS TO LOOK FOR:

FROSTNIP, the first stage of frostbite occurs when a body part comes in direct contact to a cold object or cold air. This condition is not serious and can be remedied by warming of the region. The real problem is that a numbing effect can occur and keep the worker from realizing that he is going into the next stage, SUPERFICIAL FROSTBITE.

During this condition, the skin and under layers become affected. If not treated, this condition can result in a FREEZING in which the deeper structures of the body become affected.

CONDITION	SKIN SURFACE	TISSUE UNDER SKIN	SKIN COLOR
frostnip	soft	soft	red-white
frostbite	hard	soft	white/waxy
freezing	hard	hard	white/gray

HYPOTHERMIA occurs when the body is unable to maintain its proper temperature of 98.6 degrees. It is important for the worker to realize that this can

occur in temperatures of 50 degrees and below. Submersion of a body part in cold water will also cause hypothermia very quickly. Some early signs are:

1. Shivering
2. Numbness in extremities
3. Drowsiness
4. Slow breathing and pulse rates
5. Failing eyesight
6. Loss of coordination, inability to perform easy tasks
7. Freezing of body parts

Proper treatment begins by activating the emergency medical service procedure. Hypothermia required prompt qualified medical treatment. Initial site action would involve removing the affected worker from the weather and beginning the warming process. The most important thing to realize is that hypothermia is a MEDICAL EMERGENCY.

Workers exposed to cool temperatures for extended periods of time can experience lesions in the form of red swollen areas that seem hot and itchy. These chronic lingering lesions are known as CHILBLAINS. Although not an emergency, chilblains indicate that the worker in not adequately protecting the affected area.

A common problem in wet work areas is TRENCH FOOT. A worker whose feet remain unprotected by leather footwear in water close to freezing will have swollen limbs that appear waxy and mottled in color. The affected limb will appear cold to the touch. Basic treatment involves relocating the worker to a warm place and slowly removing the wet footwear. The obvious way to prevent TRENCH FOOT is to wear rubber protective footwear.

The following suggestions are recommended to prevent cold weather operation problems:

1. Plan ahead as to the proper work clothes to be worn.
2. Avoid early overheating which dampens clothes and hastens the release of body heat by evaporation.
3. Use windbreaks in the work zone.
4. Eliminate standing water or avoid prolonged immersion in water.
5. Provide a heated rest area (i.e., trailer or vehicle).
6. Avoid overheating the rest area. Extreme temperature differentials between the work area and the rest area will lead to chilling upon return to work.
7. Maintain proper diet and eating habits.
8. Avoid or reduce smoking which constricts blood vessels.

REMEMBER, YOU ARE THE BEST PROVIDER OF INFORMATION ABOUT HOW YOU FEEL. THE BEST WAY TO PREVENT INJURIES FROM COLD WEATHER OPERATIONS IS TO RECOGNIZE THE EARLY SIGNS AND PREVENT SERIOUS INJURY.

EXHIBIT 6G

EMERGENCY SIGNALS

EXHIBIT 6G

EMERGENCY SIGNALS

In most cases, field personnel will carry portable radios for communication. If this is the case, any emergency transmission will take priority over all other transmissions. All other site radios will yield the frequency to emergency transmission.

Where radio communication is not available, the following air-horn and/or hand signals will be used:

EMERGENCY AIR-HORN SIGNALS

HELP!	Three short blasts	…
EVACUATION!	Three long blasts	__ __ __
ALL CLEAR!	Alternating long and short blasts	__. __.

EMERGENCY HAND SIGNALS

OUT OF AIR, CAN'T BREATH	Hand gripping throat
LEAVE AREA IMMEDIATELY, NO DEBATE!	Grip partner's wrist or place both hands around waist
NEED ASSISTANCE	Hands on top of head
OKAY! - I'M ALRIGHT! - I UNDERSTAND!	Thumbs up
NO! - NEGATIVE!	Thumbs down

EXHIBIT 6H

EMERGENCY INFORMATION

EXHIBIT 6H

EMERGENCY INFORMATION

H-1 EMERGENCY TELEPHONE NUMBERS

Agent/Facility	Telephone	Emergency Number
EMS – Ambulance	911	911
Police Department	(516) 573-6800	911
Fire Department	(516) 931-0666	911
Hospital (North Shore University Hospital at Plainview)	(516) 719-3000	911
Poison Control Center	(516) 542-2323	911
Gas Emergencies	(800) 490-0045	911
Electric Emergencies	(800) 490-0075	911

H-2 EMERGENCIES WITHIN THE SITE

- Contact the HSO
- Contact the FOM
- Contact Northrop Grumman Corporation
- Report the following:
  - ♦ Location of emergency in relation to a specific recognizable landmark.
  - ♦ Nature of emergency:
    - » **FIRE**, if so what kind and what equipment is involved.
    - » **EMERGENCY MEDICAL INCIDENT, ALL INJURIES, ACCIDENT(S) OR FIRES.**

      Communication will include:
      - Number of injured people.
      - Nature of injuries.
      - If project team cannot handle injuries with its resources, what emergency medical services are required.

    - » If any outside personnel must enter the site, all hazards will be communicated and those people will be supervised by the HSO.
    - » In the event that any site personnel wearing protective equipment in the Exclusion Zone becomes injured, the HSO or designated individual will do whatever decontamination is necessary to remove that equipment.

» Any personnel with emergency treatment information regarding with the injury will accompany the injured party so that those treating that person will have any and all information.
» **REQUEST FOR POLICE**. If any person entering the site who does not belong there becomes a problem, the police will be notified. If that person endangers the safe operation of project team members or himself, the HSO will suspend all work until that person can be removed.
» If site personnel will be evacuating the site due to emergency.

H-3 PERSONNEL EXPOSURES WITHIN THE SITE

- Contact the HSO
- Contact the FOM
- Provide treatment as follows:

♦ Eye Exposure - treat by immediately flushing with distilled water (portable eyewash). Transport for examination and treatment.
♦ Skin Exposure - remove contaminated clothing and treat by washing with soap and water.
♦ Inhalation - if a person inhales a large amount of organic vapor, the person will be removed from the work area to fresh air and artificial respiration will be administered if breathing has ceased. The affected person will be transported to the local hospital by ambulance or emergency vehicle if overexposure to lungs has occurred.
♦ Personal Injuries - in case of severe injury, the victim will receive emergency first aid at the site, as appropriate, and will be transported by ambulance or emergency vehicle to the local hospital. An accident form must be completed for any accident or occupational exposure and forwarded to the Project Manager.

H-4 EVACUATING THE SITE

- Contact the HSO
- Contact the FOM
- Follow the directions below:

♦ Upwind withdrawal - withdraw to a safe upwind location if:

» Ambient air contains high concentrations of volatile organic compounds, combustible gases, particulates or oxygen percentage above or below safe levels for the level of protection being worn. The field team will withdraw to a safe upwind location determined by the HSO.
» A minor accident occurs. The victim will undergo decontamination procedures and be transported to a safe upwind location. Field operations will resume after first aid and/or decontamination procedures have been administered to the affected individual.

- » Protective clothing and/or respirator malfunctions.

- Withdrawal from site - evacuate the site if:

  - » Explosive levels of combustible gases, toxic gases or volatile organics are recorded.
  - » A major accident or injury occurs.
  - » Fire and/or explosion occurs.
  - » Shock-sensitive, unstable or explosive materials are discovered.
  - » High levels of radioactive materials are discovered.

- Evacuation of nearby facilities - a continuous release of toxic, flammable or explosive vapors from the site could affect people off-site. The FOM, or his on-site designee, is responsible for determining if circumstances exist for any concentration of off-site contamination warranting concern for off-site people. He/she should always assume worst case conditions until proven otherwise. If conditions are marginal, evacuation should be conducted until acceptable conditions resume. Key personnel identified in the HASP should be contacted when evacuation of nearby facilities becomes necessary.

EXHIBIT 6I

INCIDENT NOTIFICATION FORM

EXHIBIT 6I

INCIDENT NOTIFICATION FORM

TO: Project Manager

DATE: _____

FROM: HSO and/or _____
(someone who has direct knowledge of the incident)

1. Contractor's Name: _____

2. Organization: _____

3. Telephone Number: _____

4. Location: _____

5. Reporter Name: _____

6. Name of Injured: _____ Date of Birth: _____

7. Company Employing Injured: _____

8. Date of Incident: _____

9. Time of Incident: _____

10. Location of Incident: _____

11. Brief Summary of Incident (provide pertinent details including type of operation at time of incident):

_____

_____

_____

12. Cause, if known: _____

13. Casualties, if any: _____

14. Details of Any Existing Chemical Hazards or Contamination:

_____

15. Estimated Property Damage: _____

16. Affect on Project Schedule: _____

17. Actions Taken by Contractor: _____

18. Description of Medical Help Administered: _____

19. Doctor and/or Hospital (if known): _____

20. When did Employee Return to Work: _____

21. Other Damages/Injuries Sustained (public or private):

22. Additional Information:

EXHIBIT 6J

OSHA FORM 200

Log and Summary of Occupational Injuries and illnesses

NOTE: This form is required by Public Law 91-596 and must be kept in the establishment for 5 years. Failure to maintain and post can result in issuance of citations and assessment of penalties. (*See posting requirements on the other side of form*)

RECORDABLE CASES: You are required to record information about every occupational death; every nonfatal occupational illness; and those nonfatal occupational injuries which involve one or more of the following: loss of conciousness, restriction of work or motion, transfer to another job, or medical treatment (other than first aid) (*See definitions on the other side of form*)

Case or File Number	Date of Injury or Onset of Illness	Employee's Name	Occupation	Department	Description of Injury or Illness
Enter a nonduplicating number which will facilitate comparisons with supplementary records.	Enter Mo/Day	Enter first name or initial, middle initial, last name	Enter regular job title, not activity employee was performing when injury occurred or at onset of illness. In the absence of a formal title, enter a brief description of the employee's duties.	Enter department in which the employee is regularly employed or a description of normal workplace to which employee is assigned, even though temporarily working in another department at the time of injury or illness.	Enter a brief description of the injury or illness and indicate the part or parts of the body affected. Typical entries for this column might be: Amputation of 1st joint right forefinger; Strain of lower back; Contact dermatitis on both hands; Electrocution - body.
(A)	(B)	(C)	(D)	(E)	(F)
					PREVIOUS PAGE TOTALS =>
					TOTALS (Instructions on other side of form) =>

OSHA No. 200

U.S. Department of Labor

For Calendar Year _____ Page: _____ of _____

Company Name

Establishment Name

Establishment Address

Form Approved
O.M.B. No. 1218-0176
See OMB Disclosure Statement on reverse.

Extent of and Outcome of Injury						Type, Extent of, and Outcome of Illness												
Fatalities	Nonfatal Injuries					Type of Illness							Fatalities	Nonfatal Illnesses				
Injury Related	Injuries with Lost Workdays				Injuries Without Lost Workdays	CHECK Only One Column for Each Illness (See other side of form for terminations or permanent transfers)							Illness Related	Illnesses with Lost Workdays				Illnesses without Lost Workdays
Enter Date of death. mm/dd/yy	Enter a Check if injury involves DAYS away from work or restricted work activity or both.	Enter a Check if injury involves DAYS away from work.	Enter number of DAYS away from work	Enter number of DAYS of restricted work activity	Enter a Check if no entry was made in column 1 or 2 but the injury is recordable as defined above.	Occupational Skin Disorder or Disease	Dust Disease of the lungs	Respiratory Conditions due to toxic agents	Poisoning (systemic effects of toxic materials)	Disorders due to physical agents	Disorders associated with repeated trauma	All other occupational illnesses	Enter DATE of death, mm/dd/yy	Enter a CHECK if Illness involves DAYS away from work, or DAYS of restricted work activity or both.	Enter a CHECK if Illness involves DAYS away from work.	Enter number of DAYS away from work.	Enter number of DAYS of restricted work activity	Enter a CHECK if no entry was made in columns 8 or 9
						(7)												
(1)	(2)	(3)	(4)	(5)	(6)	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(8)	(9)	(10)	(11)	(12)	(13)

Certification of Annual Summary Totals by: _____ Title: _____ Date: _____

POST ONLY THIS PORTION OF THE LAST PAGE NO LATER THAN FEBRUARY 1

OMB DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to vary from 4 to 30 (time in minutes) per response with an average of 15 (time in minutes) per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments regarding this estimate or any other aspect of this information collection, including suggestions for reducing this burden, please send them to the OSHA Office of Statistics, Room N-3644, 200 Constitution Avenue, N.W. Washington, D.C. 20210

Instructions for OSHA No. 200

I. Log and Summary of Occupational Injuries and Illnesses

Each employer who is subject to the recordkeeping requirements of the Occupational Safety and Health Act of 1970 must maintain for each establishment, a log of all recordable occupational injuries and illnesses. This form (OSHA No. 200) may be used for that purpose. A substitute for the OSHA No. 200 is acceptable if it is as detailed, easily readable, and understandable as the OSHA No. 200.

Enter each recordable case on the log within six (6) workdays after learning of its occurrence. Although other records must be maintained at the establishment to which they refer, it is possible to prepare and maintain the log at another location, using data processing equipment if desired. If the log is prepared elsewhere, a copy updated to within 45 calendar days must be present at all times in the establishment.

Logs must be maintained and retained for five (5) years following the end of the calendar year to which they relate. Logs must be available (normally at the establishment) for inspection and copying by representatives of the Department of Labor, or the Department of Health and Human Services, or States accorded jurisdiction under the Act. Access to the log is also provided to employees, former employees and their representatives.

II. Changes in Extent of or Outcome of Injury or Illness

If, during the 5-year period the log must be retained, there is a change in an extent and outcome of an injury or illness which affects entries in columns 1, 2, 6, 8, 9, or 13, the first entry should be lined out and a new entry made. For example, if an injured employee at first required only medical treatment but later lost workdays away from work, the check in column 6 should be lined out and checks entered in columns 2 and 3 and the number of lost workdays entered in column 4.

In another example, if an employee with an occupational illness lost wordays, returned to work, and then died of the illness, any entries in columns 9 through 12 would be lined out and the date of death entered in column 8.

The entire entry for an injury or illness should be lined out if later found to be nonrecordable. For example, an injury which is later determined not to be work related, or which was initially thought to involve medical treatement but later was determined to have involved only first aid.

III. Posting Requirements

A copy of the totals and information following the total line of the last page for the year, must be posted at each establishment in the place or places where notices to employees are customarily posted. This copy must be posted no later than February 1 and must remain in place until March 1. Even though there were no injuries or illnessed during the year, zeros must be entered on the totals line, and the form posted.

The person responsible for the annual summary totals shall certify that the totals are true and complete by signing at the bottom of the form.

IV. Instructions for Completing Log and Summary of Occupational injuries and illnesses

Column A - CASE OR FILE NUMBER. Self Expanatory

Column B - DATE OF INJURY OR ONSET OF ILLNESS

For occupational injuries, enter the date of the work accident which resulted in the injury. For occupational illnesses, enter the date of initial diagnosis of illness, or, if absence from work occurred before diagnosis, enter the first day of the absence attributable to the illness which was later diagnosed or recognized.

Columns C through F - Self Explanatory

Columns 1 and 8 - INJURY OR ILLNESS-RELATED DEATHS - Self Explanatory

Columns 2 and 9 - INJURIES OR ILLNESSES WITH LOST WORKDAYS - Self Explanatory

Any injury which involves days away from work, or days of restricted work activitiy, or both, must be recorded since it always involves one or more of the criteria for recordability.

Columns 3 and 10 - INJURIES OR ILLNESSES INVOLVING DAYS AWAY FROM WORK - Self Explanatory

Columns 4 and 11 - LOST WORKDAYS -- DAYS AWAY FROM WORK.

Enter the number of workdays (consecutive or not) on which the employee would have worked but could not because of occupational injury or illness. The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work. NOTE: For employees not having a regularly scheduled shift, such as certain truck drivers, construction workers, farm labor, casual labor, part-time employees, etc., it may be necessary to estimate the number of lost workdays. Estimates of lost workdays shall be based on prior work history of the employee AND days worked by employees, not ill or injured, working in the department and/or occupation of the ill or injured employee.

Columns 5 and 12 - LOST WORKDAYS -- DAYS OF RESTRICTED WORK ACTIVITY.

Enter the number of workdays (consecutive or not) on which because of injury or illness:
(1) the employee was assigned to another job on a temporary basis, or
(2) the employee worked at a permanent job less than full time, or
(3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work.

Columns 6 and 13 - INJURIES OR ILLNESSES WITHOUT LOST WORKDAYS - Self Explanatory

Columns 7a through 7g - TYPE OF ILLNESS. Enter a check in only *one* column for each illness.

TERMINATION OR PERMANENT TRANSFER - Place an asterisk to the right of the entry in columns 7a through 7g (type of illness) which represented a termination of employment or permanent transfer.

V. Totals

Add number of entries in columns 1 and 8.
Add number of checks in columns 2, 3, 6, 7, 9, 10 and 13.
Add number of days in columns 4, 5, 11 and 12.
Yearly totals for each column (1-13) are required for posting. Running or page totals may be generated at the discretion of the employer.

In an employee's loss of workdays is continuing at the time the totals are summarized, estimate the number of future workdays the employee will lose and add that estimate to the workdays already lost and include this figure in the annual totals. No further entries are to be made with respect to such cases in the next year's log.

VI. Definitions

OCCUPATIONAL INJURY is any injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from an exposure involving a single incident in the work environment. NOTE: Conditions resulting from animal bites, such as insect or snake bites or from one-time exposure to chemicals, are considered to be injuries.

OCCUPATIONAL ILLNESS of an amployee is any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact.

The following listing gives the categories of occupational illnesses and disorders that will be utilized for the purpose of classifying recordable illnesses. For porposes of information, examples of each category are given. These are typical examples, however, and are not to be considered the complete listing of the types of illnesses and disorders that are to be counted under each category.

7a. Occupational Skin Diseases or Disorders. Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; chrome ulcers; chemical burns or inflamation, etc.

7b. Dust Diseases of the Lungs (Pneumaconioses). Examples: Silicosis, asbestosis and other asbestos-related diseases, coal worker's pneumaconioses, byssinosis, siderosis, and other pneumaconioses.

7c. Respiratory Conditions Due to Toxic Agents. Examples: Pneumonitis, pharyngitis, rhinitis or acute congestion due to chemicals, dusts, gases, or fumes; farmer's lung; etc.

7d. Poisoning (Systemic Effects of Toxic Materials). Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by

carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion, lead arsenate; poisoning by other chemicals such as formaldehyde, plastics, and resins; etc.

7e. Disorders Due to Physical Agents (Other than Toxic Materials). Examples: Heatstroke, sunstroke, heat exhaustion, and other effects of environmental heat, freezing, frostbite, and effects of exposure to low temperatures; caisson disease; effects of ionizing radiation (isotopes, X-rays, radium); effects of nonionizing radiation (welding flash, ultraviolet rays, microwaves, sunburn); etc.

7f. Disorders Associated with Repeated Trauma. Examples: Noise-induced hearing loss; synovitis, tenosynovitis, and bursitis. Raynaud's phenomena; and other conditions due to repeated motion, vibration, or pressure.

7g. All Other Occupational Illnesses. Examples: Anthrax, brucellosis, infectious hepatitis, malignant and benign tumors, food poisoning, histoplasmosis, coccidioidomycosis, etc.

MEDICAL TREATMENT includes treatment (other than first aid) administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does NOT include first aid treatment (one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care) even though provided by a physician or registered professional personnel.

ESTABLISHMENT: A single physical location where business is conducted or where services or industrial operations are performed (for example: a factory, mill, store, hotel, resturant, movie theater, farm, ranch, bank, sales office, warehouse, or central administrative office). Where distinctly separate activities are performed at a single physicial location, such as construction activities operated from the same physical locations as a lumber yard, each activity shall be treated as a separate establishment.

For firms engaged in activities which may be physically dispersed, such as agriculture; construction; transportation; communications and electric, gas, and sanitary services, records may be maintained at a place to which employees report each day.

Records for personnel who do not primarily report or work at a single establishment, such as traveling salesmen, technicians, engineers, etc., shall be maintained at the location from which they are paid or the base from which personnel operate to carry out their activities.

WORK ENVIRONMENT is comprised of the physical location, equipment, materials processed or used, and the kinds of operations performed in the course of an employee's work, wether on or off the employer's premisis.

EXHIBIT 6K

REGULATION 1 - USE OF PERSONAL PROTECTIVE EQUIPMENT

EXHIBIT 6K

REGULATION 1 - USE OF PERSONAL PROTECTIVE EQUIPMENT

WHO This regulation applies to all site workers, supervisors and visitors, *without exception.*

WHEN Prior to entering the Contaminant Reduction Zone (CRZ) or Exclusion Zone (EZ), provisions of this regulation will be followed.

WHAT This regulation outlines the initial type of Personal Protective Equipment (PPE) required to be worn while working in the CRZ and EZ. PPE may be altered if approved by the HSO. Specific guidelines are provided in Section 6.7 of this HASP. Disposable PPE will not be worn for more than one work shift during the workday. In some instances, disposable PPE may require replacement more than once during a work shift. The HSO shall determine the frequency of replacing disposable PPE. Reusable PPE will be properly decontaminated, cleaned, sterilized (if appropriate) and stored. The HSO shall determine the suitable PPE for the work area.

WHY The levels of protection specified in the HASP were selected to protect individuals from potentially harmful exposures to chemicals or physical hazards. No changes to PPE specifications are authorized without the permission of the HSO.

EXHIBIT 6L

REGULATION 2 - PERSONAL HYGIENE

EXHIBIT 6L

REGULATION 2 - PERSONAL HYGIENE

WHO This regulation applies to all site workers, supervisors and visitors, but is intended primarily for site workers.

WHEN Before beginning work, during scheduled breaks and at the end of a workday.

WHAT This regulation summarizes the policy on personal hygiene that applies to all site personnel. Personal hygiene includes those activities such as washing hands, showering, shaving, etc., that are conducive to keeping one's body clean and mind refreshed. For the individual's sake, and that of his/her coworkers, each worker will be responsible for maintaining a high degree of personal hygiene. This is especially critical prior to breaks where food, beverages or smoking will occur. If proper personal hygiene is not followed, potential ingestion, absorption or inhalation of toxic materials may occur. Particular attention must be paid to close shaving whenever respirators are worn. Facial hair and long hair will interfere with respirator fit and can allow excessive contaminant penetration.

WHY To avoid accidental ingestion, absorption or inhalation of hazardous materials and to maintain an elevated state of awareness, thus reducing potential mental errors and accidents.

EXHIBIT 6M

REGULATION 3 - PROVISIONS FOR SMOKING, EATING, CHEWING AND DRINKING

EXHIBIT 6M

REGULATION 3 - PROVISIONS FOR SMOKING, EATING, CHEWING AND DRINKING

WHO This regulation applies to all site workers, supervisors and visitors, *without exception.*

WHEN At all times personnel are on-site. This regulation will specifically apply during breaks and rest periods.

WHAT Site personnel are forbidden to smoke, eat, chew or drink in the Exclusion Zone or Contaminant Reduction Zone. Only those areas designated as break areas or common areas in the Support Zone may be used for smoking, eating, chewing or drinking. Individuals found to be repeatedly disregarding these provisions will be released.

The only exception to this regulation involves access to electrolytic fluids in the Contaminant Reduction Zone when the HSO has determined that heat stress warrants regular replenishing of lost body fluids.

WHY To protect personnel from accidental exposures to hazardous materials, smoking, eating, chewing and drinking is prohibited everywhere except in designated break areas. To avoid potential fires and explosions, smoking is prohibited everywhere except in designated break areas.